GOAA Date: 09/18/24

PROJECT MANUAL

for

H-00370
AIRSIDE 3 PCC APRON PCC SLAB REHABILITATION

CONTRACT DOCUMENTS
VOLUME 1 OF 1

(Division 0 General Provisions)
(Division 1 General Requirements)
(Division 2 Technical Specifications)

ORLANDO INTERNATIONAL AIRPORT
Orlando, Florida 32827

GREATER ORLANDO AVIATION AUTHORITY

Documents Prepared and Submitted by:

AECOM Technical Services, Inc.
7650 W. Courtney Campbell CSWY., Tampa, FL 33607
Phone: (813) 286-1711 /F (813) 287-8591

GREATER ORLANDO AVIATION AUTHORITY
ORLANDO INTERNATIONAL AIRPORT

ADDENDUM NUMBER ONE (1)

TO THE

CONTRACT DOCUMENTS: PROJECT MANUAL AND DRAWINGS

DATED: July 10, 2024

FOR

H-00370 AIRSIDE 3 APRON PCC SLAB REHABILITATION

ORLANDO INTERNATIONAL AIRPORT
ORLANDO, FLORIDA

The Documents Covering the Above-Described Work Were Prepared By:

AECOM Technical Services, Inc.
7650 W. Courtney Campbell Causeway, Tampa, Florida 33607
Phone: (813) 636-2444

ADDENDUM DATE: July 25, 2024

Note: The bidder shall acknowledge receipt of this Addendum No. 1 on the Bid Form.

H-00370, AIRSIDE 3 APRON PCC SLAB REHABILITATION

ADDENDUM No. 1

TO: ALL HOLDERS OF CONTRACT DOCUMENTS

1. Your attention is directed to the following interpretations of, changes in, and/or additions to the contract documents for the above named project.
2. This addendum is part of the Contract Documents.
3. Bidders are required to acknowledge receipt of this Addendum in the space provided on the Bid Form.
4. The following changes shall be made:

Specifications – Division 0:

1. Section 00 21 13, Instructions to Bidders, Section 7.0 ADDENDA – CHANGES WHILE BIDDING: REMOVE the first paragraph and REPLACE with the following:

   "Any questions or request for interpretation of the drawings, specifications or other Contract Documents or correction of any apparent ambiguity, inconsistency or error therin, shall be in writing, addressed to *H370@goaa.org*, and must be received at least nine (9 calendar days prior to the date fixed for the opening of Bids."

Drawings:

1. Drawing C9.0.1, Typical Pavement Sections and Details (1): REMOVE Drawing C9.0.1 and REPLACE with Drawing C9.0.1, Revision B, dated 07/25/2024 (Attached).

2. Drawing C60.0.1, Work Area 1 Plan: REMOVE Drawing C60.0.1 and REPLACE with Drawing C60.0.1, Revision B, dated 07/25/2024 (Attached).

Contractor's Questions:

1. Q: What is the engineer's estimate for this Project?
   A: GOAA will not be providing the engineer's estimate for this Project.

2. Q: Does the 7% DBE Subcontract participation Goal include M/WBE, LDB and VBE?
   A: No, due to the funding source, only DBE-certified firms can be counted toward the participation goal. No other certifications will be counted.

3. Q: Will the Owner require a Vacuum Truck to be present full time?
   A: The Contractor shall have power brooms and automatic motorized vacuum equipment with drivers available on site at all times.

4. Q: Will Visqueen be allowed as a bond breaker between the Lean Concrete and 16" concrete?
   A: Yes, visqueen will be allowed as a bond breaker between the P-306 and P-501.

5. Q: Please confirm the 4' spacing between low profile barriers.
   A: The 4' spacing, as shown on plan sheet C61.0.1, will be required for the low-profile barricades.

6. Q: The plans show PVC "Half Round" barricades. Will low profile water filled barriers be allowed in lieu of?
   A: Yes, the water filled low profile barricades will be acceptable, as long as they met FAA AC 150/5370-2F standards.

7. Q: When will the prebid minutes be available?
   A: The pre-bid minutes were distributed to all attendees and plan holders on July 25, 2024.

8. Q: According to Spec. Sect. Item P-501 Cement Concrete Pavement, P-501-10, C. Temperature Management Program. It states "Prior to the start of paving operation for each day of paving, the Contractor shall provide the OAR with a Temperature Management Program for the concrete to be places to assure that uncontrolled cracking is avoided. (FHA HIPERPAV 3 is one example of a temperature management program)." Due to implementation of this program, stringent testing requirements, and unanticipated weather events, we believe that the 30-day construction time is not feasible for the amount of work that is required, therefore we respectfully request an additional 45 days of construction time.
   A: No additional time will be provided; the construction duration will remain 30 calendar days.

9. Q: Specification Section 01.11.00.1.3.5b1 states, "…schedule and coordinate all deliveries and removal of debris during daylight hours each day of work week." This statement was in bold font, so is GOAA going to enforce this requirement on such a tight schedule? This is assuming that there is no night work required. Please confirm.
   A: Night work may be required for the placement of the P-501 PCC, deliveries and material removal may be approved in advance with the OAR during nighttime hours.

10. Q: Please refer to the proposed bid form. There is no Pay Item for Stabilized Subgrade restoration, concrete slurry control, or dewatering. Based upon the current conditions and experience, these scopes of work will be necessary. Where should these costs be accounted for in the bid pricing?
    A: Please refer to Pay Item Note 1 on sheet ISO.0.1 "1. The project pay items are intended to be inclusive of all work to be performed within these H-00370 Airside 3 Apron PCC Slab

Rehabilitation Documents. All incidental work required to complete the project or adhere to this project requirements shall be included in the Contractor's Bid under the nearest applicable pay item."

11. Q: Refer to Dwg. C60.0.0, Overall Phasing Plan, Schematic Project Schedule. It seems like this tight time frame does not account for submittal submission and approvals, mobilization, maintenance of traffic, demolition, concrete placement, concrete material testing, clean-up, etc. We believe that the 30-day construction time is not feasible for the amount of work that is required, therefore we respectfully request an additional 45 days of contract time.
    A: There is a 30-day mobilization period that is intended to be utilized for submission and approval of shop drawings, as well as material procurement. No additional time will be provided; the construction duration will remain 30 calendar days. The proposed durations have been carefully coordinated with the airport's operational needs and no additional time will be available.

12. Q: Is the MOT (barricades, lights, etc) adequate, according to Operations, for the ramp closure? Or will there be an allowance for additional MOT devices for changes by GOAA, outside of plans?
    A: This MOT Plan has been coordinated with MCO's Airfield and Airline Operations. There will be no allowance for additional MOT requirements.

13. Q: Are the test results from other, similar projects available for review prior to bid?
    A: No, material test data from previous projects will not be provided. The Bidder should reach out to their material supplier for historic test data.

14. Q: Will the previously-accepted concrete mix design information be made available for review prior to bid?
    A: No, the previously approved mix designs will not be provided. The Bidder should coordinate with local material suppliers who have the capability of supplying the required P-501 mix design.

15. Q: If additional days are not provided, should the contractor include liquidated damages in the total price to accommodate for anticipated extra days.
    A: No additional contract time will be provided. Bidders shall complete the Bid Form provided in the Bid Documents at their discretion.

16. Q: Can a 7% VBE participation be utilized in lieu of a 7% DBE participation?
    A: No, due to the funding source, only DBE-certified firms can be counted toward the participation goal. No other certifications will be counted.

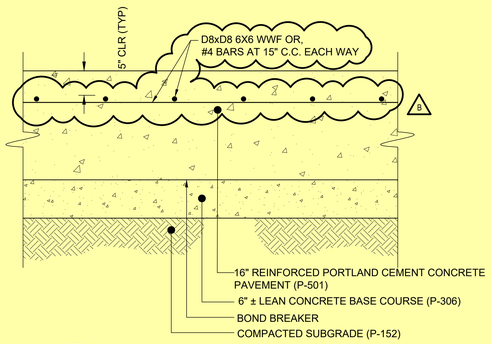
17. Q: Specification P-306-2.8, P-306-5.14 and P-501-4.4 reference installation of the Bond Breaker. Please confirm if a layer of visqueen will also be required in addition to the cure compound?

A: Visqueen will not be required in addition to the cure compound for the bond breaker; however, visqueen may be used in lieu of the curing compound as a bond breaker.

18. Q: C9.0.2 details 7 & 8 note sawcut and demolition plan for concrete pavement. Can the demo sawcut detail be completed full depth thru both the existing P-501 and P-306 layers (~22-23" deep) or does the P-501 layer have to be removed first for inspection before the P-306 is removed?
A: The initial demolition shall be as described on plan sheet C9.0.2. If it is determined during demolition that there is no possibility of salvaging the existing P-306, the Contractor shall coordinate with the OAR and may be allowed to complete full depth cuts going forward without damaging the adjacent slabs.

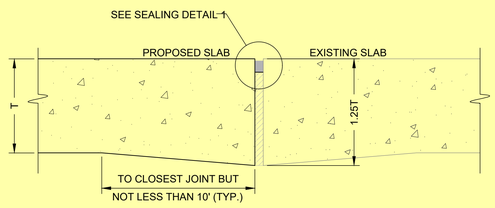
LIST OF ATTACHMENTS:

A. Drawing C9.0.1, Typical Pavement Sections and Details (1), dated 07/25/2024.
B. Drawing C60.0.1, Work Area 1 Plan, dated 07/25/2024.

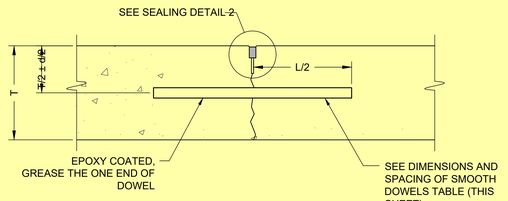


NOTE:
1. BOND BREAKER SHALL BE A DOUBLE APPLICATION OF CURING COMPOUND AS SPECIFIED UNDER ITEM P-306.
2. REFER TO ITEM P-501 FOR BOND BREAKER APPLICATION REQUIREMENTS.
3. CONTRACTOR TO FIELD VERIFY EXISTING PAVEMENT THICKNESS AND MAKE UP

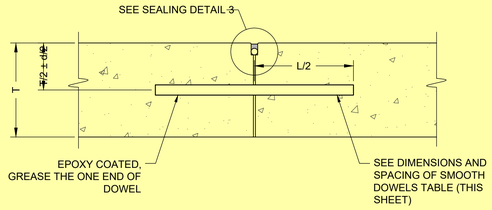
1 NEW PCC FULL STRENGTH PAVEMENT
N.T.S.



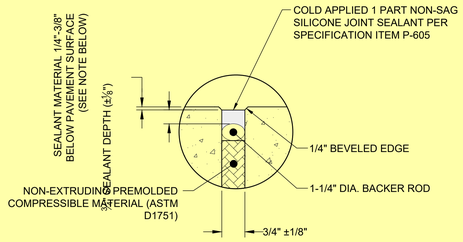
2 TYPE A THICKENED EDGE ISOLATION JOINT
N.T.S.



3 TYPE C DOWELED CONTRACTION JOINT
N.T.S.

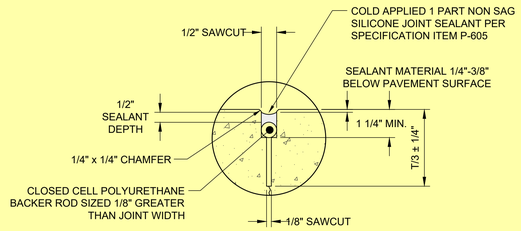


4 TYPE E DOWELED CONSTRUCTION JOINT
N.T.S.



FOR ISOLATION JOINTS

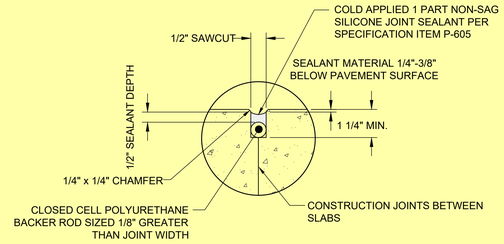
5 SEALING DETAIL 1
N.T.S.



FOR CONTRACTION JOINTS

6 SEALING DETAIL 2
N.T.S.

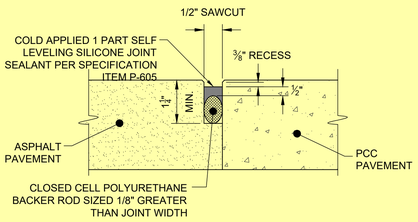
NOTES:
1. INITIAL SAWCUT T/5 TO T/6 WHEN USING EARLY ENTRY SAW.



FOR CONSTRUCTION JOINTS

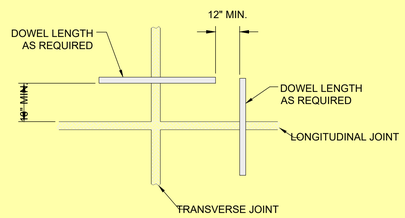
7 SEALING DETAIL 3
N.T.S.

NOTES:
1. SEALANT MATERIAL SHALL BE HELD DOWN (RECESSED) ⅜ " ON GROOVED PAVEMENT.
2. INITIAL SAWCUT T/5 TO T/6 WHEN USING EARLY ENTRY SAW.



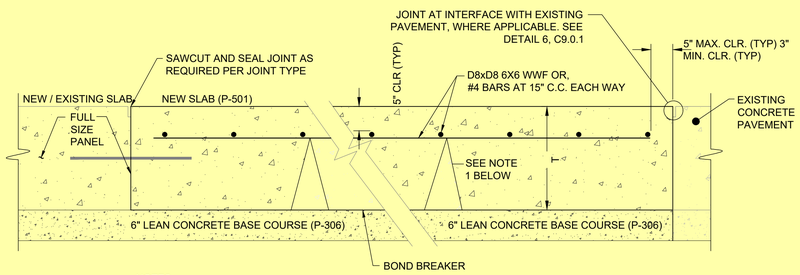
NOTE:
1. ALL MATERIAL AND INSTALLATION COSTS SHALL BE INCLUDED AND CONSIDERED INCIDENTAL AND INCLUDED TO THE NEAREST APPLICABLE PAY ITEM.
2. JOINT SEALING DETAIL 4 SHALL BE INSTALLED AT ALL ASPHALT TO NEW OR EXISTING PCC PAVEMENT LOCATIONS AND STRUCTURES, UNLESS OTHERWISE NOTED ON THE PLANS.

8 SEALING DETAIL 4 - CONCRETE TO ASPHALT JOINT SEAL
N.T.S.



9 DOWEL POSITION AT EDGE OF JOINT
N.T.S.

DIMENSIONS AND SPACING OF SMOOTH DOWELS TABLE			
SLAB THICKNESS (T)	DIAMETER (d)	LENGTH (L)	SPACING
12.5" - 16"	1 ¼"	20"	15"
16.5" - 20"	1 ½"	20"	18"



NOTES:
1. BAR MATS SHALL BE SUPPORTED WITH CHAIRS NO MORE THAN 3' APART.
2. ALL COSTS RELATED TO THE INSTALLATION OF SLAB REINFORCING SHALL BE INCLUDED AND INCIDENTAL TO PAY ITEM FOR PORTLAND CEMENT CONCRETE PAVEMENT.

10 TYPICAL SLAB REINFORCING - SECTION VIEW
N.T.S.

PCC PAVEMENT CONSTRUCTION NOTES:

1. DOWELS SHALL BE EPOXY COATED CONFORMING TO SPECIFICATION P-501.
2. DOWELS SHALL BE SOLID SMOOTH STEEL BARS, LENGTH AND SPACING AS INDICATED ON THE PLANS.
3. DOWELS SHALL BE LIGHTLY GREASED WITH A THIN COAT OF HIGH MELTING POINT GREASE OR AN APPROVED EQUIVALENT PRIOR TO INSTALLATION ALONG CONTRACTION JOINTS.
4. AFTER INSERTION AND GROUTING IN PLACE OF DOWELS ALONG CONSTRUCTION JOINTS, FREE END SHALL BE GREASED AS DESCRIBED IN NOTE 3 ABOVE.
5. ALL CONSTRUCTION JOINT DOWELS SHALL BE GANG-DRILLED AND EPOXY GROUTED.
6. DRILLING METHOD FOR DOWELS SHALL BE CAPABLE OF MAINTAINING DRILL HOLES PARALLEL TO THE CONCRETE SURFACE AND PERPENDICULAR TO THE JOINT DIRECTION. DRILL HOLES SHALL BE ACCURATELY LAID OUT SO THAT THE MAXIMUM DEVIATION DOES NOT EXCEED 1" HORIZONTALLY. DRILL HOLE DIAMETER TO BE OF SUFFICIENT SIZE TO ACCEPT THE TYPE AND SIZE OF REQUIRED DOWEL.
7. AFTER DRILLING IS COMPLETE AND PRIOR TO THE INSTALLATION OF THE DOWELS, THE DRILLED HOLES SHALL BE THOROUGHLY CLEANED TO REMOVE DRILLING DUST, CONCRETE CHIPS AND ANY OTHER MATERIAL THAT MAY HINDER PROPER BONDING.
8. CONTRACTOR WILL NOT BE PERMITTED TO DIP DOWEL IN EPOXY BEFORE INSERTING DOWEL. EPOXY GROUT SHALL BE INJECTED UNIFORMLY TO FILL THE ENTIRE CIRCUMFERENCE OF THE DRILLED DOWEL HOLE. CONTRACTOR TO INJECT SUFFICIENT AMOUNT OF EPOXY MATERIAL IN THE HOLE SO THAT A SLIGHT AMOUNT WILL BE FORCED OUT WHEN THE DOWEL IS INSERTED AND TAPPED IN PLACE. THE CONTRACTOR IS PERMITTED TO USE SMALL WEDGES TO PROVIDE SUPPORT TO THE DOWELS TO KEEP THEM IN THEIR PROPER LOCATION UNTIL THE EPOXY MATERIAL HARDENS. THE TOLERANCE FOR DOWEL ALIGNMENT IN EITHER THE HORIZONTAL OR VERTICAL PLANE IS 1/4" PER FOOT OF DOWEL BAR.
9. ALL LONGITUDINAL AND TRANSVERSE CONTRACTION JOINT DOWELS SHALL BE INSTALLED USING A OAR APPROVED WELDED BASKET ASSEMBLY ANCHORED TO THE BASE COURSE WITH A MINIMUM OF 4 GALVANIZED STRAPS AND NAILS PER ASSEMBLY. THE CONTRACTOR MUST POSITION ANCHOR STRAPS ON ALTERNATING SIDES OF THE BASKET ASSEMBLY.
10. A TRANSVERSE CONSTRUCTION JOINT SHALL BE INSTALLED AT A PLANNED JOINT WHEN PAVING OPERATIONS ARE INTERRUPTED FOR MORE THAN A HALF AN HOUR (30 MINUTES). IF AN INTERRUPTION OCCURS BETWEEN PLANNED JOINTS, THE FRESH CONCRETE SHALL BE REMOVED BACK TO THE PREVIOUSLY INSTALL JOINT. NO JOINTS WILL BE ALLOWED BETWEEN THE JOINTS SHOWN WITHIN THESE CONSTRUCTION DOCUMENTS.
11. EDGES OF CONCRETE SLABS SHALL BE COVERED WITH AN APPROVED CURING MATERIAL AT THE SAME TIME AS THE SURFACE IS CURED. AT FORMED LOCATIONS, SLAB SIDES SHALL BE CURED WHEN FORMS ARE REMOVED.
12. IN THICKENED EDGE AREAS WHERE DOWELS OR REINFORCING STEEL ARE REQUIRED, PROVIDE ADDITIONAL SUPPORT AS APPROVED BY THE OAR TO MAINTAIN THE SAME DEPTH FROM THE SURFACE AS FOR THE SPECIFIED PCC CONCRETE PAVEMENT.
13. CONCRETE IN REINFORCED PANELS SHALL BE PLACED IN ONE COURSE. ALL REINFORCING STEEL SHALL BE INSTALLED USING OAR APPROVED HI-CHAIRS ANCHORED TO THE BASE COURSE AT A MAXIMUM OF 3' ON CENTER. THE REINFORCING MUST RETAIN ITS SPECIFIED POSITION DURING THE PLACEMENT OF THE CONCRETE.
14. THE CONTRACTOR WILL NOT BE PERMITTED TO VIBRATE THE REINFORCING DOWN FROM THE TOP AFTER THE CONCRETE IS POURED.
15. ALL CONCRETE JOINT EDGES SHALL RECEIVE A ONE QUARTER INCH ¼" CHAMFER.
16. SEALANT RESERVOIR SHAPE FACTOR (W/D) SHALL BE PER THE SEALANT MANUFACTURER'S INSTRUCTION RECOMMENDATIONS. ALL JOINT SEALANT RESERVOIRS SHOWN WITHIN THESE PLANS SHALL BE VERIFIED BY THE SEALANT MANUFACTURER PRIOR TO CONSTRUCTION (REFERENCE SPECIFICATION ITEM P-605 FOR MORE INFORMATION).
17. CONTRACTOR SHALL HAVE MANUFACTURER TECHNICAL REPRESENTATIVE ON THE PROJECT SITE AT THE START OF THE PROJECT TO ENSURE THAT JOINT SEALING, CRACK SEALING AND SPALL REPAIRS SHALL CONFORM TO MANUFACTURER'S REQUIREMENTS AND RECOMMENDATIONS. THIS REQUIREMENT IS TO ENSURE THAT THE MANUFACTURER WILL PROVIDE GUARANTEE ON THE PERFORMANCE OF THE MATERIAL.
18. CONTRACTOR TO REMOVE ANY EXCESS SEALANT FROM THE CONCRETE SLAB SURFACE.
19. BACKER RODS SHALL BE 25% LARGER THAN JOINT WIDTH. BACKER RODS SHALL BE MANUFACTURED FROM CLOSED CELL POLYETHYLENE FOAM COMPATIBLE WITH APPROVED SEALANT.
20. THE COST OF MODIFYING THE UNDERLYING PAVEMENT COURSES TO ACCOMMODATE THE CONCRETE PAVEMENT THICKENED EDGE IS INCIDENTAL TO PAY ITEM P-101-5.2. NO SEPARATE PAYMENT WILL BE MADE FOR NECESSARY MODIFICATIONS.

GREATER ORLANDO AVIATION AUTHORITY

H-00370
MCO
AIRSIDE 3 APRON PCC SLAB REHABILITATION

ORLANDO INTERNATIONAL AIRPORT

AECOM TECHNICAL SERVICES, INC.
7650 W. COURTNEY CAMPBELL CSWY
SUITE 700
TAMPA, FLORIDA 33607
PHONE: 813.286.1711
FOR THE FIRM EB 7937

CLINT JAMES MARTIN
FL. P.E. NO. 82740
FIRM EB NO. 8115
AECOM TECHNICAL SERVICES, INC.

REVISIONS

No.	DATE	DESCRIPTION
A	07-08-2024	BID DOCUMENTS
B	07-25-2024	ADDENDUM NO. 1

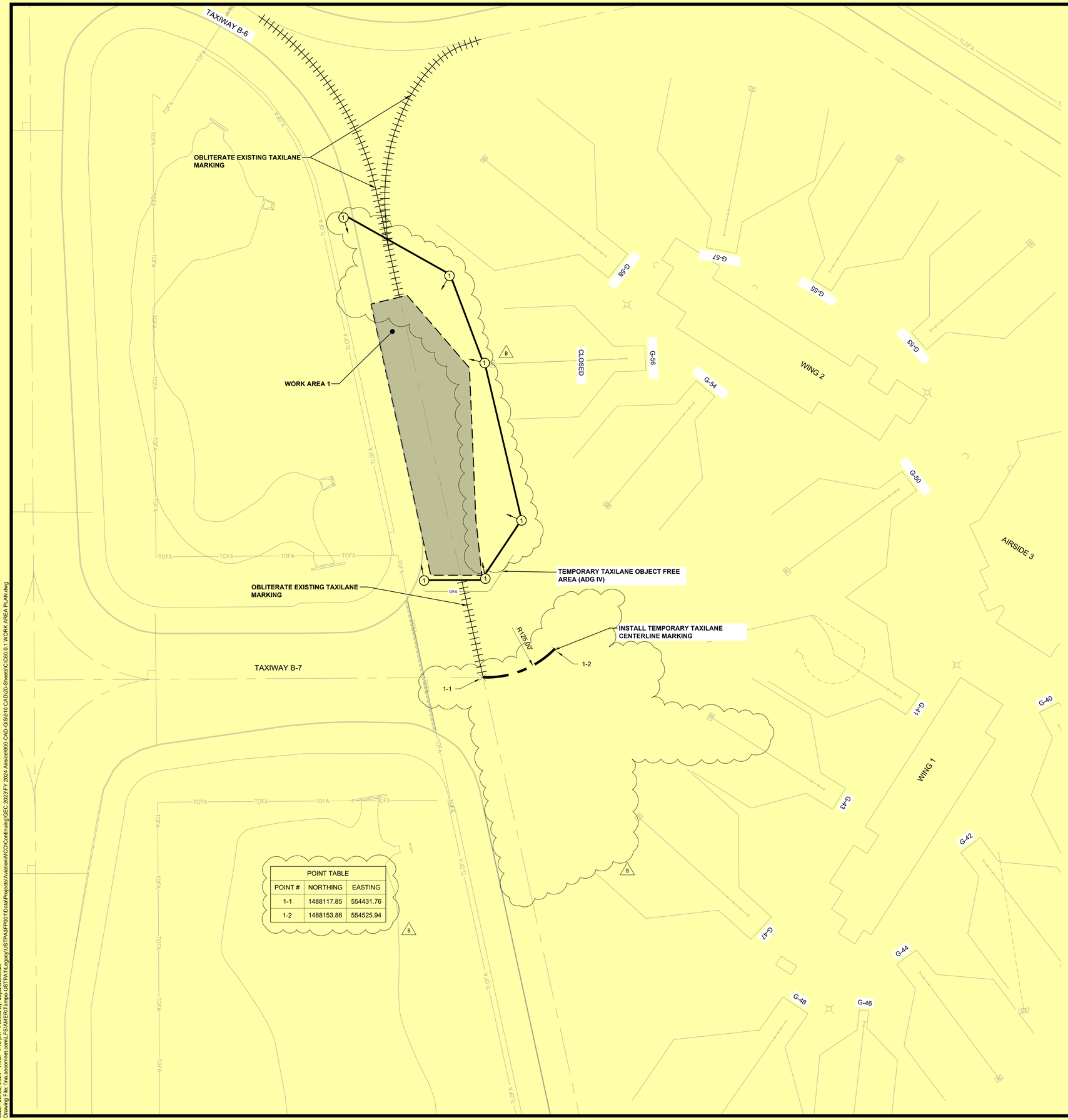
KEY PLAN

PROJECT NO.:	60731531
DESIGNED BY:	JC
DRAWN BY:	JC
CHECKED BY:	AJR
ISSUE DATE:	07-08-2024
DRAWING SCALE:	AS NOTED

DRAWING TITLE:
TYPICAL PAVEMENT SECTIONS AND DETAILS (1)

DRAWING NO.
C.9.0.1

Date: Jul 23, 2024 - Time: 2:58 pm - Plotted By: Jayla Cornelius
Drawing File: \\na.aecomnet.com\FSAMER\Tampa\UST\PASFP0011\Data\Projects\Aviation\MCO\Continuing\GEC 2023\FY 2024 Airside\900\CAD-GIS\910 CAD\10-Reference\C\C.9.0.1 TYPICAL PAVEMENT SECTIONS AND DETAILS (1).dwg



POINT TABLE		
POINT #	NORTHING	EASTING
1-1	1488117.85	554431.76
1-2	1488153.86	554525.94

LEGEND

- WORK AREA LIMITS OF WORK
- BARRICADE LOCATION PER WORK AREA
- PAVEMENT MARKINGS TO BE OBLITERATED (TEMPORARY)
- OFA — TAXILANE OBJECT FREE AREA

WORK AREA 1 NOTES:
DURATION 30 CALENDAR DAYS

1. OBTAIN AUTHORIZATION FROM THE AIRPORT TO CLOSE WORK AREA 1 AS SHOWN.
2. PRIOR TO CLOSING WORK AREA 1 AS SHOWN, THE CONTRACTOR SHALL OBLITERATE THE TAXILANE PAVEMENT MARKINGS AS SHOWN.
3. COMPLETE WORK ITEMS WITHIN THE LIMITS OF WORK AREA 1 BEFORE MOVING ON TO THE NEXT PHASE, UNLESS PREVIOUSLY APPROVED BY THE OAR.
4. CLEAN UP, REMOVE BARRICADES AND REOPEN TO TRAFFIC UNDER THE DIRECTION OF THE OAR AND AIRFIELD OPERATIONS.
5. THE COMPLETION OF THIS WORK AREA SHALL INCLUDE ALL THE WORK REQUIRED TO BE CONSTRUCTED WITHIN THE WORK AREA.

WORK AREA 1 MAJOR WORK ITEMS:

1. FULL DEPTH PCC PAVEMENT REMOVAL
2. FULL STRENGTH PCC PAVEMENT
3. CRACK REPAIRS
4. SPALL REPAIRS

OPERATIONAL IMPACTS:

1. GATE 56 CLOSED
2. AIRSIDE 3 RAMP CLOSED BETWEEN TAXIWAY B6 AND B7
3. GATE 54 RESTRICTED TO ADG III AIRCRAFT
4. GATES 41,43,47, AND 50 RESTRICTED TO ADG IV AIRCRAFT
5. TAXIWAY B7, BETWEEN AIRSIDE 3 RAMP AND TAXIWAY C, RESTRICTED TO ADG IV AIRCRAFT
6. AIRSIDE 3 RAMP, BETWEEN TAXIWAY B7 AND TAXIWAY E1, RESTRICTED TO ADG IV AIRCRAFT

NOTES:

1. FOR SAFETY AND SECURITY NOTES AND DETAILS REFER TO SHEET C61.0.1.
2. CONTRACTOR SHALL COORDINATE THE ACTUAL WORK LIMITS AND THE PLACEMENT AND LOCATION OF ALL TEMPORARY CONSTRUCTION BARRICADES FOR EACH PHASE WITH THE OAR/AIRFIELD OPERATIONS PRIOR TO THE START OF CONSTRUCTION FOR EACH PHASE.
3. FOR PROJECT HAUL ROUTE AND STAGING AREA SEE SHEET C2.0.2.
4. FOR PAVEMENT MARKING DETAILS AND INFORMATION REFER TO SHEET C9.0.2 AND SPECIFICATION ITEM P-620.

N

50' 25' 0 50' 100'

GRAPHIC SCALE

GREATER ORLANDO AVIATION AUTHORITY

H-00370
MCO
AIRSIDE 3 APRON PCC SLAB REHABILITATION

ORLANDO INTERNATIONAL AIRPORT

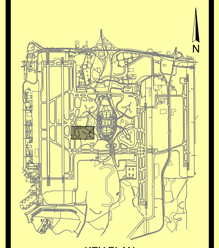
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KEY PLAN

PROJECT NO.:	60731531
DESIGNED BY:	JC
DRAWN BY:	JC
CHECKED BY:	AJR
ISSUE DATE:	07-08-2024
DRAWING SCALE:	AS NOTED

DRAWING TITLE:

WORK AREA 1 PLAN

DRAWING NO.

C60.0.1

Date: Jul 25, 2024 - Time: 1:10 pm - Plotted By: Jayla Cornelius
Drawing File: \\ta.aecomnet.com\FS\AMER\Tampa\USTPA3FP001\Data\Projects\Aviation\MCO\Continuing\GEC 2023\FY 2024 Airside\900-CAD-GIS\010 CAD\20\Sheets\C\C60.0.1 WORK AREA PLAN.dwg

GREATER ORLANDO AVIATION AUTHORITY
ORLANDO INTERNATIONAL AIRPORT

ADDENDUM NUMBER TWO (2)

TO THE

CONTRACT DOCUMENTS: PROJECT MANUAL AND DRAWINGS

DATED: July 10, 2024

FOR

H-00370 AIRSIDE 3 APRON PCC SLAB REHABILITATION

ORLANDO INTERNATIONAL AIRPORT
ORLANDO, FLORIDA

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1. Your attention is directed to the following interpretations of, changes in, and/or additions to the contract documents for the above named project.
2. This addendum is part of the Contract Documents.
3. Bidders are required to acknowledge receipt of this Addendum in the space provided on the Bid Form.
4. The following changes shall be made:

Specifications – Division 0:

1. INVITATION TO BID LETTER: REMOVE the second paragraph and REPLACE with the following:

   "A Pre-Bid Conference will be held at the Orlando International Airport, Conference Room Building, in the Alpha/Bravo conference rooms, 11344 Terminal C Service Road, Bldg. 4, Orlando, Florida, at 11:00am on July 18th, 2024. Sealed bids, on the forms in the Bid Documents, will be received up to 2:00 p.m. on August 20th, 2024, and should be delivered to the Project Controls Office, Greater Orlando Aviation Authority, 11312 Terminal C Service Road, Bldg. 16, Orlando FL 32824, marked "H-00370, Airside 3 Apron PCC Slab Rehabilitation". Bids received after that time and date will not be considered and will be returned unopened."

2. Section 00 21 13, Instructions to Bidders: REMOVE Instructions to Bidders Page 00 21 13 – 2 and REPLACE with Instructions to Bidders Page 00 21 13 – 2, noted Addendum No. 2.

3. Section 00 41 13, BID FORM (SINGLE-PRIME CONTRACT): REMOVE sheet 00 41 13 - 6 and REPLACE with the updated 00 41 13 – 6, noted Addendum No. 2.

Drawings:

1. Drawing ISO.0.1, Index of Drawings, Summary of Quantities & Project Location Map: REMOVE Drawing ISO.0.1 and REPLACE with Drawing ISO.0.1, Revision B, dated 08/13/2024 (Attached).

2. Drawing C8.0.1, Demolition, Markings, and Paving Plans: REMOVE Drawing C8.0.1 and REPLACE with Drawing C8.0.1, Revision B, dated 08/13/2024 (Attached).

3. Drawing C60.0.0, Overall Phasing Plan: REMOVE Drawing C60.0.0 and REPLACE with Drawing C60.0.0, Revision B, dated 08/13/2024 (Attached).

4. Drawing C60.0.1, Work Area 1 Plan: REMOVE Drawing C60.0.1 and REPLACE with Drawing C60.0.1, Revision C, dated 08/13/2024 (Attached).

LIST OF ATTACHMENTS:

A. Section 00 21 13, INSTRUCTIONS TO BIDDERS, Page 00 21 13 – 2, Noted Addendum No. 2
B. Section 00 41 13, BID FORM (SINGLE-PRIME CONTRACT), Page 00 41 13-6, Noted Addendum No. 2
C. Drawing ISO.0.1, Index of Drawings, Summary of Quantities & Project Location Map, Dated 08/13/2024
D. Drawing C8.0.1, Demolition, Markings, and Paving Plans, dated 08/13/2024
E. Drawing C60.0.0, Overall Phasing Plan, dated 08/13/2024
F. Drawing C60.0.1, Work Area 1 Plan, dated 08/13/2024

BIDDER: _____

FOR ALL WORK REQUIRED IN ACCORDANCE WITH THE APPLICABLE DRAWINGS, SPECIFICATIONS AND OTHER BID DOCUMENTS, INCLUDING ALL COSTS RELATED TO THE WORK, AND ANY REQUIRED PERMITS, TAXES, BONDS, AND INSURANCE, THE UNDERSIGNED SUBMITS:

BID FORM

PAY ITEM NO.	DESCRIPTION	UNIT	QUANTITY	UNIT PRICE	EXTENSION
C-100-1	CONTRACTOR QUALITY CONTROL PROGRAM (CQCP)	LS	1		
C-105-1	MOBILIZATION AND GENERAL CONDITIONS	LS	1		
C-106-1	SAFETY, SECURITY AND MAINTENANCE OF TRAFFIC	LS	1		
P-101-5.1	PCC PAVEMENT REMOVAL	SY	485		
P-101-5.2	SOIL CEMENT / LEAN CONCRETE BASE REMOVAL	SY	485		
P-101-5.3	CRACK REPAIR	LF	0		
P-101-5.4	CONCRETE SPALL REPAIR	SF	24		
P-306-8.1	LEAN CONCRETE BASE COURSE (6")	SY	485		
P-501-8.1	PORTLAND CEMENT CONCRETE PAVEMENT (16" THICK)	CY	245		
P-620-5.1	RUNWAY AND TAXIWAY MARKING (YELLOW WITH GLASS BEADS)	SF	1,200		
P-620-5.2	RUNWAY AND TAXIWAY MARKING (BLACK - NO BEADS)	SF	1,200		
				TOTAL PRICE	

INDEX OF DRAWINGS	
SHEET NO.	SHEET TITLE
CS001	COVER SHEET
IS0.0.1	INDEX OF DRAWINGS, SUMMARY OF QUANTITIES, & PROJECT LOCATION MAP
IS0.0.2	GENERAL NOTES AND PROJECT CONTACTS
C2.0.1	PROJECT LAYOUT AND KEY MAP
C2.02	PROJECT HAUL ROUTE & STAGING AREA
C8.0.1	DEMOLITION, MARKINGS, AND PAVING PLANS
C.9.0.1	TYPICAL PAVEMENT SECTIONS AND DETAILS (1)
C.9.02	TYPICAL PAVEMENT SECTIONS AND DETAILS (2)
C60.0.0	OVERALL PHASING PLAN
C60.0.1	WORK AREA 1 PLAN
C60.0.2	SAFETY AND SECURITY PLAN AND NOTES

ITEM NO.	ITEM DESCRIPTION	UNIT	QUANTITY
BASE BID - WORK AREA 1			
C-100-1	CONTRACTOR QUALITY CONTROL PROGRAM (CQCP)	LS	1
C-105-1	MOBILIZATION AND GENERAL CONDITIONS	LS	1
C-106-1	SAFETY, SECURITY AND MAINTENANCE OF TRAFFIC	LS	1
P-101-5.1	PCC PAVEMENT REMOVAL	SY	485
P-101-5.2	SOIL CEMENT / LEAN CONCRETE BASE REMOVAL	SY	485
P-101-5.3	CRACK REPAIR	LF	0
P-101-5.4	CONCRETE SPALL REPAIR	SF	24
P-306-8.1	LEAN CONCRETE BASE COURSE (6")	SY	485
P-501-8.1	PORTLAND CEMENT CONCRETE PAVEMENT (16" THICK)	CY	245
P-620-5.1	RUNWAY AND TAXIWAY MARKING (YELLOW WITH GLASS BEADS)	SF	1,200
P-620-5.2	RUNWAY AND TAXIWAY MARKING (BLACK - NO BEADS)	SF	1,200

B

PAY ITEM NOTES:

1. THE PROJECT PAY ITEMS ARE INTENDED TO BE INCLUSIVE OF ALL WORK TO BE PERFORMED WITHIN THESE H-00370 AIRSIDE 3 APRON PCC SLAB REHABILITATION DOCUMENTS. ALL INCIDENTAL WORK REQUIRED TO COMPLETE THE PROJECT OR ADHERE TO THIS PROJECT REQUIREMENTS SHALL BE INCLUDED IN THE CONTRACTOR'S BID UNDER NEAREST APPLICABLE PAY ITEM.

2. ALL COSTS ASSOCIATED WITH PREPARING THE CONTRACTOR'S STAGING AREAS SHALL BE BORNE BY THE CONTRACTOR. THIS INCLUDES, BUT IS NOT LIMITED TO, CLEARING AND GRADING OF THE SITE, STABILIZATION OF STAGING AREA, CONSTRUCTION OF ALL TEMPORARY UTILITIES IF NECESSARY, SECURITY FENCING,PERMITTING COSTS, AND RESTORATION OF THE SITE TO ITS ORIGINAL CONDITION AT PROJECT COMPLETION. CONTRACTOR IS RESPONSIBLE FOR ENSURING THAT ALL FEDERAL, STATE, AND LOCAL REQUIREMENTS ARE MET. ALL COSTS RELATED TO THE CONTRACTOR'S STAGING AREA SHALL BE INCLUDED UNDER ITEM C-105, MOBILIZATION.

3. UNLESS OTHERWISE SPECIFIED, ALL TESTS REQUIRED BY THE CONTRACT DOCUMENTS FOR ACCEPTANCE OF MATERIALS AND WORKMANSHIP SHALL BE INITIATED BY THE OWNER'S AUTHORIZED REPRESENTATIVE (OAR) AND PAID FOR BY THE OWNER. ALL RETESTS FOR FAILED TESTS SHALL BE AT THE CONTRACTOR'S EXPENSE.

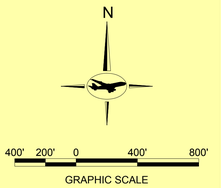
4. THE COST OF TEMPORARY UTILITIES NEEDED TO ACCOMPLISH THE WORK IS CONSIDERED INCIDENTAL TO THE PROJECT AND PAID FOR BY THE CONTRACTOR UNDER THE NEAREST APPLICABLE PAY ITEM.

5. THE COST ASSOCIATED WITH THE EQUIPMENT, MATERIAL AND PERSONNEL NECESSARY TO ENSURE APPROPRIATE SAFETY, SECURITY, AND MAINTENANCE OF TRAFFIC ON THE AIR OPERATIONS AREA (AOA) SHALL BE PAID FOR UNDER ITEM C-106, SAFETY, SECURITY, AND MAINTENANCE OF TRAFFIC. THIS SHALL INCLUDE THE COST ASSOCIATED WITH TEMPORARY PAVEMENT MARKING, FLAGGERS, ESCORTS, BARRICADES, AND RADIOS .

6. ANY DAMAGE TO EXISTING ITEMS TO REMAIN INCLUDING, BUT NOT LIMITED TO, ASPHALT PAVEMENT, CONCRETE SLABS, MARKINGS, UTILITIES, LIGHTING, SIGNAGE, AND GRASS SHALL BE REPLACED IN KIND, AND IN A MANNER ACCEPTABLE TO THE OAR, BY THE CONTRACTOR AT NO ADDITIONAL COST TO THE OWNER.



PROJECT LOCATION MAP



GREATER ORLANDO AVIATION AUTHORITY

H-00370
MCO
AIRSIDE 3 APRON PCC SLAB REHABILITATION

ORLANDO INTERNATIONAL AIRPORT

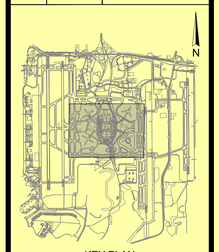
AECOM TECHNICAL SERVICES, INC.

7650 W. COURTNEY CAMPBELL CSWY
SUITE 700
TAMPA, FLORIDA 33607
PHONE: 813.286.1711
FOR THE FIRM EB 7937

CLINT JAMES MARTIN
FL. P.E. NO. 82740
FIRM EB NO. 8115
AECOM TECHNICAL SERVICES, INC.

REVISIONS

No.	DATE	DESCRIPTION
A	07-08-2024	BID DOCUMENTS
B	08-13-2024	ADDENDUM NO. 2



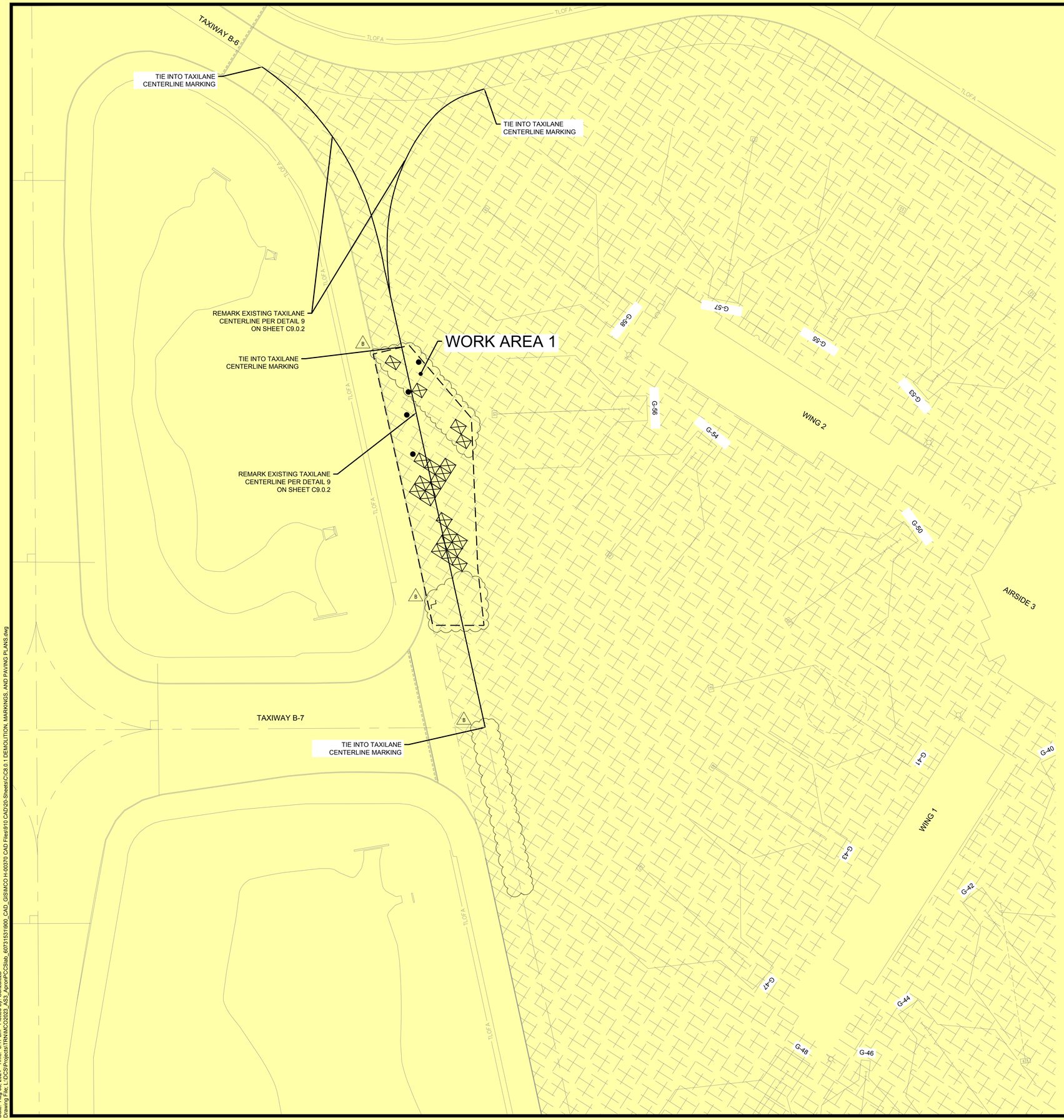
KEY PLAN

PROJECT NO.:	60731531
DESIGNED BY:	JC
DRAWN BY:	JC
CHECKED BY:	AJR
ISSUE DATE:	07-08-2024
DRAWING SCALE:	AS NOTED

DRAWING TITLE:
INDEX OF DRAWINGS, SUMMARY OF QUANTITIES, & PROJECT LOCATION MAP

DRAWING NO.
IS0.0.1

Date: Aug 08, 2024 - Time: 6:30 am - Plotted By: GonzalezD
Drawing File: L:\DGS-Projects\TPA\MCO\2022_AS_Apron\PCCSlab_60731531\900_CAD_GIS\MCO H-00370 CAD Files\910 CAD\20\Sheets\CIS\IS0.01 INDEX OF DRAWINGS, SUMMARY OF QUANTITIES, & PROJECT LOCATION MAP.dwg



LEGEND:

- ISOLATED SLAB REMOVAL AND REPLACEMENT
- SPALL REPAIR
- CRACK REPAIR
- WORK AREA LIMITS

GENERAL DEMOLITION AND PAVING NOTES:

1. THE DEMOLITION, PAVING, AND PAVEMENT MARKING WORK SHOWN ON THESE PLANS SHALL BE COORDINATED AND PHASED AS SHOWN ON THE C60 SERIES DRAWINGS.
2. ALL DEMOLITION MATERIALS AND EXCAVATED DEBRIS SHALL BE REMOVED FROM THE CONSTRUCTION WORK AREA AT THE END OF EACH WORK DAY.
3. CONTRACTOR TO SUBMIT A DETAILED PAVING PLAN, FOR PCC PAVING, TO THE ENGINEER FOR REVIEW AND APPROVAL PRIOR TO THE START OF CONSTRUCTION.
4. ALL INTERFACE PAVEMENT EDGES SHALL BE NEATLY SAW-CUT WITH APPROPRIATE EQUIPMENT, AS SPECIFIED UNDER SPECIFICATION P-101.
5. ALL CONCRETE DEMOLITION AND PAVING SHALL BE PER FAA SPECIFICATION P-501 AND DETAILS AS SHOWN ON SHEETS C9.0.1 AND C9.0.2.
6. CONCRETE TO CONCRETE JOINTS SHALL BE CLEANED AND RE-SEALED IN ACCORDANCE WITH ALL APPLICABLE SPECIFICATIONS AND DETAILS, AS SHOWN ON SHEETS C9.0.1 AND C9.0.2.
7. ALL NEW PORTLAND CEMENT CONCRETE SLABS SHALL BE REINFORCED. REFER TO DETAIL 10 ON SHEET C9.0.1.

GENERAL PAVEMENT MARKING NOTES:

1. TAXILANE PAVEMENT MARKING SHALL BE REINSTALLED, AT COMPLETION OF WORK, IN ITS CURRENT CONFIGURATION. THE CONTRACTOR SHALL USE A LICENSED SURVEYOR TO LOCATE THE EXISTING TAXILANE CENTERLINE PRIOR TO CONSTRUCTION IN ORDER TO LAY THE TAXILANE OUT IN THE CURRENT CONFIGURATION ONCE CONSTRUCTION ACTIVITIES HAVE BEEN COMPLETED. ALL COSTS WITH SURVEY AND PAVEMENT MARKING LAYOUT SHALL BE CONSIDERED INCIDENTAL AND APPLIED TO THE COST OF THE NEAREST APPLICABLE PAY ITEM.
2. FOR NEW MARKINGS, PAVEMENT SHALL BE THOROUGHLY CLEANED OF ALL DIRT, GREASE, LAITENCE, AND LOOSE MATERIAL IN ACCORDANCE WITH SPECIFICATION P-620.
3. CONTRACTOR SHALL REPAINT AT THEIR OWN EXPENSE ANY EXISTING MARKINGS, THAT ARE TO REMAIN, THAT HAVE BEEN DAMAGED DURING CONSTRUCTION.
4. SEE SHEET C9.0.2 FOR PAVEMENT MARKING DETAILS.
5. REFER TO THE C60 SERIES SHEETS FOR TEMPORARY PAVEMENT MARKING LAYOUT AND TEMPORARY TAXILANE PHASING REQUIREMENTS. ALL COSTS FOR TEMPORARY PAVEMENT MARKING INSTALLATION AND REMOVAL SHALL BE INCLUDED IN THE CONTRACTORS LUMP SUM PRICE FOR SAFETY, SECURITY, AND MAINTENANCE OF TRAFFIC, ITEM NO. C-106-1.
6. TEMPORARY MARKING SHALL NOT RECEIVE A BLACK OUTLINE, UNLESS NOTED OTHERWISE OR AS DIRECTED BY THE OAR/AIRFIELD OPERATIONS.
7. TEMPORARY MARKINGS FOR THE RELOCATED TAXILANE CENTERLINE AS PART OF THE MAINTENANCE OF TRAFFIC FOR EACH WORK AREA SHALL BE INSTALLED WITH TYPE I REFLECTIVE MEDIA AND AT THE APPLICATION RATE SPECIFIED IN THE P-620 SPECIFICATION. TEMPORARY MARKING DURING THE 30 DAY CURING PERIOD ON NEW PCC WILL NOT REQUIRE REFLECTIVE MEDIA, REFLECTIVE MEDIA FOR PAVEMENT MARKING ON NEW PCC WILL BE INSTALLED WITH THE PERMANENT MARKING APPLICATION ONCE THE 30 DAY CURING PERIOD IS COMPLETE.
8. PRIOR TO PLACING THE PERMANENT PAVEMENT MARKINGS ON NEW PAVEMENT, THE PAVEMENT SHALL BE ALLOWED TO CURE FOR THE PERIOD SPECIFIED IN THE P-620 SPECIFICATION.
9. ALL PAVEMENT MARKINGS SHALL BE INSTALLED AND/ REMOVED AS REQUIRED, IN COMPLIANCE WITH SPECIFICATION P-620.
10. THE CONTRACTOR SHALL PROTECT EXISTING IN-PAVEMENT AND ELEVATED LIGHT FIXTURE DURING PAVEMENT MARKING OPERATIONS. LIGHT FIXTURES THAT ARE DAMAGED, PAINTED, OR EXHIBIT OVERSPRAY SHALL BE REPLACED BY THE CONTRACTOR AT NO COST TO THE OWNER.

N

50' 25' 0 50' 100'

GRAPHIC SCALE

GREATER ORLANDO AVIATION AUTHORITY

H-00370

MCO
AIRSIDE 3 APRON PCC SLAB REHABILITATION

ORLANDO INTERNATIONAL AIRPORT

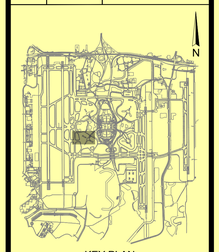
AECOM TECHNICAL SERVICES, INC.

7650 W. COURTNEY CAMPBELL CSWY
SUITE 700
TAMPA, FLORIDA 33607
PHONE: 813.286.1711
FOR THE FIRM EB 7937

CLINT JAMES MARTIN
FL. P.E. NO. 82740
FIRM EB NO. 8115
AECOM TECHNICAL SERVICES, INC.

REVISIONS

No.	DATE	DESCRIPTION
A	07-08-2024	BID DOCUMENTS
B	08-13-2024	ADDENDUM NO. 2



KEY PLAN

PROJECT NO.:	60731531
DESIGNED BY:	JC
DRAWN BY:	JC
CHECKED BY:	AJR
ISSUE DATE:	07-08-2024
DRAWING SCALE:	AS NOTED

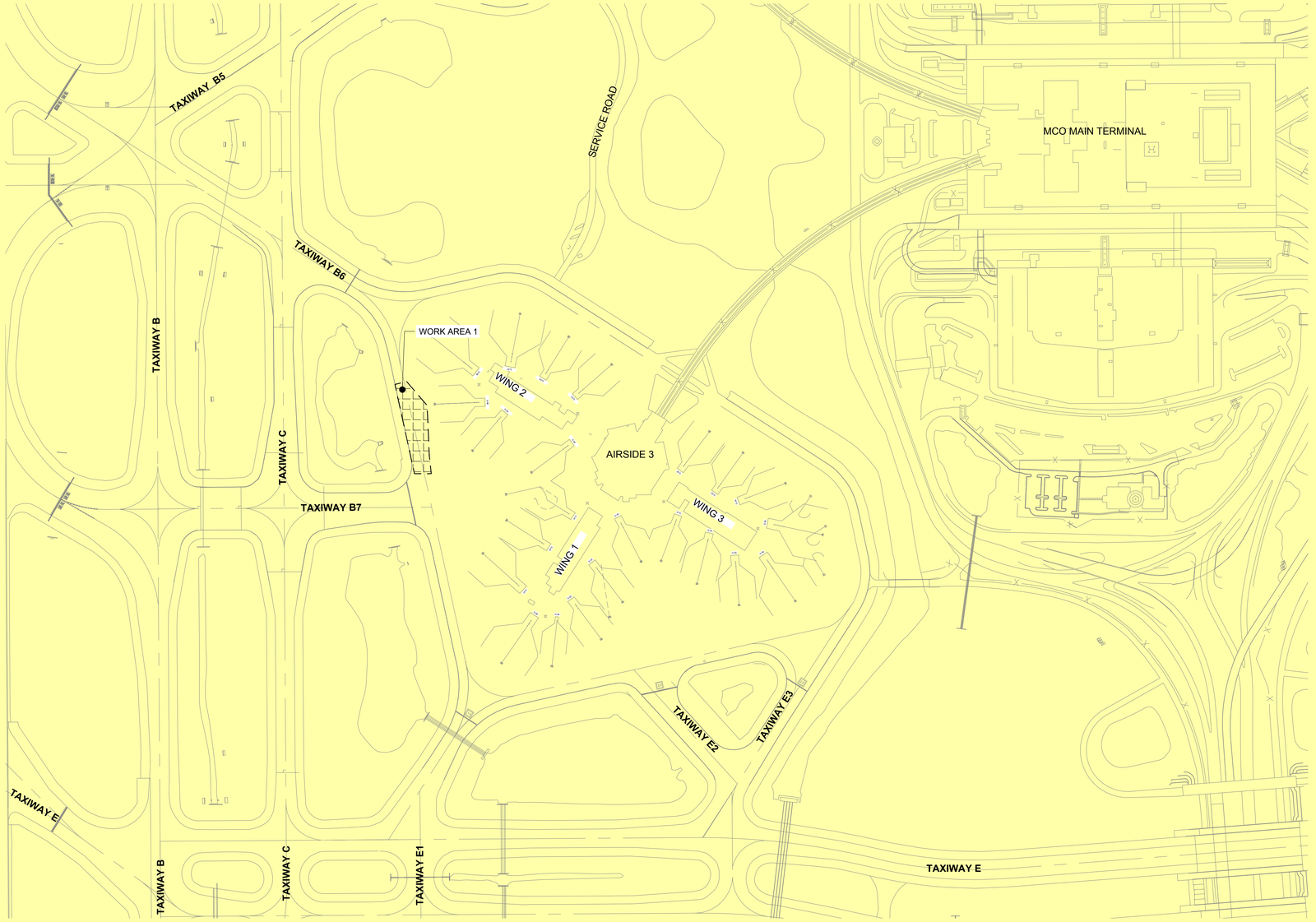
DRAWING TITLE:

DEMOLITION, MARKINGS, AND PAVING PLANS

DRAWING NO.

C8.0.1

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Drawing File: L:\OCS Projects\TNH\MCO\H00370_AS3_ApronPCCSlab_60731531900_CAD_GIS\MCO H-00370 CAD Files\910 CAD\20-Sheets\C\C8.0.1 DEMOLITION, MARKINGS, AND PAVING PLANS.dwg



GENERAL NOTES:

1. FOR SAFETY AND SECURITY NOTES AND DETAILS REFER TO SHEET C61.0.1.
2. FOR PROJECT HAUL ROUTE AND STAGING AREA SEE SHEET C2.0.2.
3. THE CONTRACTOR SHALL SUBMIT A DETAILED PLAN/SCHEDULE, IN ACCORDANCE WITH THE C-106 SPECIFICATION, ON HOW THE CONTRACTOR INTENDS TO ACCOMPLISH THE CONSTRUCTION WITHIN EACH PHASE WITHIN THE TIME FRAMES AVAILABLE.
4. THE OWNER RESERVES THE RIGHT TO REVISE WITHOUT LIMIT, THE SEQUENCE OF CONSTRUCTION PHASES AND SUB-PHASES.
5. THE CONSTRUCTION OF ANY WORK THAT IS NOT CLEARLY IDENTIFIED AS BEING CONSTRUCTED WITHIN A SPECIFIC PHASE SHALL BE COORDINATED WITH THE OAR AND CONSTRUCTED IN ACCORDANCE WITH THE NEEDS OF THE OWNER AND AIRFIELD OPERATIONS. THE CONTRACTOR SHALL PROVIDE THE OAR 7 DAYS NOTICE PRIOR TO COMMENCING WORK IN THESE AREAS. THE CONTRACTOR'S ACCESS TO THESE PHASES MAY BE RESTRICTED DUE TO THE AIRPORT'S OPERATIONAL REQUIREMENTS. THE WORK WILL BE PERFORMED AT THE OWNER'S CONVENIENCE AT NO ADDITIONAL COST TO THE OWNER.
6. FOR PAVEMENT MARKING REMOVAL ON TEMPORARY CLOSED TAXIWAYS/TAXILANES, AS WELL AS COVERING OR DISCONNECTION OF LIGHT FIXTURES, SIGNS, AND OTHER ELECTRICAL ITEMS REFER TO SECTION 218 OF THE CONSTRUCTION SAFETY AND PHASING PLAN INCLUDED AS AN ATTACHMENT OF THE C-106 SPECIFICATION, IN THE PROJECT MANUAL.
7. ALL COSTS FOR TEMPORARY PAVEMENT MARKING INSTALLATION AND REMOVAL SHALL BE INCLUDED IN THE CONTRACTORS LUMP SUM PRICE FOR SAFETY, SECURITY AND MAINTENANCE OF TRAFFIC, ITEM C-106-1.

SCHEMATIC PROJECT SCHEDULE

	MOBILIZATION 25 DAYS	CONSTRUCTION 35 DAYS	FINAL COMPLETION 30 DAYS
MOBILIZATION (DURATION 25 CALENDAR DAYS)	B	B	
WORK AREA 1 (DURATION 35 CALENDAR DAYS)		B	
FINAL COMPLETION (DURATION 30 CALENDAR DAYS)			

LEGEND

PHASE 0: (MOBILIZATION 25 CALENDAR DAYS) (SEE PHASING NOTES)

WORK AREA 1: (DURATION 35 CALENDAR DAYS)

N

200' 100' 0 200' 400'

GRAPHIC SCALE

GREATER ORLANDO AVIATION AUTHORITY

H-00370

MCO
AIRSIDE 3 APRON PCC SLAB REHABILITATION

ORLANDO INTERNATIONAL AIRPORT

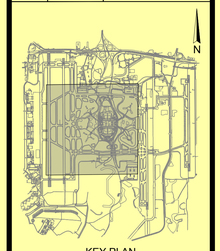
AECOM TECHNICAL SERVICES, INC.

7650 W. COURTNEY CAMPBELL CSWY
SUITE 700
TAMPA, FLORIDA 33607
PHONE: 813.286.1711
FOR THE FIRM EB 7937

CLINT JAMES MARTIN
FL. P.E. NO. 82740
FIRM EB NO. 8115
AECOM TECHNICAL SERVICES, INC.

REVISIONS

No.	DATE	DESCRIPTION
A	07-08-2024	BID DOCUMENTS
B	08-13-2024	ADDENDUM NO. 2



KEY PLAN

PROJECT NO.:	60731531
DESIGNED BY:	JC
DRAWN BY:	JC
CHECKED BY:	AJR
ISSUE DATE:	07-08-2024
DRAWING SCALE:	AS NOTED

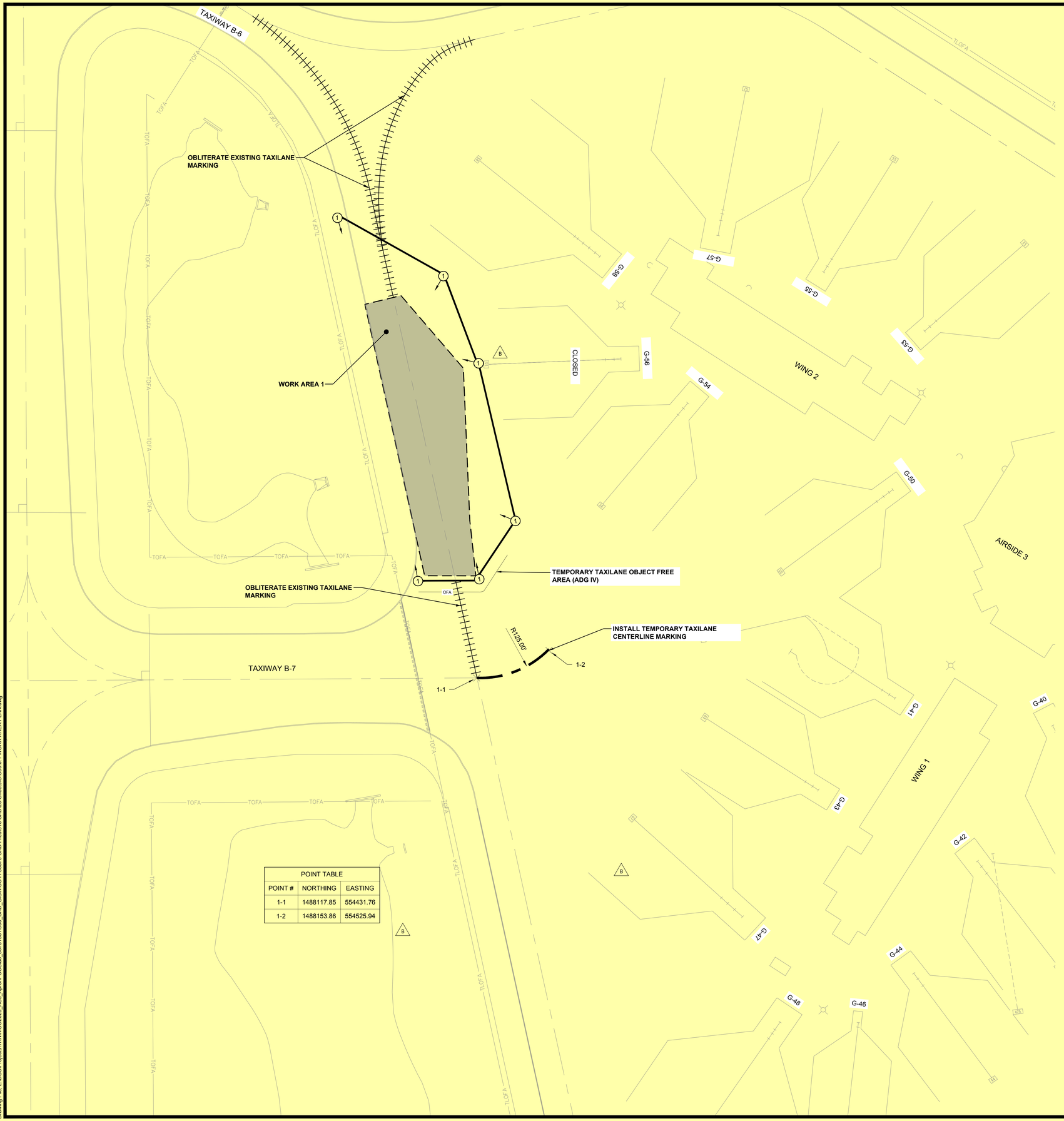
DRAWING TITLE:

OVERALL PHASING PLAN

DRAWING NO.

C60.0.0

Date: Aug 12, 2024 - Time: 2:32 pm - Plotted By: GonzalezD
Drawing File: L:\OSS\Projects\ITNMCO2022_ASI2_Apron\CSlab_60731531900_CAD_OSI\MCO H-00370 CAD Files\910 CAD\20-Sheets\C\C60.0.0 OVERALL PHASING PLAN.dwg



POINT TABLE		
POINT #	NORTHING	EASTING
1-1	1488117.85	554431.76
1-2	1488153.86	554525.94

LEGEND

- WORK AREA LIMITS OF WORK
- BARRICADE LOCATION PER WORK AREA
- PAVEMENT MARKINGS TO BE OBLITERATED (TEMPORARY)
- OFA — TAXILANE OBJECT FREE AREA

WORK AREA 1 NOTES:
DURATION 35 CALENDAR DAYS

1. OBTAIN AUTHORIZATION FROM THE AIRPORT TO CLOSE WORK AREA 1 AS SHOWN.
2. PRIOR TO CLOSING WORK AREA 1 AS SHOWN, THE CONTRACTOR SHALL OBLITERATE THE TAXILANE PAVEMENT MARKINGS AS SHOWN.
3. COMPLETE WORK ITEMS WITHIN THE LIMITS OF WORK AREA 1 BEFORE MOVING ON TO THE NEXT PHASE, UNLESS PREVIOUSLY APPROVED BY THE OAR.
4. CLEAN UP, REMOVE BARRICADES AND REOPEN TO TRAFFIC UNDER THE DIRECTION OF THE OAR AND AIRFIELD OPERATIONS.
5. THE COMPLETION OF THIS WORK AREA SHALL INCLUDE ALL THE WORK REQUIRED TO BE CONSTRUCTED WITHIN THE WORK AREA.

WORK AREA 1 MAJOR WORK ITEMS:

1. FULL DEPTH PCC PAVEMENT REMOVAL
2. FULL STRENGTH PCC PAVEMENT
3. CRACK REPAIRS
4. SPALL REPAIRS

OPERATIONAL IMPACTS:

1. GATE 56 CLOSED
2. AIRSIDE 3 RAMP CLOSED BETWEEN TAXIWAY B6 AND B7
3. GATE 54 RESTRICTED TO ADG III AIRCRAFT
4. GATES 41,43,47, AND 50 RESTRICTED TO ADG IV AIRCRAFT
5. TAXIWAY B7, BETWEEN AIRSIDE 3 RAMP AND TAXIWAY C, RESTRICTED TO ADG IV AIRCRAFT
6. AIRSIDE 3 RAMP, BETWEEN TAXIWAY B7 AND TAXIWAY E1, RESTRICTED TO ADG IV AIRCRAFT

NOTES:

1. FOR SAFETY AND SECURITY NOTES AND DETAILS REFER TO SHEET C61.0.1.
2. CONTRACTOR SHALL COORDINATE THE ACTUAL WORK LIMITS AND THE PLACEMENT AND LOCATION OF ALL TEMPORARY CONSTRUCTION BARRICADES FOR EACH PHASE WITH THE OAR/AIRFIELD OPERATIONS PRIOR TO THE START OF CONSTRUCTION FOR EACH PHASE.
3. FOR PROJECT HAUL ROUTE AND STAGING AREA SEE SHEET C2.0.2.
4. FOR PAVEMENT MARKING DETAILS AND INFORMATION REFER TO SHEET C9.0.2 AND SPECIFICATION ITEM P-620.

N

50' 25' 0 50' 100'

GRAPHIC SCALE

GREATER ORLANDO AVIATION AUTHORITY

H-00370
MCO
AIRSIDE 3 APRON PCC SLAB REHABILITATION

ORLANDO INTERNATIONAL AIRPORT

AECOM

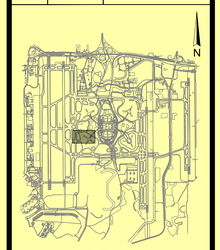
AECOM TECHNICAL SERVICES, INC.

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REVISIONS

No.	DATE	DESCRIPTION
A	07-08-2024	BID DOCUMENTS
B	07-25-2024	ADDENDUM NO. 1
C	08-13-2024	ADDENDUM NO. 2



KEY PLAN

PROJECT NO.:	60731531
DESIGNED BY:	JC
DRAWN BY:	JC
CHECKED BY:	AJR
ISSUE DATE:	07-08-2024
DRAWING SCALE:	AS NOTED

DRAWING TITLE:

WORK AREA 1 PLAN

DRAWING NO.

C60.0.1

Date: Aug 12, 2024 - Time: 2:33 pm - Plotted By: GonzalezD
Drawing File: L:\DGS\Projects\TRK\MCO\2022_AS_3\pref\PCCSlab_60731531l900_CAD_GIS\MCO H-00370 CAD Files\910 CAD\200-Sheets\C\C60.0.1 WORK AREA PLAN.dwg

GREATER ORLANDO AVIATION AUTHORITY
ORLANDO INTERNATIONAL AIRPORT

ADDENDUM NUMBER THREE (3)

TO THE

CONTRACT DOCUMENTS: PROJECT MANUAL AND DRAWINGS

DATED: July 10, 2024

FOR

H-00370 AIRSIDE 3 APRON PCC SLAB REHABILITATION

ORLANDO INTERNATIONAL AIRPORT
ORLANDO, FLORIDA

The Documents Covering the Above-Described Work Were Prepared By:

AECOM Technical Services, Inc.
7650 W. Courtney Campbell Causeway, Tampa, Florida 33607
Phone: (813) 636-2444

ADDENDUM DATE: August 15, 2024

Note: The bidder shall acknowledge receipt of this Addendum No. 3 on the Bid Form.

H-00370, AIRSIDE 3 APRON PCC SLAB REHABILITATION

ADDENDUM No. 3

TO: ALL HOLDERS OF CONTRACT DOCUMENTS

1. Your attention is directed to the following interpretations of, changes in, and/or additions to the contract documents for the above named project.
2. This addendum is part of the Contract Documents.
3. Bidders are required to acknowledge receipt of this Addendum in the space provided on the Bid Form.
4. The following changes shall be made:

Specifications – Division 0:

1. Section 00 41 13, BID FORM (SINGLE-PRIME CONTRACT): REMOVE sheet 00 41 13 – 6, noted Addendum No. 2, and REPLACE with the updated 00 41 13 – 6, noted Addendum No. 3.

Contractor's Questions:

1. Q: The CCM recommendation noted to reject all bids due to the 35% plus over budget. The Addendum 2 quantities have a minimal reduction and unlikely to be within the engineers estimate. Will the rebids also be rejected if over budget?
   A: Bidders should provide their best pricing to account for the revised scope of work and the revised time of completion as specified in the Bid Documents, including all addenda. GOAA will evaluate the Bids received and the available funding for making the decision.

2. Q: The Addendum 2 bid form, top left corner lists a different project "BP-498, TAXIWAYS G H REHABILITATION – PHASE 2".
   A: A revised Bid Form has been issued as part of this Addendum No. 3 correcting this issue.

3. Q: The bid form still shows a line for crack repair with a quantity of 0 LF. Is a unit price still required to be entered on the bid?
   A: A revised Bid Form has been issued as part of this Addendum No. 3 eliminating the referenced line item.

   LIST OF ATTACHMENTS:

   A. Section 00 41 13, BID FORM (SINGLE-PRIME CONTRACT), Page 00 41 13-6, noted Addendum No. 3

BIDDER: _____

FOR ALL WORK REQUIRED IN ACCORDANCE WITH THE APPLICABLE DRAWINGS, SPECIFICATIONS AND OTHER BID DOCUMENTS, INCLUDING ALL COSTS RELATED TO THE WORK, AND ANY REQUIRED PERMITS, TAXES, BONDS, AND INSURANCE, THE UNDERSIGNED SUBMITS:

BID FORM

PAY ITEM NO.	DESCRIPTION	UNIT	QUANTITY	UNIT PRICE	EXTENSION
C-100-1	CONTRACTOR QUALITY CONTROL PROGRAM (CQCP)	LS	1		
C-105-1	MOBILIZATION AND GENERAL CONDITIONS	LS	1		
C-106-1	SAFETY, SECURITY AND MAINTENANCE OF TRAFFIC	LS	1		
P-101-5.1	PCC PAVEMENT REMOVAL	SY	485		
P-101-5.2	SOIL CEMENT / LEAN CONCRETE BASE REMOVAL	SY	485		
P-101-5.4	CONCRETE SPALL REPAIR	SF	24		
P-306-8.1	LEAN CONCRETE BASE COURSE (6")	SY	485		
P-501-8.1	PORTLAND CEMENT CONCRETE PAVEMENT (16" THICK)	CY	245		
P-620-5.1	RUNWAY AND TAXIWAY MARKING (YELLOW WITH GLASS BEADS)	SF	1,200		
P-620-5.2	RUNWAY AND TAXIWAY MARKING (BLACK - NO BEADS)	SF	1,200		
				TOTAL PRICE	

DIVISION 0

DIVISION 0 – TABLE OF CONTENTS

CONTINUING CONTRACTS VERSION

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-	Invitation to Bid Letter-c	August 2023
00 21 13	Instructions to Bidders-c	August 2023
00 31 11	Project Directory	August 2023
00 41 13	Bid Form-c Stipulated Sum (Single-Prime Contract)	August 2023
00 41 13.15	Exhibit C –Schedule of DBE Subcontractor Participation of Total Bid Price	August 2023
00 61 13	Performance and Payment Bond Cover Sheet	August 2023
00 61 13.13	Performance Bond Form	August 2023
00 61 13.16	Payment Bond Form	August 2023
00 61 13.19	Performance and Payment Bond Certification Form	August 2023
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00 63 73	Addendum to Continuing Construction Contract	August 2023
00 65 19.29	Final Release Form	August 2023
00 65 19.33	Subcontractor Final Release Form	August 2023
00 72 13	General Conditions - Stipulated Sum (Single–Prime Contract)	August 2023
00 73 00	Supplementary Conditions of the Contract for Construction-c	August 2023
00 73 19.13	Hazardous Materials	August 2023
00 73 93	Special Conditions Regarding Construction at Airport Facilities	August 2023
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00 73 93.02	FIS/CBP Access Procedures at OIA	August 2023
00 73 93.03	Special Project Procedures for Sensitive Security Information	August 2023

SECTION 00 21 13 - INSTRUCTIONS TO BIDDERS

1.0 DEFINITIONS:

The definitions of certain terms used in these Contract Documents are given in the attached General Conditions, Supplementary Conditions and Special Conditions Regarding Construction at Airport Facilities.

2.0 DELIVERY, RECEIPT AND OPENING OF BIDS:

Bids shall be hand delivered or mailed to the exact place specified in the Invitation to Bid. Bids must be submitted in sealed envelopes addressed and labeled with the name of the Bidder, the Bidder's address, the time and date fixed for the opening of Bids and plainly marked as follows: "BID PACKAGE NO. H-00370, AIRSIDE 3 APRON PCC SLAB REHABILITATION , ORLANDO INTERNATIONAL AIRPORT. "Bids received after that time will not be considered and will be returned unopened. Bids transmitted by facsimile or electronic mail are non-responsive and will not be considered.

Bids will be opened and read at the time and place specified in the Invitation to Bid. Bidders or their authorized agents are invited to be present during the bid opening.

3.0 DRAWINGS AND OTHER CONTRACT DOCUMENTS:

The drawings and other Contract Documents set forth, among other factors, the location and description of the Work to be performed under this Contract, the quantity of Work for which Bids are invited and the time in which the Work must be completed.

4.0 EXAMINATION OF CONTRACT DOCUMENTS AND SITE:

A Site Inspection may be conducted immediately following the Pre-Bid Conference or at a time specified during the Pre-Bid Conference. The Bidder is required to examine carefully the site of the Work and the drawings and other Contract Documents for the Work contemplated. By submitting a Bid, the Bidder represents to the Owner that it has satisfied itself as to the conditions to be encountered, of the character, quality and quantities of Work to be performed and materials to be furnished, and of all of the requirements of the plans, specifications and other Contract Documents, including the security requirements.

5.0 OBLIGATION OF BIDDERS:

The Bidder must inform itself fully of the construction, labor and security conditions under which the Work is to be performed. The Bidder shall not be relieved of its obligation to furnish all material, equipment, labor, and services necessary to carry out the provisions of the Contract Documents and to complete the contemplated Work for the consideration set forth in its Bid by reason of having failed to inform itself with respect to those matters.

6.0 PREPARATION OF BIDS:

Bids shall be submitted on a copy of the attached Bid Documents. All blank spaces in the Bid Form shall be completed legibly and correctly in ink. The Bidder shall specify the Total Bid Price for the entire Work

described in the Contract Documents. **No modifications to the Bid Documents shall be permitted, unless made pursuant to an Addendum.**

7.0 ADDENDA - CHANGES WHILE BIDDING:

Any questions or requests for interpretation of the drawings, specifications or other Contract Documents or correction of any apparent ambiguity, inconsistency or error therein, shall be in writing, addressed to AECOM Technical Services, Inc., Attn. Clint Martin, 7650 W. Courtney Campbell Causeway, Tampa FL 33607, Phone (906)236-2874, Email Clint.Martin@aecom.com, and must be received at least nine (9) calendar days prior to the date fixed for the opening of Bids.

All interpretations, corrections and supplemental instructions will be in the form of written Addenda to the Contract Documents which, if issued, may be by Electronic mail (e-mail), registered mail, transmitted by facsimile, or hand delivered, to all prospective Bidders (at the respective addresses provided to the AECOM Technical Services, Inc. at the time the Bidder received the Bid Documents) not later than five (5) calendar days prior to the date fixed for the receipt of Bids.

All Addenda shall become part of the Contract Documents. Only the interpretation or correction issued in a written Addendum shall be binding, and prospective Bidders are warned that no other source or form of communication is authorized to give information concerning, or to explain or interpret, or modify the Bid Documents.

If the Bidder fails to acknowledge receipt of any such Addendum in the space provided in the Bid Form, its Bid will nevertheless be construed as though the Addendum had been received and acknowledged, and the submission of its Bid will constitute acknowledgement of the receipt of the same.

8.0 WITHDRAWAL OF BIDS:

No Bid may be withdrawn after it is submitted, unless the Bidder makes its request in writing and such request is received prior to the time and date fixed for the opening of Bids. The Bidder may withdraw its Bid after the Bid opening only after requesting in writing to the Owner and the Owner agrees with the conditions justifying the withdraw.

9.0 TIME OF COMPLETION:

The time of completion is of the essence of the contract and, each Bidder, if delivered an executed Contract, shall proceed with the Work in accordance with the approved schedule and within the Contract Time period specified in the Contract Documents. In the event offailure to complete the Work within the time specified, the Owner may assess damages as provided by law or the Contract Documents, unless an appropriate extension of time has been approved in a Contract Modification. This time period includes a thirty (30) calendar day submittal period during which no work will be performed at the job site unless authorized by the Owner or Owner’s Authorized Representative (OAR).

The time of completion for this Work, as used throughout the Contract Documents, is 60 calendar days to achieve Substantial Completion, commencing from the issuance of the Notice to Proceed.

Final Completion shall be achieved within 30 calendar days from the date of Actual Substantial Completion.

10.0 LIQUIDATED DAMAGES:

It is agreed that if Substantial Completion or Final Completion as defined in the Contract Documents is not achieved within the established time frames, as adjusted by Contract Modifications, if any, the Contractor and the Contractor's surety shall be liable to the Owner for liquidated damages, and not as a penalty, for such delay, two thousand eight hundred and 00/100 Dollars ($2,800) per calendar day for each and every consecutive calendar day elapsing between the date fixed for Substantial Completion of the Work and the date Substantial Completion is actually achieved, and one thousand four hundred and 00/100 Dollars ($1,400) per calendar day for each and every consecutive calendar day beyond the calendar days fixed for Final Completion of the Work and the date Final Completion is actually achieved. The Owner's receipt of payment for such Liquidated Damages does not preclude the Owner from pursuing any other rights or remedies available to it under the Contract or Florida law.

11.0 COMPUTATION OF TIME:

Unless otherwise specified in the Bid Documents, the term "days" shall refer to calendar days. When any obligation or deadline is measured by the number of days and the deadline date falls on a legal holiday or weekend when the Owner's office is closed, the obligation will be allowed to be completed on the next business day without penalty.

12.0 DISADVANTAGED BUSINESS ENTERPRISE PARTICIPATION PROGRAM:

Pursuant to regulations promulgated by the U.S. Department of Transportation, the Owner has adopted a Disadvantaged Business Enterprise (DBE) Participation Program for Federally and State of Florida Funded Contracts.

The policies, forms and certified DBE Directory are available on-line at the Owner's web site: http://www.orlandoairports.net/small_business/index.htm

DBE Subcontractor Participation Goal: 7% of Total Bid Price.

All Bidders shall complete and submit the schedule of DBE Subcontractor Participation, Exhibit D to these Documents, with the Bid.

The Bidder, in meeting the guidelines of the DBE Participation Program, is not relieved of its equal employment opportunity obligations under state and federal laws and regulations.

The Aviation Authority, in accordance with the provisions of Title VI of the Civil Rights Act of 1964 (78 Stat. 252, 42 U.S.C. §§ 2000d to 2000d-4) and the Regulations, hereby notifies all bidders that it will affirmatively ensure that any contract entered into pursuant to this invitation, disadvantaged business enterprises will be afforded full and fair opportunity to submit bids in response to this invitation and no businesses will be discriminated against on the grounds of race, color, or national origin (including limited English proficiency), creed, sex (including sexual orientation and gender identity), age, or disability in consideration for an award.

All contracts and subcontracts that result from this solicitation incorporate by reference the provisions of 29 CFR part 201, et seq, the Federal Fair Labor Standards Act (FLSA), with the same force and effect as if given in full text. The FLSA sets minimum wage, overtime pay, recordkeeping, and child labor standards for full and part-time workers.

Questions concerning the DBE program and can be addressed to the Owner's Office of Small Business Development, Attn. Ms. Iranetta Dennis, Vice President, Greater Orlando Aviation Authority, Orlando International Airport, 5850-B Cargo Road, Orlando, FL 32827; phone number (407) 825-7179, E-mail iranetta.dennis@goaa.org.

13.0 DISQUALIFICATION OF BIDDERS:

Any of the following causes may be considered sufficient for the disqualification of a Bidder and the rejection of its Bid:

a. submission of more than one Bid for the same work by an individual, firm, partnership or corporation under the same or different names;
b. evidence of collusion between or among Bidders;
c. work for which the Bidder is committed by contract, which, in the Owner's judgment and sole discretion, might hinder or prevent the prompt completion of the Work under this Contract if awarded to the Bidder;
d. being behind on the approved completion schedule for any existing contracts with the Owner, in litigation with the Owner or having defaulted on a previous contract with the Owner;
e. poor, negligent or defective performance of work for Owner or any other party on prior projects, which, in the Owner's judgment and sole discretion, raises doubts as to the Bidder's ability to properly perform the Work;
f. appearance of the Bidder on the Department of Management Services' Convicted Vendors List or Discriminatory Vendor List; and
g. not possessing the required licenses, registrations or certifications to perform the Work.
h. Insufficient evidence of qualifications for this project. To be qualified to submit a bid for this project, the Bidder must have successfully completed at least one airfield project of a similar scope and size within the last five years. Bidders must complete and submit with the Bid, the Qualifications Form identifying qualifying project information.

14.0 REJECTIONS OF BIDS:

A Bid may be considered irregular and may be rejected if, in the Owner’s sole discretion, the Bid contains any omissions, alterations of form, additions not called for, conditions, reservations, qualifications, objections, limitations, unauthorized alternate bids or any other irregularities of any kind or any other cause, which, in the Owner's judgment and sole discretion, is sufficient to justify disqualification of a Bidder or the rejection of its Bid. In addition, the Owner reserves the right to reject for any reason, in its sole discretion, all bids at any time prior to full execution of Contract and delivery to the Bidder.

Failure to meet the MWBE, LDB/VBE participation goals and the failure to provide satisfactory documentation of Good Faith Efforts may result in the rejection of the bid.

The Owner reserves the right to reject any irregular Bid, to reject any or all Bids, to re-advertise the Project or elect not to proceed with the Project. The Owner also reserves the right to waive irregularities if such waiver is in the best interest of the Owner.

15.0 BASIS OF AWARD:

Unless all Bids are rejected, a Notice of Intent to Award the Contract will be issued to the lowest, qualified, responsible Bidder whose Bid is responsive to the Invitation to Bid. The apparent low bid will be determined on the basis of the Total Bid Price as included in Section 00 41 13. In determining the apparent low bid, the Owner reserves the right to correct, in all bids, obvious mathematical errors within the Total Bid Price, the unit price extensions, page totals or any combination thereof, if applicable. The Owner also reserves the right to take into consideration the Bidder's qualifications and past performance with the Owner or any other entity in determining if the Bidder is responsible and qualified.

16.0 EXECUTION OF ADDENDUM:

Unless all Bids are rejected, a Notice of Intent to Award the Contract will be issued to the apparent successful Bidder. The Notice of Intent to Award is not a commitment, but a procedure to enable the Bidder to assemble and deliver to the Owner the Contract Documents. The Bidder who receives a Notice of Intent to Award an Addendum shall, within ten (10) business days of the date of Notice of Intent to Award, execute and deliver to the Owner all of the required Contract Documents, including, but not limited to the following:

a. the Addendum in the form contained in the Contract Documents,
b. the Performance Bond and Payment Bond in the form contained in the Contract Documents each for not less than the Total Contract Price,
c. the Power of Attorney,
d. the Performance and Payment Bond Certification Form, evidencing the authority of the person executing the Bonds, and
e. the Certificate of Insurance evidencing the required insurance coverage,
f. the required DBE data and submittals, and,
g. the Preliminary Schedule.

The above documents must be furnished, executed and delivered to the Owner before the Contract Documents will be executed by the Owner. The Contract shall not be deemed awarded and shall not be binding upon the Owner until it has been executed by the Owner and a copy of the fully executed Contract Documents is delivered to the Contractor.

Bidders are hereby informed that the award of this Contract may be contingent upon Owner's receipt of grant funding. The Owner reserves the right not to proceed with the award of the contract for any reason, including, but not limited to, if the lowest Total Bid Price exceeds the Owner’s estimates or budget or funding is otherwise unavailable. The Owner shall have the right to rescind its Notice of Intent to Award without liability at any time before the Contract Documents have been fully executed by all parties and delivered to the Contractor.

17.0 GUARANTY OF FAITHFUL PERFORMANCE AND PAYMENT:

Contractors are hereby informed that as a public entity, the Owner’s property is not subject to the Construction Lien Law contained in Chapter 713, Florida Statutes.

A Performance Bond and a Payment Bond satisfactory to the Owner and in the form attached hereto, each in an initial amount of not less than the Total Contract Price, will be required from the successful Bidder for, among other, the following purposes: a) to guarantee faithful performance of the requirements of the Contract Documents, including all applicable warranties; b) to guarantee the payment of all labor, materials, or supplies used directly or indirectly in the prosecution of the Work provided for in the Contract; and c) to comply fully with the requirements of Florida law.

18.0 POWER OF ATTORNEY AND COUNTERSIGNATURE:

Attorneys in fact who sign Bid Bonds, Performance Bonds and Payment Bonds, must file with such Bonds a certified copy of their power of attorney to sign the bonds. All bonds must be countersigned by an agent appointed by the Surety and licensed by the State of Florida, with the powers-of-attorney attached.

19.0 INSURANCE REQUIREMENTS:

The selected Contractor will be required to provide insurance Inside the Aircraft Operations Area as listed below in accordance with the General Conditions.

Type of Policy	Limits
Commercial General Liability:	$5,000,000, each Occurrence
Maximum Deductible or Self-insured Retention:	100,000
Coverage shall include Products & Completed Operations and Contractual liability for the entire period of the statute of repose contained in Florida Statutes 95.11.	
Automobile Liability:	$5,000,000
Maximum Deductible or Self-insured Retention:	$100,000
Workers Compensation and Employers' Liability	Statutory Limit $500,000 each accident $500,000 disease-policy limit $500,000 disease-each employee
~~Professional Liability Coverage:~~	~~$1,000,000, each Claim~~
Maximum Deductible or Self-insured Retention:	$100,000
~~Cyber and Privacy Liability~~	~~$5,000,000 each Occ~~urrence

Any deductible or self-insurance retention ($0.00 and higher) for each coverage line must be indicated on the Certificate of Insurance. See Section 00 62 16 Certificate of Insurance and Article 11 of the General Conditions for Additional Insured requirements.

20.0 FLORIDA SALES AND OTHER TAXES:

The Bidder is responsible for paying to the appropriate governmental entity all applicable taxes. Any applicable tax legally enacted when the bids are received shall be included in the Total Bid Price by the Bidder, whether or not yet effective or merely scheduled to go into effect.

21.0 CITY OF ORLANDO PERMIT FEES:

The City of Orlando, Office of Permitting Services, collects a non-refundable 25% deposit for all commercial permit applications. The Owner will make the deposit once the amount is conveyed to the Owner by the City. The bidder is responsible for the balance of all permit fees as required by the Contract Documents.

22.0 THE AUTHORITY'S DEBARMENT LIST

Any entity or individual placed on the Authority's Debarment List pursuant to Authority Policy, Section 130.04, may not submit a response to any letter of intent, letter of interest, statement of qualifications, quote, proposal, or bid as a contractor, supplier, subcontractor, consultant or individual, of any tier, for any goods or services or contracts and may not provide any goods or services to the Authority, on behalf of the Authority, or on Authority property, regardless of whether there is a contractual relationship with the Authority. The Authority will disqualify any submission, bid or proposal that includes a person or entity on

the Authority's Debarment List. You may request a copy of the Authority's Debarment List for your review at the following email:debarmentlist@goaa.org.

BID CHECKLIST

As a courtesy to all Bidders, the following checklist has been created to remind Bidders of certain requirements for submitting a Bid. To reduce the chance of a Bid being rejected, please confirm that the Bid has been properly prepared and submitted.

a. BID DELIVERY
   - Envelope sealed, labeled and addressed as specified in Instructions to Bidders
   - Delivered to exact specified location by bid deadline

b. 00 41 13 - BID FORM
   - Acknowledge addenda on page 2, if any
   - Modifications made pursuant to Addenda only – No other modifications allowed
   - Properly executed signature block (including address, SSN or Federal ID #)
   - Confirm that there are no mathematical errors

c. DBE Exhibits (All Exhibits are required. If a form is not applicable, indicate N/A on the form.)
   - 00 41 13.16 – Exhibit D – Schedule of DBE Subcontractor Participation of Total Bid Price
   - SUBMIT COPY OF GOOD-FAITH EFFORT, if required by the Owner's Policies.

d. BIDDER'S QUALIFICATIONS FORM

*****WARNING*****

This checklist does <u>not</u> represent all of the information required to be submitted with each Bid. It is intended only to assist Bidders with compliance with the Instructions to Bidders and to help reduce the possibility of Bid irregularities.

END OF SECTION 00 21 13

SECTION 00 31 11 - PROJECT DIRECTORY

OWNER

Greater Orlando Aviation Authority
Orlando International Airport
Mr. Max Marble
Senior Vice President, Capital Programs
One Jeff Fuqua Blvd.
Orlando, FL 32827
Phone: (407) 825-3105

CONSULTANT

AECOM Technical Services, Inc.
Project Manager Clint Martin
7650 W. Courtney Campbell Causeway, Tampa FL 33607
Phone: (906)236-2874
Email: Clint.Martin@aecom.com

END OF SECTION 00 31 11

SECTION 00 41 13 - BIDFORM

BID
FOR THE GREATER ORLANDO AVIATION AUTHORITY

Submitted By: **Kiewit Infrastructure South Co.**
(Bidder's Name)

Date: 8/20/24

The undersigned Bidder, and under the provisions of its existing Continuing Agreement proposes to perform the work covered by the Bid Documents for the project, hereby certifies the following: (1) it has accurately identified all persons required by the applicable signature block; (2) this Bid is fair, in all respects, and made in good faith, without collusion or fraud; (3) no officer, employee or agent of the Authority and no spouse or child of an officer or employee of the Authority, has, or will have during the performance of the Contract, any material interest in the business of the Bidder, and (4) Bidder has no knowledge of any potential conflict of interest.

The Bidder further represents that it has examined the site of the Work and informed itself fully in regard to all conditions pertaining to the place where the Work is to be done, including security requirements; that it has examined the plans and specifications for the Work and other Bid Documents relative thereto and has read all of the Addenda furnished prior to the opening of the Bids, as acknowledged below; and that it has otherwise fully informed itself regarding the nature, extent, scope and details of the Work to be performed, including the conditions to be encountered.

If provided with a Notice of Intent to Award the Contract by the Owner, the Bidder shall execute and deliver to the Owner all of the documents required by the Bid Documents, including but not limited to, the Addendum to the Agreement and the Performance and Payment Bonds in the form contained in the Bid Documents, furnish the required evidence of the specified insurance coverages, furnish all necessary permits, licenses, materials, equipment, machinery, maintenance, tools, apparatus, means of transportation and labor necessary to complete the Work provided for in the Bid Documents for "Bid Package H-00370, Airside 3 Apron PCC Slab Rehabilitation, Orlando International Airport," Orlando, Florida.

Bids may be rejected if they contain any qualifications, exceptions, objections or any modification whatsoever to the Bid Documents that have not been authorized by an Addendum.

The Bidder shall perform the Work specified herein within the time limits set forth in the Instructions to Bidders, which time limits the Bidder acknowledges as reasonable.

Bidder is aware that if the Bidder fails to complete the Work within the scheduled time as may be adjusted by Contract Modifications, the Bidder and its surety shall be liable for the amount of Liquidated Damages identified in the Instructions to Bidders.

Acknowledgment is hereby made of the following Addenda (identified by number) received since issuance of the Plans and Specifications:

ADDENDA	DATE
1	7/25/2024
2	8/13/2024
3	8/15/2024

ADDENDA	DATE

DBE PROGRAM ACKNOWLEDGEMENT

By submitting a Bid on this Project, Bidder represents that it has reviewed and familiarized itself with the Owner's Disadvantaged Business Enterprise Participation Program (DBE). **See the Invitation to Bid and Instructions to Bidders for the DBE Participation Goal**.

SCRUTINIZED COMPANY CERTIFICATION

In the event this contract exceeds One Million Dollars, ($1,000,000.00), the Bidder hereby certifies that it is not on the Scrutinized Companies with Activities in Sudan List or the Scrutinized Companies with Activities in the Iran Petroleum Energy Sector List as defined in Florida Statutes § 287.135.

TEXTING WHEN DRIVING

In accordance with Executive Order 13513, "Federal Leadership on Reducing Text Messaging While Driving" (10/1/2009) and DOT Order 3902.10, "Text Messaging While Driving" (12/30/2009), FAA encourages recipients of Federal grant funds to adopt and enforce workplace safety policies to decrease crashes caused by distracted drivers including policies to ban text messaging while driving when performing any work for, or on behalf of, the Federal government, including work relating to a grant or subgrant.

The Contractor must promote and conduct workplace safety initiatives for employees and other work personnel in a manner commensurate with the size of the business, such as:

a. Establishment of new rules and programs or re-evaluation of existing programs to prohibit text messaging while driving; and
b. Education, awareness, and other outreach to employees about the safety risks associated with texting while driving.

The Contractor must insert this "Texting When Driving" language in each third party subcontract involved on this project.

PUBLIC ENTITY CRIMES ACT

The Contractor represents that it is not precluded from submitting a bid or proposal under Section 287.133(2)(a), which provides as follows: A person or affiliate who has been placed on the convicted

vendor list following a conviction for a public entity crime may not submit a bid, proposal or reply on a contract to provide any goods or services to a public entity, may not submit a bid, proposal or reply on a contract with a public entity for the construction or repair of a public building or public work, may not submit bids on leases of real property to a public entity, may not be awarded or perform work as a contractor, supplier, subcontractor, or consultant under a contract with any public entity, and may not transact business with any public entity in excess of the threshold amount set forth in Florida Statutes s.287.017, for CATEGORY TWO for a period of thirty-six (36) months from the date of being placed on the convicted vendor list.

DISCRIMINATORY VENDOR LIST

The Contractor represents that it is not precluded from submitting a bid or proposal under Section 287.134, which provides as follows: An entity or affiliate who has been placed on the discriminatory vendor list may not submit a bid, proposal, or reply on a contract to provide any goods or services to a public entity; may not submit a bid, proposal, or reply on a contract with a public entity for the construction or repair of a public building or public work; may not submit bids, proposals, or replies on leases of real property to a public entity; may not be awarded or perform work as a contractor, supplier, subcontractor, or consultant under a contract with any public entity; and may not transact business with any public entity unless that entity or affiliate has been removed from the list pursuant to Florida law.

FLORIDA DEPARTMENT OF TRANSPORTATION (FDOT) QUALIFICATION (if applicable)

The Contractor represents that neither it nor its affiliates have had their Certificate of Qualification suspended, revoked or denied by the FDOT, or determined by the FDOT to be a non-responsible contractor.

BID

FOR ALL WORK REQUIRED IN ACCORDANCE WITH THE APPLICABLE DRAWINGS, SPECIFICATIONS AND OTHER BID DOCUMENTS, INCLUDING ALL COSTS RELATED TO THE WORK, AND ANY REQUIRED PERMITS, TAXES, BONDS AND INSURANCE, THE UNDERSIGNED SUBMITS:

BID SCHEDULE

Total Bid Price: $ 885,919.00

eight hundred eighty-five thousand nine hundred nineteen dollars and zero cents. **Dollars**

Timothy J. Cleary
(Bidder's Signature)

Sr. Vice President
(Bidder's Title)

8/20/24
(Date)

Tim.Cleary@kiewit.com
(Email)

(If Bidder is a corporation, complete this signature block)
Fill in the name of the corporation, followed by the signature of the officer signing on behalf of the corporation, name and officer's title and Secretary attestation.

The below Corporation is organized and existing under the laws of the State of **Delaware**, authorized by law to make this bid and perform all work and furnish materials and equipment required under the Contract Documents, and is authorized to do business in the State of Florida.

Federal ID # **47-0530367** **Kiewit Infrastructure South Co.**
(Name of Corporation)

Phone: **407-563-7555** By: Timothy J. Cleary
(Signature of Corporate Officer)

Fax: **770-487-0005** Name: **Timothy J. Cleary**
(Please print legibly or type)

Date: 8/20/24 Title: **Sr. Vice President**

Address: **6200 Lee Vista Blvd., Suite 100, Orlando, FL 32822**

(Affix Corporate Seal)

Attest: Thomas J. Boyle
Asst.(Secretary) **Thomas J. Boyle**

The full name, address and title of every Officer of the Corporation (including the President, Vice President, Secretary, and Treasurer) is as follows (attach additional pages if necessary):

David J. Miles	**1550 Mike Fahey Street, Omaha, NE 68102**	**President**
Name	Address	Title
Timothy J. Cleary	**450 Dividend Drive Peachtree City, GA 30269**	**Sr. Vice President**
Name	Address	Title
Michael F. Norton	**1550 Mike Fahey Street, Omaha, NE 68102**	**Secretary**
Name	Address	Title
Stephen S. Thomas	**1550 Mike Fahey Street, Omaha, NE 68102**	**Treasurer**
Name	Address	Title

END OF SECTION 00 41 13

BIDDER: **Kiewit Infrastructure South Co.**

FOR ALL WORK REQUIRED IN ACCORDANCE WITH THE APPLICABLE DRAWINGS, SPECIFICATIONS AND OTHER BID DOCUMENTS, INCLUDING ALL COSTS RELATED TO THE WORK, AND ANY REQUIRED PERMITS, TAXES, BONDS, AND INSURANCE, THE UNDERSIGNED SUBMITS:

BID FORM

PAY ITEM NO.	DESCRIPTION	UNIT	QUANTITY	UNIT PRICE	EXTENSION
C-100-1	CONTRACTOR QUALITY CONTROL PROGRAM (CQCP)	LS	1	$ 50,000.00	$ 50,000.00
C-105-1	MOBILIZATION AND GENERAL CONDITIONS	LS	1	$ 88,000.00	$ 88,000.00
C-106-1	SAFETY, SECURITY AND MAINTENANCE OF TRAFFIC	LS	1	$ 241,489.00	$ 241,489.00
P-101-5.1	PCC PAVEMENT REMOVAL	SY	485	$ 265.00	$ 128,525.00
P-101-5.2	SOIL CEMENT / LEAN CONCRETE BASE REMOVAL	SY	485	$ 188.00	$ 91,180.00
P-101-5.4	CONCRETE SPALL REPAIR	SF	24	$ 350.00	$ 8,400.00
P-306-8.1	LEAN CONCRETE BASE COURSE (6")	SY	485	$ 160.00	$ 77,600.00
P-501-8.1	PORTLAND CEMENT CONCRETE PAVEMENT (16" THICK)	CY	245	$ 785.00	$ 192,325.00
P-620-5.1	RUNWAY AND TAXIWAY MARKING (YELLOW WITH GLASS BEADS)	SF	1,200	$ 4.00	$ 4,800.00
P-620-5.2	RUNWAY AND TAXIWAY MARKING (BLACK - NO BEADS)	SF	1,200	$ 3.00	$ 3,600.00
				TOTAL PRICE	$ 885,919.00

Officers List

Kiewit

KIEWIT INFRASTRUCTURE SOUTH CO.

Management Name	Title	Role Start Date	Address (Complete)
Miles, David J.	President	04-12-2022	1550 Mike Fahey Street,Omaha, Nebraska 68102, United States
Bentley, Walter L.	Executive Vice President	07-25-2022	3831 Technology Forest Blvd.,The Woodlands, Texas 77381, United States
Glaser, William D.	Executive Vice President	11-15-2021	1550 Mike Fahey St.,Omaha, Nebraska 68102, United States
Carlsgaard, Terry J.	Senior Vice President	08-16-2017	2050 Roanoke Road,Westlake, Texas 76262, United States
Cleary, Timothy J.	Senior Vice President	07-07-2023	450 Dividend Dr.,Peachtree City, Georgia 30269, United States
Hucks, Jr., Charles E.	Senior Vice President	04-13-2021	205 Hutchinson Island Road,Savannah, Georgia 31421, United States
Krumwiede, Christopher J.	Senior Vice President	04-19-2017	10055 Trainstation Circle,Lone Tree, Colorado 80124, United States
Ostlund, Michael D.	Senior Vice President	04-12-2022	1550 Mike Fahey St.,Omaha, Nebraska 68102, United States
Petersen, Shane T.	Senior Vice President	04-15-2013	2050 Roanoke Rd., Suite #100,Westlake, Texas 76262, United States
Swinton, Matt L.	Senior Vice President	10-10-2014	1550 Mike Fahey Street,Omaha, Nebraska 68102, United States
Applegate, Bruce J.	Vice President	04-11-2023	5617 North Rhett Avenue, Suite 125 D & E,North Charleston, South Carolina 29406, United States
Cole, Clinton J.	Vice President	04-14-2020	2050 Roanoke Road,Westlake, Texas 76262, United States
Frieberg, Christopher S.	Vice President	03-08-2018	5130 Masthead NE,Albuquerque, New Mexico 87109, United States
Goyer, James P.	Vice President	06-07-2018	5757 Blue Lagoon Dr., Suite 200,Miami, Florida 33126, United States
Jensen, Cody J.	Vice President	07-07-2023	5405 Cypress Center Dr., Suite 210,Tampa, Florida 33609, United States
Joyce, Anthony	Vice President	10-18-2021	2050 Roanoke Road,Westlake, Texas 76262, United States
Kite, Gray D.	Vice President	04-26-2010	7770 Jefferson St. NE, Ste. 101,Albuquerque, New Mexico 87109, United States
Proskovec, John D.	Vice President	01-01-2016	2050 Roanoke Rd., Suite #100,Westlake, Texas 76262, United States
Schropp, Tobin A.	Vice President	06-16-2003	1550 Mike Fahey Street,Omaha, Nebraska 68102, United States
Sosa, Nicolas C.	Vice President	04-12-2022	6200 Lee Vista Blvd. Suite 100, Orlando, FL 32822, United States
Swaving, Kevin R.	Vice President	04-26-2010	5130 Masthead Street NE,Albuquerque, New Mexico 87109, United States
Thorn, Thomas A.	Vice President	01-22-2016	2050 Roanoke Rd., Suite #100,Westlake, Texas 76262, United States
Van Wagner, III Eugene D.	Vice President	04-16-2021	4790 Regent Blvd., Suite 100,Irving, Texas 75063, United States
Demulling, Trent M.	Vice President and Chief Financial Officer	08-01-2014	1550 Mike Fahey Street,Omaha, Nebraska 68102, United States
Nolan, James M.	Controller	06-10-2019	1550 Mike Fahey Street,Omaha, Nebraska 68102, United States
Thomas, Stephen S.	Treasurer	06-30-2006	1550 Mike Fahey Street,Omaha, Nebraska 68102, United States
Norton, Michael F.	Secretary	06-15-1998	1550 Mike Fahey Street,Omaha, Nebraska 68102, United States
Boyle, Thomas J.	Assistant Secretary	06-29-2015	450 Dividend Drive,Peachtree City, Georgia 30269, United States
DeVine, Anthony A.	Assistant Secretary	07-11-2018	2050 Roanoke Road,Westlake, Texas 76262, United States
Fibich, Donald J.	Assistant Secretary	04-22-2015	1550 Mike Fahey Street,Omaha, Nebraska 68102, United States
Gilmore, J. Samuel	Assistant Secretary	11-18-2014	1550 Mike Fahey Street,Omaha, Nebraska 68102, United States
Kampschneider, Dean J.	Assistant Secretary	04-26-2010	1550 Mike Fahey Street,Omaha, Nebraska 68102, United States
Kollberg, Erik B.	Assistant Secretary	03-08-2018	10055 Trainstation Circle,Lone Tree, Colorado 80124, United States
Patterson, Scott M.	Assistant Secretary	01-13-2021	2050 Roanoke Rd., Suite #100,Westlake, Texas 76262, United States
Pessini, Andre J.T.	Assistant Secretary	04-11-2023	12720 I Street,Omaha, Nebraska 68137, United States

KIEWIT INFRASTRUCTURE SOUTH CO.

Management Name	Title	Role Start Date	Address (Complete)
Scott, Eric M.	Assistant Secretary	01-13-2021	4650 Business Center Drive,Fairfield, California 94534, United States
Weston, Donald E.	Assistant Secretary	10-21-2010	470 Chestnut Ridge Road,Woodcliff Lake, New Jersey 07677, United States
Miles, David J.	Director	04-12-2022	1550 Mike Fahey Street,Omaha, Nebraska 68102, United States

Authority to Sign

Kiewit

OFFICER'S CERTIFICATE
OF
KIEWIT INFRASTRUCTURE SOUTH CO.

I, the undersigned, hereby certify that I am an Assistant Secretary of Kiewit Infrastructure South Co., a Delaware corporation (the "Corporation"), and further certify on behalf of the Corporation located at 1550 Mike Fahey Street, Omaha, NE 68102, that:

1. Timothy J. Cleary ("Signing Officer") is a duly appointed and acting Senior Vice President of the Corporation.

2. Thomas J. Boyle is a duly appointed and acting Assistant Secretary of the Corporation

3. The Corporation intends to submit a bid to the Orlando International Airport for the H-00370, Airside 3 Apron PCC Slab Rehabilitation. ("Proposal").

4. The Signing Officer, as a Senior Vice President, is authorized to execute and deliver the Proposal on behalf of the Corporation, and upon award of the Project, to execute and deliver the Project contract and any related documents for the Project, and Thomas J. Boyle, as an Assistant Secretary of the Corporation, is authorized to witness such execution of documents and further certify on behalf of the Corporation that the foregoing information provided in the Proposal is true, full and correct

SIGNED on behalf of the Corporation on this **16th** day of **August**, 2024.

KIEWIT INFRASTRUCTURE SOUTH CO.

By: _____
Name: Thomas J. Boyle
Title: Assistant Secretary

STATE OF **Georgia**)
)ss.
COUNTY OF **Fayette**)

The foregoing instrument was acknowledged before me this **16** th day of **August**, 2024, by **Thomas J. Boyle**, Assistant Secretary of Kiewit Infrastructure South Co., a Delaware corporation, on behalf of the corporation.

_____
Notary Public

My commission expires: **1.27.2028**

JESSICA WOLFE
Notary Public, Georgia
Coweta County
My Commission Expires
January 27, 2028

SECTION 00 41 13.15 - EXHIBIT C

Bidder: Kiewit Infrastructure South Co.

SCHEDULE OF DBE SUBCONTRACTOR PARTICIPATION OF TOTAL BID PRICE

	"A"	"B"	"C"	"D"	"E"
	NAME OF CERTIFIED DBE FIRM, MANUFACTURER, VENDOR/SUPPLIER	ADDRESS AND PHONE NUMBER	SCOPE OF WORK	ESTIMATED SUBCONTRACT AMOUNT ($)*	VENDOR/SUPPLIER SUBCONTRACT AMOUNT ($)**
1					
2	See Attached				
3					
4					
5					
6					
7					
			TOTALS		
	Example Firm, Manufacturer,			$100	
	Example Vendor/Supplier			$60	$100

*"D" Show DBE Bid Values: The Bid value in this column for Vendor/Supplier Subcontracts is shown as 60% of column "E" 100% value.
** "E" Show DBE Vendor/Supplier Values: Full Subcontractor Bid Amount

The undersigned will enter into a formal agreement with the above DBE subcontractors for work listed in the schedule conditioned upon execution of a contract with the Owner.

By: Timothy J. Cleary

SECTION 00 41 13.15 - EXHIBIT C

Bidder: **Kiewit Infrastructure South Co.**

SCHEDULE OF DBE SUBCONTRACTOR PARTICIPATION OF TOTAL BID PRICE

	"A"	"B"	"C"	"D"	"E"
	NAME OF CERTIFIED DBE FIRM, MANUFACTURER, VENDOR/SUPPLIER	ADDRESS AND PHONE NUMBER	SCOPE OF WORK	ESTIMATED SUBCONTRACT AMOUNT ($)*	VENDOR/SUPPLIER SUBCONTRACT AMOUNT ($)**
1	Gosalia Concrete Constructors, Inc.	4607 N. 56 Street Tampa, FL 33610 813-443-0984	Saw & Seal Final Joints	$32,020	$32,020
2	Unlimited Turf, LLC	850 NW Federal Highway, Ste 170 Stuart, FL 34994 863-357-5700	Furnish & Install Turf	$21,087	$21,087
3	Sunrise Hauling and Excavating Inc.	345 Enterprise Street Ocoee, FL 34761 321-231-6092	Hauling	$14,320	$14,320
4					
5					
6					
7					
			TOTALS	$67,427	
	Example Firm, Manufacturer,			$100	
	Example Vendor/Supplier			$60	$100

"D" Show DBE Bid Values: The Bid value in this column for Vendor/Supplier Subcontracts is shown as 60% of column "E" 100% value.
** "E" Show DBE Vendor/Supplier Values: Full Subcontractor Bid Amount**

The undersigned will enter into a formal agreement with the above DBE subcontractors for work listed in the schedule conditioned upon execution of a contract with the Owner.

By: **See Previous Sheet for Signature**

BIDDER'S QUALIFICATIONS

I, (name) Timothy J. Cleary , (title) Sr. Vice President, an authorized officer of (firm) Kiewit Infrastructure South Co. certify that the Bidder has, within the last five years, successfully performed the following projects which included construction activities that are similar to this Project. The following projects demonstrate my firm's experience in the **AIRFIELD PAVEMENT**.

(List as many projects as required to include all types of work specified. Additional pages may be submitted as necessary):

Project Name	Owner	Owner's Contact Person, Address, Phone, Fax	Design Professional	Prime or Sub*	Construction Value **	Completion Date
	See Attached					

* State whether the Work was performed by the Bidder as a Prime or Subcontractor.
** If Work was performed as a subcontractor, list the construction value of the Work performed (not the Construction value of the entire project)

Timothy J. Cleary
Signature:

8/20/24
Date:

BIDDER'S QUALIFICATIONS

I, (name) **Timothy J. Cleary** , (title) **Sr. Vice President**, an authorized officer of (firm) **Kiewit Infrastructure South Co.** certify that the Bidder has, within the last five years, successfully performed the following projects which included construction activities that are similar to this Project. The following projects demonstrate my firm's experience in the **AIRFIELD PAVEMENT**.

(List as many projects as required to include all types of work specified. Additional pages may be submitted as necessary):

Project Name	Owner	Owner's Contact Person, Address, Phone, Fax	Design Professional	Prime or Sub*	Construction Value **	Completion Date
STC Airfield Civil	Greater Orlando Aviation Authority	Ben Brown 11336 Terminal C Service Rd. Orlando, FL 32824 Phone: 407-466-4533	N/A	Prime	$1,407,936,702	5/27/2023
CHS Misc Airfield Pavement Repairs	Charleston County Aviation Authority	Jonathan Sheppard 5500 International Blvd. North Charleston, SC 29418 Phone: 843.767.7208	N/A	Prime	$2,585,201	3/15/2022
Rehabilitate Apron Pavement	Decatur County Board of Commissioners	Alen Thomas 203 West Broughton St. Bainbridge, GA 39817 Phone: 229.248.3030	Passero Associaes	Prime	$2,185,957	7/1/2023
Wallops Airfield Repair Phase 8	NASA	Therese Patterson Goddard Space Flight Center Procurement Operations Division Greenbelt, MD 20771 Phone: 757.824.1066	N/A	Prime	$3,267,589	4/28/2023

* State whether the Work was performed by the Bidder as a Prime or Subcontractor.
** If Work was performed as a subcontractor, list the construction value of the Work performed (not the Construction value of the entire project)

See previous sheet for signature
Signature:

8/20/24
Date:

License

Kiewit

Ron DeSantis, Governor

Melanie S. Griffin, Secretary

Florida dbpr

STATE OF FLORIDA
DEPARTMENT OF BUSINESS AND PROFESSIONAL REGULATION

CONSTRUCTION INDUSTRY LICENSING BOARD

THE GENERAL CONTRACTOR HEREIN IS CERTIFIED UNDER THE
PROVISIONS OF CHAPTER 489, FLORIDA STATUTES

BROWN, JEFFREY PAUL

KIEWIT INFRASTRUCTURE SOUTH CO.
1550 MIKE FAHEY ST.
STACEY LAMB; LEGAL
OMAHA NE 68102

LICENSE NUMBER: CGC1511417

EXPIRATION DATE: AUGUST 31, 2026

Always verify licenses online at MyFloridaLicense.com

ISSUED: 07/23/2024

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Ron DeSantis, Governor

Melanie S. Griffin, Secretary

Florida dbpr

STATE OF FLORIDA
DEPARTMENT OF BUSINESS AND PROFESSIONAL REGULATION

CONSTRUCTION INDUSTRY LICENSING BOARD

THE PLUMBING CONTRACTOR HEREIN IS CERTIFIED UNDER THE
PROVISIONS OF CHAPTER 489, FLORIDA STATUTES

BROWN, JEFFREY PAUL

KIEWIT INFRASTRUCTURE SOUTH CO.
1550 MIKE FAHEY ST.
STACEY LAMB; LEGAL
OMAHA NE 68102

LICENSE NUMBER: CFC1427088

EXPIRATION DATE: AUGUST 31, 2026

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ISSUED: 07/23/2024

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Ron DeSantis, Governor

Melanie S. Griffin, Secretary

STATE OF FLORIDA
DEPARTMENT OF BUSINESS AND PROFESSIONAL REGULATION

CONSTRUCTION INDUSTRY LICENSING BOARD

THE MECHANICAL CONTRACTOR HEREIN IS CERTIFIED UNDER THE
PROVISIONS OF CHAPTER 489, FLORIDA STATUTES

BROWN, JEFFREY PAUL

KIEWIT INFRASTRUCTURE SOUTH CO.
1550 MIKE FAHEY ST.
STACEY LAMB; LEGAL
OMAHA NE 68102

LICENSE NUMBER: CMC1249632

EXPIRATION DATE: AUGUST 31, 2026

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ISSUED: 07/23/2024

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Ron DeSantis, Governor

Melanie S. Griffin, Secretary

Florida dbpr

STATE OF FLORIDA
DEPARTMENT OF BUSINESS AND PROFESSIONAL REGULATION

CONSTRUCTION INDUSTRY LICENSING BOARD

THE UNDERGROUND UTILITY & EXCAVATION CO HEREIN IS CERTIFIED UNDER THE PROVISIONS OF CHAPTER 489, FLORIDA STATUTES

BROWN, JEFFREY PAUL

KIEWIT INFRASTRUCTURE SOUTH CO.
1550 MIKE FAHEY ST.
STACEY LAMB; LEGAL
OMAHA NE 68102

LICENSE NUMBER: CUC1224233

EXPIRATION DATE: AUGUST 31, 2026

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ISSUED: 07/23/2024

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Insurance Certificate

Kiewit

ACORD®

CERTIFICATE OF LIABILITY INSURANCE

DATE (MM/DD/YYYY)
7/29/2024

THIS CERTIFICATE IS ISSUED AS A MATTER OF INFORMATION ONLY AND CONFERS NO RIGHTS UPON THE CERTIFICATE HOLDER. THIS CERTIFICATE DOES NOT AFFIRMATIVELY OR NEGATIVELY AMEND, EXTEND OR ALTER THE COVERAGE AFFORDED BY THE POLICIES BELOW. THIS CERTIFICATE OF INSURANCE DOES NOT CONSTITUTE A CONTRACT BETWEEN THE ISSUING INSURER(S), AUTHORIZED REPRESENTATIVE OR PRODUCER, AND THE CERTIFICATE HOLDER.

IMPORTANT: If the certificate holder is an ADDITIONAL INSURED, the policy(ies) must have ADDITIONAL INSURED provisions or be endorsed. If SUBROGATION IS WAIVED, subject to the terms and conditions of the policy, certain policies may require an endorsement. A statement on this certificate does not confer rights to the certificate holder in lieu of such endorsement(s).

PRODUCER Midwest Agencies, Inc. 1550 Mike Fahey Street Omaha, NE 68102	CONTACT NAME: Traci Sutton PHONE (A/C, No, Ext): 402-271-2956 FAX (A/C, No): 402-271-2830 E-MAIL ADDRESS: Traci.Sutton@Midwestagenciesinc.com
INSURED Kiewit Infrastructure South Co. 6200 Lee Vista Boulevard, Suite 100 Orlando FL 32822	INSURER(S) AFFORDING COVERAGE — NAIC # INSURER A : Old Republic Insurance Company — 24147 INSURER B : Swiss Re Corporate Solutions America Ins — 29874 INSURER C : INSURER D : INSURER E : INSURER F :

COVERAGES **CERTIFICATE NUMBER:** 81191004 **REVISION NUMBER:**

THIS IS TO CERTIFY THAT THE POLICIES OF INSURANCE LISTED BELOW HAVE BEEN ISSUED TO THE INSURED NAMED ABOVE FOR THE POLICY PERIOD INDICATED. NOTWITHSTANDING ANY REQUIREMENT, TERM OR CONDITION OF ANY CONTRACT OR OTHER DOCUMENT WITH RESPECT TO WHICH THIS CERTIFICATE MAY BE ISSUED OR MAY PERTAIN, THE INSURANCE AFFORDED BY THE POLICIES DESCRIBED HEREIN IS SUBJECT TO ALL THE TERMS, EXCLUSIONS AND CONDITIONS OF SUCH POLICIES. LIMITS SHOWN MAY HAVE BEEN REDUCED BY PAID CLAIMS.

INSR LTR	TYPE OF INSURANCE	ADDL INSD	SUBR WVD	POLICY NUMBER	POLICY EFF (MM/DD/YYYY)	POLICY EXP (MM/DD/YYYY)	LIMITS	
A	✓ COMMERCIAL GENERAL LIABILITY			MWZY 312911	3/1/2024	3/1/2025	EACH OCCURRENCE	$5,000,000
	☐ CLAIMS-MADE ✓ OCCUR						DAMAGE TO RENTED PREMISES (Ea occurrence)	$5,000,000
	✓ Contractual Liability						MED EXP (Any one person)	$10,000
	✓ XCU Included						PERSONAL & ADV INJURY	$5,000,000
	GEN'L AGGREGATE LIMIT APPLIES PER:						GENERAL AGGREGATE	$10,000,000
	☐ POLICY ✓ PRO-JECT ☐ LOC						PRODUCTS - COMP/OP AGG	$10,000,000
	OTHER:							$
A	AUTOMOBILE LIABILITY			MWTB 312910	3/1/2024	3/1/2025	COMBINED SINGLE LIMIT (Ea accident)	$5,000,000
	✓ ANY AUTO						BODILY INJURY (Per person)	$
	☐ OWNED AUTOS ONLY ✓ SCHEDULED AUTOS						BODILY INJURY (Per accident)	$
	☐ HIRED AUTOS ONLY ☐ NON-OWNED AUTOS ONLY						PROPERTY DAMAGE (Per accident)	$
								$
B	☐ UMBRELLA LIAB ✓ OCCUR			EXS 2000809	3/1/2024	3/1/2025	EACH OCCURRENCE	$20,000,000
	✓ EXCESS LIAB ☐ CLAIMS-MADE						AGGREGATE	$20,000,000
	☐ DED ✓ RETENTION $ N/A							$
A	WORKERS COMPENSATION AND EMPLOYERS' LIABILITY Y/N			MWC 312908	3/1/2024	3/1/2025	✓ PER STATUTE ☐ OTH-ER	
	ANYPROPRIETOR/PARTNER/EXECUTIVE OFFICER/MEMBER EXCLUDED? N	N/A		MWXS 312909	3/1/2024	3/1/2025	E.L. EACH ACCIDENT	$5,000,000
	(Mandatory in NH)			MWFEX 312928-FL	3/1/2024	3/1/2025	E.L. DISEASE - EA EMPLOYEE	$5,000,000
	If yes, describe under DESCRIPTION OF OPERATIONS below			MWXS 316021-CA	3/1/2024	3/1/2025		
				USL&H & Jones Act StopGap			E.L. DISEASE - POLICY LIMIT	$5,000,000

DESCRIPTION OF OPERATIONS / LOCATIONS / VEHICLES (ACORD 101, Additional Remarks Schedule, may be attached if more space is required)

Project: H-00370 Airside 3 Apron PCC Slab Rehab.

RE: Evidence of coverage

CERTIFICATE HOLDER

Greater International Aviation Authority
Engineering and Construction
One Jeff Fuqua Blvd.
Orlando FL 32827

CANCELLATION

SHOULD ANY OF THE ABOVE DESCRIBED POLICIES BE CANCELLED BEFORE THE EXPIRATION DATE THEREOF, NOTICE WILL BE DELIVERED IN ACCORDANCE WITH THE POLICY PROVISIONS.

AUTHORIZED REPRESENTATIVE

Philip G. Dehn

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SECTION 00 61 13 - PERFORMANCE/PAYMENT BOND COVER SHEET

This cover sheet is an integral part of the attached bonds and must not be separated from them

GREATER ORLANDO AVIATION AUTHORITY
ORLANDO, FLORIDA
(Public Work)
In Compliance with Florida Statute Chapter 255.05(1)(a)

PERFORMANCE BOND NO.:		108085918
PAYMENT BOND NO.:		108085918
CONTRACTOR INFORMATION:	Name:	Kiewit Infrastructure South Co.
	Address:	6200 Lee Vista Blvd. Suite 100
		Orlando FL 32822
	Phone:	407-563-7555
SURETY PRINCIPAL BUSINESS INFORMATION:	Name:	Travelers Casualty and Surety Company of America
	Address:	One Tower Square
		Hartford, CT 06183
	Phone:	402-271-2956
OWNER INFORMATION:	Name:	Greater Orlando Aviation Authority
	Address:	One Jeff Fuqua Blvd.
		Orlando, FL 32827
	Phone:	(407) 825-2001
BOND AMOUNT:		$885,919.00
CONTRACT NO. (*if applicable*):		H-370
DESCRIPTION OF WORK:		Airside 3 Apron PCC Slab Rehabilitation
PROJECT LOCATION:		Orlando International Airport, Orlando, FL
AGENT INFORMATION:	Name:	Katie Cronin
	Address:	2420 Lakemont Ave., 2nd Floor
		Orlando, FL 32814
	Phone:	407-388-3264

SECTION 00 61 13.13 - PERFORMANCE BOND

BOND NO.: 108085918

GREATER ORLANDO AVIATION AUTHORITY
ORLANDO, FLORIDA

The cover page that lists the contact information for the entities involved in this bond is considered the front page of this bond and is an integral part of this bond and, therefore, must not be separated from this bond.

KNOW ALL PERSONS BY THESE PRESENTS that **Kiewit Infrastructure South Co.**, hereinafter called Principal, and Travelers Casualty and Surety Company of America, a corporation organized under the laws of the State of Connecticut and licensed to do business in the State of Florida, hereinafter called Surety, are held and firmly bound unto the Greater Orlando Aviation Authority, hereinafter called Owner, in the Penal Sum of **EIGHT HUNDRED EIGHTY-FIVE THOUSAND NINE HUNDRED NINETEEN AND NO/100 DOLLARS ($885,919.00)**, for the payment of which sum well and truly made, Principal and Surety bind ourselves, our heirs, personal representatives, successors and assigns, jointly and severally, firmly by these presents.

WHEREAS, Principal has by written agreement dated Oct 7, 2024, entered into a Contract with Owner for " Bid Package H-370, Airside 3 Apron PCC Slab Rehabilitation, Orlando International Airport," in accordance with the Contract Documents which are incorporated herein by reference and made a part hereof, and are herein referred to as the Contract.

WHEREAS, Surety is authorized to do business in the State of Florida.

NOW, THEREFORE, the condition of this obligation is such that if Principal:

1. Promptly and faithfully performs the Contract including, but not limited to, its design (if any), construction and warranty provisions in the time and manner prescribed in the Contract, and correction of defective work, and

2. Pays Owner all losses, damages, expenses, costs, attorneys' fees and other legal costs (including, but not limited to, those for investigative and legal support services and appellate proceedings), that Owner sustains resulting directly or indirectly from the conduct of the Principal including, but not limited to, breach or default under the Contract, want of care or skill, negligence, patent infringement, or intentionally wrongful conduct on the part of the Principal, its officers, agents, employees or any other person or entity for whom the Principal is responsible,

then this bond is void; otherwise it shall remain in full force and effect.

3. In the event that the Principal shall fail to perform any of the terms, covenants and conditions of the Contract during the period in which this Performance Bond is in effect, the Surety shall remain liable to the Owner for all such loss or damage (including reasonable attorneys' fees and other legal costs) resulting from any failure to perform up to the amount of the Penal Sum.

4. In the event that the Surety fails to fulfill its obligations under this Performance Bond, then the Surety shall also indemnify and save the Owner harmless from any and all loss, damage, cost and expense, including reasonable attorneys' fees and other legal costs for all trial and appellate proceedings resulting directly or indirectly from the Surety's failure to fulfill its obligations hereunder. This paragraph shall survive the termination or cancellation of this Performance Bond. The obligations set forth in this paragraph shall not be limited by the Penal Sum of this Bond.

5. The Surety's obligations hereunder shall be direct and immediate and not conditional or contingent upon Owner's pursuit of its remedies against Principal, and shall remain in full force and effect notwithstanding (i) amendments or modifications to the Contract entered into by Owner and Principal without the Surety's knowledge or consent, (ii) waivers of any default under the Agreement or the

Contract granted by Owner to Principal without the Surety's consent, (iii) the discharge of Principal from its obligations under the Contract as a result of any proceeding initiated under The Bankruptcy Code of 1978, as the same may be amended, or any similar state or federal law, or any limitation of the liability of Principal or its estate as a result of any such proceeding, or (iv) any other action taken by Owner or Principal that would, in the absence of this clause, result in the release or discharge by operation of law of the Surety from its obligations hereunder.

6. The institution of suit upon this Bond shall be in accordance with Section 95.11(2)(b), Florida Statutes.

7. Any changes in or under the Contract Documents (which include the Plans, Drawings and Specifications) and compliance or noncompliance with any formalities connected with the Contract or the changes therein shall not affect Surety's obligations under this Bond and Surety hereby waives notice of any such changes. Further, Principal and Surety acknowledge that the Penal Sum of this bond shall increase or decrease in accordance with approved changes or other modifications to the Contract Documents.

IN WITNESS WHEREOF, the Principal and Surety have executed this instrument under their several seals on this 13th day of September, 2024, to be effective as of the date of the Contract, the name and corporate seal of each corporate party being hereto affixed and these presents fully signed by its undersigned representative, pursuant to authority of its governing body.

Signed, sealed and delivered
In the presence of:

_____

_____

(SEAL)

_____

_____

(SEAL)

Kiewit Infrastructure South Co.,
Principal

By: _____

Timothy J. Cleary, Sr. Vice President
Name and Title

Travelers Casualty and Surety Company of America
Surety

By: _____

Traci Sutton, Attorney-in-Fact
Name and Title
Midwest Agencies, Inc.
Agency
1550 Mike Fahey Street, Omaha, NE 68102
Address

_____
(Countersignature by a Florida Licensed Agent)

Katie Cronin, Florida Resident Agent & Attorney-in-Fact
Name and Title
Travelers
Agency
2420 Lakemont Ave., 2nd Floor, Orlando, FL 32814
Address

NOTE: If Principal or Surety are corporations, the respective corporate seals should be affixed. Additionally, a certified copy of a Power-of-Attorney appointing the individual Attorney-in-Fact for the Surety, as well as the Power-of-Attorney appointing the Florida licensed agent, should be attached.

TRAVELERS

Travelers Casualty and Surety Company of America
Travelers Casualty and Surety Company
St. Paul Fire and Marine Insurance Company

POWER OF ATTORNEY

KNOW ALL MEN BY THESE PRESENTS: That Travelers Casualty and Surety Company of America, Travelers Casualty and Surety Company, and St. Paul Fire and Marine Insurance Company are corporations duly organized under the laws of the State of Connecticut (herein collectively called the "Companies"), and that the Companies do hereby make, constitute and appoint **Philip G. Dehn, Tammy Pike, Paul A. Foss, Marie Huggins, Traci Sutton, and Deanne Jones of Omaha, Nebraska,** their true and lawful Attorney (s)-in-Fact to sign, execute, seal and acknowledge any and all bonds, recognizances, conditional undertakings and other writings obligatory in the nature thereof on behalf of the Companies in the,r business of guaranteeing the fidelity of persons, guaranteeing the performance of contracts and executing or guaranteeing bonds and undertakings required or permitted in any actions or proceedings allowed by law.

IN WITNESS WHEREOF, the Companies have caused this instrument to be signed, and their corporate seals to be hereto affixed, this **21st** day of **April, 2021.**

State of Connecticut

City of Hartford ss.

By: _____
Robert L. Raney, Senior Vice President

On this the **21st** day of **April, 2021**, before me personally appeared **Robert L. Raney**, who acknowledged himself to be the Senior Vice President of each of the Companies, and that he, as such, being authorized so to do, executed the foregoing instrument for the purposes therein contained by signing on behalf of said Companies by himself as a duly authorized officer.

IN WITNESS WHEREOF, I hereunto set my hand and official seal.

My Commission expires the **30th** day of **June, 2026**

_____
Anna P. Nowik, Notary Public

This Power of Attorney is granted under and by the authority of the following resolutions adopted by the Boards of Directors of each of the Companies, which resolutions are now in full force and effect, reading as follows:

RESOLVED, that the Chairman, the President, any Vice Chairman, any Executive Vice President, any Senior Vice President, any Vice President, any Second Vice President, the Treasurer, any Assistant Treasurer, the Corporate Secretary or any Assistant Secretary may appoint Attorneys-in-Fact and Agents to act for and on behalf of the Company and may give such appointee such authority as his or her certificate of authority may prescribe to sign with the Company's name and seal with the Company's seal bonds, recognizances, contracts of indemnity, and other writings obligatory in the nature of a bond, recognizance, or conditional undertaking, and any of said officers or the Board of Directors at any time may remove any such appointee and revoke the power given him or her; and it is

FURTHER RESOLVED, that the Chairman, the President, any Vice Chairman, any Executive Vice President, any Senior Vice President or any Vice President may delegate all or any part of the foregoing authority to one or more officers or employees of this Company, provided that each such delegation is in writing and a copy thereof is filed in the office of the Secretary; and it is

FURTHER RESOLVED, that any bond, recognizance, contract of indemnity, or writing obligatory in the nature of a bond, recognizance, or conditional undertaking shall be valid and binding upon the Company when (a) signed by the President, any Vice Chairman, any Executive Vice President, any Senior Vice President or any Vice President, any Second Vice President, the Treasurer, any Assistant Treasurer, the Corporate Secretary or any Assistant Secretary and duly attested and sealed with the Company's seal by a Secretary or Assistant Secretary; or (b) duly executed (under seal, if required) by one or more Attorneys-in-Fact and Agents pursuant to the power prescribed in his or her certificate or their certificates of authority or by one or more Company officers pursuant to a written delegation of authority; and it is

FURTHER RESOLVED, that the signature of each of the following officers: President, any Executive Vice President, any Senior Vice President, any Vice President, any Assistant Vice President, any Secretary, any Assistant Secretary, and the seal of the Company may be affixed by facsimile to any Power of Attorney or to any certificate relating thereto appointing Resident Vice Presidents, Resident Assistant Secretaries or Attorneys-in-Fact for purposes only of executing and attesting bonds and undertakings and other writings obligatory in the nature thereof, and any such Power of Attorney or certificate bearing such facsimile signature or facsimile seal shall be valid and binding upon the Company and any such power so executed and certified by such facsimile signature and facsimile seal shall be valid and binding on the Company in the future with respect to any bond or understanding to which it is attached.

I, **Kevin E. Hughes**, the undersigned, Assistant Secretary of each of the Companies, do hereby certify that the above and foregoing is a true and correct copy of the Power of Attorney executed by said Companies, which remains in full force and effect.

Dated this 13th day of September , 2024 .

_____
Kevin E. Hughes, Assistant Secretary

To verify the authenticity of this Power of Attorney, please call us at 1-800-421-3880.
Please refer to the above-named Attorney(s)-in-Fact and the details of the bond to which this Power of Attorney is attached.

SECTION 00 61 13.16 - PAYMENT BOND FORM

BOND NO.: 108085918

GREATER ORLANDO AVIATION AUTHORITY
ORLANDO, FLORIDA

The cover page that lists the contact information for the entities involved in this bond is considered the front page of this bond and is an integral part of this bond and, therefore, must not be separated from this bond.

KNOW ALL PERSONS BY THESE PRESENTS that **Kiewit Infrastructure South Co.**, hereinafter called Principal, and Travelers Casualty and Surety Company of America, a corporation organized under the laws of the State of Connecticut, having its home office in the City of Hartford and licensed to do business in the State of Florida, hereinafter called Surety, are held and firmly bound unto the Greater Orlando Aviation Authority, hereinafter called Owner, for the use and benefit of claimants as hereinbelow defined, in the Penal Sum of **EIGHT HUNDRED EIGHTY-FIVE THOUSAND NINE HUNDRED NINETEEN AND NO/100 DOLLARS ($885,919.00)** for the payment of which sum well and truly to be made, Principal and Surety bind ourselves, our heirs, personal representatives, successors and assigns, jointly and severally, firmly by these presents.

WHEREAS, Principal has by written agreement dated Oct 7, 2024, entered into a contract with Owner for " Bid Package H-370, Airside 3 Apron PCC Slab Rehabilitation, Orlando International Airport," in accordance with the Contract Documents which are incorporated herein by reference and made a part hereof, and are herein referred to as the Contract.

WHEREAS, Surety is authorized to do business in the State of Florida.

NOW, THEREFORE, the condition of this obligation is such that if Principal shall promptly make payments to all claimants as defined in Section 255.05(1), Florida Statutes, supplying Principal with labor, materials, or supplies, used directly or indirectly by Principal in the prosecution of the work provided for in the Contract, then this obligation shall be void; otherwise, it shall remain in full force and effect subject, however, to the following conditions:

1. **This bond is given to comply with Section 255.05, Florida Statutes, and any action instituted by a claimant under this bond for payment must be in accordance with Sections 255.05(2) and 255.05(10), Florida Statutes, as amended, including, but not limited to, the notice and time limitation provisions therein**.

2. Therefore, a claimant, except a laborer, who is not in privity with the Contractor shall, before commencing or not later than 45 days after commencing to furnish labor, services or materials for the prosecution of the work, serve the Contractor with a written notice that he or she intends to look to the bond for protection. A claimant who is not in privity with the Contractor and who has not received payment for furnishing his or her labor, services, or materials shall, serve a written notice of nonpayment on the Contractor and on the Surety. Notices must be served in accordance with Section 255.05(2), as amended. The notice of non-payment shall be under oath and served during the progress of the work or thereafter, but may not be served earlier than forty-five (45) days after the first furnishing of the labor, services or materials by the claimant or later than ninety (90) days after the final furnishing of the labor, services or materials by the claimant, or, with respect to rental equipment, later than 90 days after the date that the rental equipment was last on the job site available for use. Any notice of nonpayment served by a claimant who is not in privity with the contractor which includes sums for retainage must specify the portion of the amount claimed for retainage. No action for the labor, services, or materials may be instituted against the Contractor or the Surety unless both notices have been served. No action shall be instituted against the Contractor or the Surety on the bond after one (1) year from the performance of the labor or completion of the delivery of the materials or supplies.

3. The Surety's obligations hereunder shall remain in full force and effect notwithstanding (i) amendments or modifications to the Contract entered into by Owner and Principal without the Surety's knowledge or consent, (ii) waivers of compliance with or any default under the Contract granted by Owner to Principal without the

Surety's knowledge or consent, (iii) the discharge of Principal from its obligations under the Contract as a result of any proceeding initiated under The Bankruptcy Code of 1978, as the same may be amended, or any similar state or federal law, or any limitation of the liability of Principal or its estate as a result of any such proceeding, or (iv) any other action taken by Owner or Principal that would, in the absence of this clause, result in the release or discharge by operation of law of the Surety from its obligations hereunder.

4. Any changes in or under the Contract Documents (which include the, Drawings and Specifications) and compliance or noncompliance with any formalities connected with the Contract or the changes therein shall not affect Surety's obligations under this Bond and Surety hereby waives notice of any such changes. Further, Principal and Surety acknowledge that the Penal Sum of this Bond shall increase or decrease in accordance with the approved changes or other modifications to the Contract Documents.

IN WITNESS WHEREOF, the Principal and Surety have executed this instrument under their several seals on this 13th day of September, 2024, to be effective as of the date of the Contract, the name and corporate seal of each corporate party being hereto affixed and these presents fully signed by its undersigned representative, pursuant to authority of its governing body.

Signed, sealed and delivered
In the presence of:

_____

_____

(SEAL)

_____

_____

(SEAL)

_____
(Countersignature by a Florida Licensed Agent)

Katie Cronin, Florida Resident Agent & Attorney-in-Fact
Name and Title
Travelers
Agency
2420 Lakemont Ave., 2nd Floor, Orlando, FL 32814
Address

Kiewit Infrastructure South Co.,
Principal

By: _____

Timothy J. Cleary, Sr. Vice President
Name and Title

Travelers Casualty and Surety Company of America
Surety

By: _____

Traci Sutton, Attorney-in-Fact
Name and Title
Midwest Agencies, Inc.
Agency
1550 Mike Fahey Street, Omaha, NE 68102
Address

NOTE: If Principal or Surety are corporations, the respective corporate seals should be affixed. Additionally, a certified copy of a Power-of-Attorney appointing the individual Attorney-in-Fact for the Surety, as well as the Power-of-Attorney appointing the Florida licensed agent, should be attached.

TRAVELERS

Travelers Casualty and Surety Company of America
Travelers Casualty and Surety Company
St. Paul Fire and Marine Insurance Company

POWER OF ATTORNEY

KNOW ALL MEN BY THESE PRESENTS: That Travelers Casualty and Surety Company of America, Travelers Casualty and Surety Company, and St. Paul Fire and Marine Insurance Company are corporations duly organized under the laws of the State of Connecticut (herein collectively called the "Companies"), and that the Companies do hereby make, constitute and appoint **Philip G. Dehn, Tammy Pike, Paul A. Foss, Marie Huggins, Traci Sutton, and Deanne Jones of Omaha, Nebraska,** their true and lawful Attorney (s)-in-Fact to sign, execute, seal and acknowledge any and all bonds, recognizances, conditional undertakings and other writings obligatory in the nature thereof on behalf of the Companies in the,r business of guaranteeing the fidelity of persons, guaranteeing the performance of contracts and executing or guaranteeing bonds and undertakings required or permitted in any actions or proceedings allowed by law.

IN WITNESS WHEREOF, the Companies have caused this instrument to be signed, and their corporate seals to be hereto affixed, this **21st** day of **April, 2021.**

HARTFORD, CONN. — TRAVELERS CASUALTY AND SURETY COMPANY OF AMERICA
HARTFORD, CONN. — TRAVELERS CASUALTY AND SURETY COMPANY
CORPORATE SEAL — ST. PAUL FIRE AND MARINE INSURANCE COMPANY

State of Connecticut

By: _____
Robert L. Raney, Senior Vice President

City of Hartford ss.

On this the **21st** day of **April, 2021**, before me personally appeared **Robert L. Raney**, who acknowledged himself to be the Senior Vice President of each of the Companies, and that he, as such, being authorized so to do, executed the foregoing instrument for the purposes therein contained by signing on behalf of said Companies by himself as a duly authorized officer.

IN WITNESS WHEREOF, I hereunto set my hand and official seal.

My Commission expires the **30th** day of **June, 2026**

ANNA P NOWIK — NOTARY PUBLIC — CONNECTICUT

_____
Anna P. Nowik, Notary Public

This Power of Attorney is granted under and by the authority of the following resolutions adopted by the Boards of Directors of each of the Companies, which resolutions are now in full force and effect, reading as follows:

RESOLVED, that the Chairman, the President, any Vice Chairman, any Executive Vice President, any Senior Vice President, any Vice President, any Second Vice President, the Treasurer, any Assistant Treasurer, the Corporate Secretary or any Assistant Secretary may appoint Attorneys-in-Fact and Agents to act for and on behalf of the Company and may give such appointee such authority as his or her certificate of authority may prescribe to sign with the Company's name and seal with the Company's seal bonds, recognizances, contracts of indemnity, and other writings obligatory in the nature of a bond, recognizance, or conditional undertaking, and any of said officers or the Board of Directors at any time may remove any such appointee and revoke the power given him or her; and it is

FURTHER RESOLVED, that the Chairman, the President, any Vice Chairman, any Executive Vice President, any Senior Vice President or any Vice President may delegate all or any part of the foregoing authority to one or more officers or employees of this Company, provided that each such delegation is in writing and a copy thereof is filed in the office of the Secretary; and it is

FURTHER RESOLVED, that any bond, recognizance, contract of indemnity, or writing obligatory in the nature of a bond, recognizance, or conditional undertaking shall be valid and binding upon the Company when (a) signed by the President, any Vice Chairman, any Executive Vice President, any Senior Vice President or any Vice President, any Second Vice President, the Treasurer, any Assistant Treasurer, the Corporate Secretary or any Assistant Secretary and duly attested and sealed with the Company's seal by a Secretary or Assistant Secretary; or (b) duly executed (under seal, if required) by one or more Attorneys-in-Fact and Agents pursuant to the power prescribed in his or her certificate or their certificates of authority or by one or more Company officers pursuant to a written delegation of authority; and it is

FURTHER RESOLVED, that the signature of each of the following officers: President, any Executive Vice President, any Senior Vice President, any Vice President, any Assistant Vice President, any Secretary, any Assistant Secretary, and the seal of the Company may be affixed by facsimile to any Power of Attorney or to any certificate relating thereto appointing Resident Vice Presidents, Resident Assistant Secretaries or Attorneys-in-Fact for purposes only of executing and attesting bonds and undertakings and other writings obligatory in the nature thereof, and any such Power of Attorney or certificate bearing such facsimile signature or facsimile seal shall be valid and binding upon the Company and any such power so executed and certified by such facsimile signature and facsimile seal shall be valid and binding on the Company in the future with respect to any bond or understanding to which it is attached.

I, **Kevin E. Hughes**, the undersigned, Assistant Secretary of each of the Companies, do hereby certify that the above and foregoing is a true and correct copy of the Power of Attorney executed by said Companies, which remains in full force and effect.

Dated this 13th day of September , 2024 .

HARTFORD, CONN. — TRAVELERS CASUALTY AND SURETY COMPANY OF AMERICA
HARTFORD, CONN. — TRAVELERS CASUALTY AND SURETY COMPANY
CORPORATE SEAL — ST. PAUL FIRE AND MARINE INSURANCE COMPANY

_____
Kevin E. Hughes, Assistant Secretary

To verify the authenticity of this Power of Attorney, please call us at 1-800-421-3880.
Please refer to the above-named Attorney(s)-in-Fact and the details of the bond to which this Power of Attorney is attached.

ACORD®

CERTIFICATE OF LIABILITY INSURANCE

DATE (MM/DD/YYYY)
9/30/2024

THIS CERTIFICATE IS ISSUED AS A MATTER OF INFORMATION ONLY AND CONFERS NO RIGHTS UPON THE CERTIFICATE HOLDER. THIS CERTIFICATE DOES NOT AFFIRMATIVELY OR NEGATIVELY AMEND, EXTEND OR ALTER THE COVERAGE AFFORDED BY THE POLICIES BELOW. THIS CERTIFICATE OF INSURANCE DOES NOT CONSTITUTE A CONTRACT BETWEEN THE ISSUING INSURER(S), AUTHORIZED REPRESENTATIVE OR PRODUCER, AND THE CERTIFICATE HOLDER.

IMPORTANT: If the certificate holder is an ADDITIONAL INSURED, the policy(ies) must have ADDITIONAL INSURED provisions or be endorsed. If SUBROGATION IS WAIVED, subject to the terms and conditions of the policy, certain policies may require an endorsement. A statement on this certificate does not confer rights to the certificate holder in lieu of such endorsement(s).

PRODUCER Midwest Agencies, Inc. 1550 Mike Fahey Street Omaha, NE 68102	CONTACT NAME: Traci Sutton PHONE (A/C, No, Ext): 402-271-2956 FAX (A/C, No): 402-271-2830 E-MAIL ADDRESS: Traci.Sutton@Midwestagenciesinc.com
	INSURER(S) AFFORDING COVERAGE — NAIC #
	INSURER A : Old Republic Insurance Company — 24147
INSURED Kiewit Infrastructure South Co. 6200 Lee Vista Boulevard, Suite 100 Orlando FL 32822	INSURER B : Swiss Re Corporate Solutions America Ins — 29874
	INSURER C :
	INSURER D :
	INSURER E :
	INSURER F :

COVERAGES **CERTIFICATE NUMBER:** 82195478 **REVISION NUMBER:**

THIS IS TO CERTIFY THAT THE POLICIES OF INSURANCE LISTED BELOW HAVE BEEN ISSUED TO THE INSURED NAMED ABOVE FOR THE POLICY PERIOD INDICATED. NOTWITHSTANDING ANY REQUIREMENT, TERM OR CONDITION OF ANY CONTRACT OR OTHER DOCUMENT WITH RESPECT TO WHICH THIS CERTIFICATE MAY BE ISSUED OR MAY PERTAIN, THE INSURANCE AFFORDED BY THE POLICIES DESCRIBED HEREIN IS SUBJECT TO ALL THE TERMS, EXCLUSIONS AND CONDITIONS OF SUCH POLICIES. LIMITS SHOWN MAY HAVE BEEN REDUCED BY PAID CLAIMS.

INSR LTR	TYPE OF INSURANCE	ADDL INSD	SUBR WVD	POLICY NUMBER	POLICY EFF (MM/DD/YYYY)	POLICY EXP (MM/DD/YYYY)	LIMITS	
A	✓ COMMERCIAL GENERAL LIABILITY ☐ CLAIMS-MADE ☑ OCCUR ✓ Contractual Liability ✓ XCU Included GEN'L AGGREGATE LIMIT APPLIES PER: ☐ POLICY ☑ PRO-JECT ☐ LOC ☐ OTHER:	✓	✓	MWZY 312911	3/1/2024	3/1/2025	EACH OCCURRENCE DAMAGE TO RENTED PREMISES (Ea occurrence) MED EXP (Any one person) PERSONAL & ADV INJURY GENERAL AGGREGATE PRODUCTS - COMP/OP AGG $	$5,000,000 $5,000,000 $10,000 $5,000,000 $10,000,000 $10,000,000 $
A	AUTOMOBILE LIABILITY ✓ ANY AUTO ☐ OWNED AUTOS ONLY ☑ SCHEDULED AUTOS ☐ HIRED AUTOS ONLY ☐ NON-OWNED AUTOS ONLY	✓	✓	MWTB 312910	3/1/2024	3/1/2025	COMBINED SINGLE LIMIT (Ea accident) BODILY INJURY (Per person) BODILY INJURY (Per accident) PROPERTY DAMAGE (Per accident) $	$5,000,000 $ $ $ $
B	☐ UMBRELLA LIAB ☑ OCCUR ✓ EXCESS LIAB ☐ CLAIMS-MADE ☐ DED ✓ RETENTION $ N/A	✓	✓	EXS 2000809	3/1/2024	3/1/2025	EACH OCCURRENCE AGGREGATE $	$20,000,000 $20,000,000 $
A	WORKERS COMPENSATION AND EMPLOYERS' LIABILITY ANYPROPRIETOR/PARTNER/EXECUTIVE OFFICER/MEMBER EXCLUDED? Y/N: N (Mandatory in NH) If yes, describe under DESCRIPTION OF OPERATIONS below	N / A	✓	MWC 312908 MWXS 312909 MWFEX 312928-FL MWXS 316021-CA USL&H & Jones Act StopGap	3/1/2024 3/1/2024 3/1/2024 3/1/2024	3/1/2025 3/1/2025 3/1/2025 3/1/2025	✓ PER STATUTE ☐ OTH-ER E.L. EACH ACCIDENT E.L. DISEASE - EA EMPLOYEE E.L. DISEASE - POLICY LIMIT	 $5,000,000 $5,000,000 $5,000,000

DESCRIPTION OF OPERATIONS / LOCATIONS / VEHICLES (ACORD 101, Additional Remarks Schedule, may be attached if more space is required)

Greater Orlando Aviation Authority and the City of Orlando and their members (including without limitation, members of the Owner's board and the City Council and members of the citizens' advisory committees of each), the OAR, and the Designer are additional insured on a primary and non-contributory basis and granted a waiver of subrogation as required by written contract.

RE: H-00370 PCC Apron PCC Slab Rehabilitation

CERTIFICATE HOLDER

Greater Orlando Aviation Authority
Engineering and Construction
One Jeff Fuqua Blvd.
Orlando FL 32827

CANCELLATION

SHOULD ANY OF THE ABOVE DESCRIBED POLICIES BE CANCELLED BEFORE THE EXPIRATION DATE THEREOF, NOTICE WILL BE DELIVERED IN ACCORDANCE WITH THE POLICY PROVISIONS.

AUTHORIZED REPRESENTATIVE
Philip G. Dehn

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SECTION 00 62 76.19 - PARTIAL RELEASE FOR REDUCTION OF RETAINAGE

GREATER ORLANDO AVIATION AUTHORITY

KNOW ALL PERSONS BY THESE PRESENTS, that the undersigned, conditioned upon payment of the sum of _____ DOLLARS ($_____) (payment amount), paid by the Greater Orlando Aviation Authority (hereinafter referred to as "Owner"), does hereby fully and completely discharge and release the Owner from and waives any and all debts, accounts, promises, damages, liens, encumbrances, causes of action, suits, bonds, judgments, claims and demands whatsoever, in law or in equity, which the undersigned ever had, now has or might hereafter have on account of labor performed, material furnished or services rendered, directly or indirectly, for the Contract between the parties, dated_____, known as "H-00370, Airside 3 Apron PCC Slab Rehabilitation , Orlando International Airport," except for the following Claims, if any, which have been properly raised in accordance with the Contract Documents:

_____(list brief description of Claim or list None). All Claims not specifically listed are hereby waived.

The undersigned further covenants that it will use this payment to make full and final payments to all subcontractors, suppliers, materialmen and any or all other persons supplying material, supplies, services or labor used directly or indirectly in the prosecution of the Work.

The undersigned shall maintain in full force and effect the provisions of the Contract Documents respecting the guaranty against defective work, and any other special guaranties required by the Contract Documents, for the terms provided in the Contract Documents, which terms shall begin to run from the date specified in the Contract Documents.

The undersigned represents and warrants that the statements contained in the foregoing Release are true and correct and that the person signing this Release has full authority to bind the Contractor.

IN WITNESS WHEREOF, I hereunto set my hand and seal this_____day of_____, 20_.

WITNESSES:

_____
CONTRACTOR

_____ By:_____

_____ Title: President

(CORPORATE SEAL)
(If Applicable)

This Release Form must be signed by a corporate officer or such other representative of the Contractor with authority to bind the Contractor to this Release.

SECTION 00 62 93 - CONSTRUCTION ADMINISTRATION FORMS

PART 1 - GENERAL

The following listed forms are hereby made a part of the Construction Documents.

PART 2 - PRODUCTS

Index of Construction Administration Forms for Contractor

Form #	Description
01	Parking Permit Office - Release Form
02	Badge & ID Office (Access Control Office) – Release Form
003	Key Shop - Release Form
06	LDB/VBE Designated Mobilization Payment Release Form (Shall not apply if the Project is funded by the State of Florida and requires Disadvantaged Business Enterprise (DBE) participation as defined in the Instructions to Bidders)
07	Certificate of Substantial Completion (CoSC)
008	Substantial Completion Acceptance (SCA)
009	Partial Occupancy/Use Agreement (POUA)
010	Application for Payment Forms
	010-Cover Cover Sheet
	010-Bkdwn Breakdown
	010-SM Stored Materials
	010-DISB Contractor Disbursements to Subcontractors/Suppliers
010A	Remittance Information Request
013A	Owner's Close-Out Documentation Checklist
015	Request for Information
016	Request for Clarification
017	Job Memorandum
18	Electrical System Interruption/Utility Outage Notification
018A	UON Procedures for Contractors and UON Checklist
018B	Roofing Impact Notification (RIN)
018C	Security System Interruption/Utility Outage Notification
018D	TBD Blank Interruption/Utility Outage Notification
018E	Energized Electrical Work Permit
018F	Maintenance of Traffic (MOT) Notification
018G	Smoke Detector Notification
018H	TBD Blank Notification
19	Designer's Supplemental Instructions
20	Utility Service Request (to OUC by Owner)
021	Request for Use of Lot(s) on Canal Road
023	Subcontractor's Sworn Statement of Account
024	Powder Actuated Tools Permit
25	Receipt for Commissioning Closeout Documents
26	City of Orlando Wastewater Division Construction Closeout Checklist
---	Construction Coordination Phone List
---	Airport Layout Plan (ALP) Change Request
	Hot Work (Burn) Permit
	Key Plans and Instructions

PART 3 - EXECUTION

3.1 During the administration of the Contract, the Contractor will be required to complete various construction administration forms as a part of the Greater Orlando Aviation Authority's Management System. These forms are identified in the "Index of Construction Forms" and will be issued at the Pre-Construction Conference. These forms may be revised during the construction period and the Contractor will be required to comply with these revisions.

END OF SECTION 00 62 93

ANDERSON
& ASSOCIATES, P.A.
Advocating and Protecting Legacies

225 North French Avenue
Sanford, Florida 32771
(407) 843-9901 – Phone
(407) 843-9903 - Fax

ATTORNEYS & COUNSELORS at LAW

August 23, 2024

MEMORANDUM

TO: Iranetta Dennis, Vice President, Small Business Development

FROM: Veronica Anderson, Esq. VA

RE: H 00370 Airside 3 Apron PCC Slab Rehabilitation DBE Good Faith Efforts, Pursuant to 49 CFR Part 26, Appendix A

Introduction

This project was originally opened for bids on July 31, 2024. Subsequently, the Authority rejected the bids, due to all bids being over the budget. Thereafter, the scope of work was reduced and sent out for bids again. On August 13, 2024, the bidders received notice of bid rejection and received a new bid date of August 20, 2024. The Middlesex Corporation ("MC") responded with a bid of $841,357 and DBE participation of $25,826 for 3.1% participation. The DBE goal established for the project was 7%.

MC included good faith effort documentation in their bid package, to explain their inability to meet the DBE goal. The purpose of this memorandum is to evaluate MC's good faith efforts (GFE) to utilize Disadvantaged Business Enterprises (DBEs) in compliance with 49 CFR Part 26, Appendix A.

Today, I communicated with MC'S Chief Estimator, Jim Carr, to review the documentation included in the bid package. Below is a summary of MC's GFE Documentation.

Solicitation Efforts

- **Outreach to DBEs:** MC has a project management system that sends out electronic bid notification and emails to subcontractors. This tool is also used to conduct outreach to DBE's. On this project, MC sent out project information and followed up with some calls.
- **Timing of Solicitations:** There was a short window for MC to re-submit their bid; therefore, the DBE's MC solicited were held to the same timeframe. When asked about the initial bid, Mr. Carr noted that they did not meet the DBE goal in the initial bid either.
- **Documentation:** In the re-bid documents, MC provided emails, bid tracking and outreach logs, showing their outreach efforts. The logs of subcontractors does not include DBE's in marking/stripping or maintenance of traffic. There are DBE firms, in these lines of business, listed in the UCP that were not listed on the MC lists and tracking logs.

Information Provided to DBEs

- **Project Information:** MC sent detailed project information to DBEs via "Building Connected," which is a project management and vendor database system that provides MC with the tools to conduct outreach to subcontractors, including DBE's. The system provides access to necessary plans, specifications, and requirements.
- **Negotiations:** Mr. Carr stated that there was not enough time to negotiate the scope of work between two of the subcontractors solicited: Brevard Concrete and Paving, Inc. and Gosalia Concrete Constructors, where MC may have been able to negotiate their scopes and obtained better DBE participation. MC did not follow up to negotiate the scope of work.

Assistance Provided to DBEs

Technical Assistance: There was no technical assistance offered. MC said there was no opportunity to break down contract work into smaller, more manageable tasks to facilitate DBE participation, due to the limited scope of work.

Comparison to Similar Projects

MC rejected a DBE (Gosalia Concrete Constructors, Inc.) and selected a DBE, who is not certified in the proper NAIC for construction, where the DBE participation could not be counted, and to MC's credit, was not offered for DBE participation. The second low bidder listed the DBE, for a higher amount and additional scope, that MC rejected. MC admitted had they taken more time, they may have been able to include Gosalia Concrete Constructors, Inc. to increase their DBE participation.

Conclusion

MC informed me that the project had a limited scope of work; the rebid date of August 13, 2024, left only 2 days to get quotes, because of the internal review that had to take place. Brevard Concrete Paving, Inc., a DBE, whose NAIC does not address construction services, required MC to accept their entire bid, and not remove a section for subcontract to another company, or Brevard Concrete Paving, Inc. would not honor the bid. MC, decided to go with Brevard Concrete Paving, Inc., which resulted in lower DBE participation.

Coincidentally, MC had the same time constraints to make a GFE to meet the DBE goal as did Kiewit Infrastructure South Co., the second lowest bidder. However, the second low bidder was able to meet the goal. It should be noted that following my conversation with Mr. Carr, he forwarded additional GFE documentation. However, this documentation was not analyzed, because MC did not include this documentation in their bid package, at the time of bid opening.

In conclusion, MC needed to demonstrate that that it took all necessary and reasonable steps to achieve a DBE goal and that by their scope, intensity, and appropriateness to the objective, could reasonably be expected to obtain sufficient DBE participation, even if they were not fully successful in meeting the goal. In my opinion, with additional effort, the apparent low bidder could have met the goal or come much closer to meeting the

goal. Additionally, there were other scopes of work that were not included in the MC directory for DBE outreach, such as maintenance of traffic, marking and stripping, etc. Considering the foregoing, I conclude that MC did not sufficiently document GFE.

SECTION 00 63 73 – ADDENDUM NO. 1 TO CONTINUING CONSTRUCTION AGREEMENT

THIS ADDENDUM, made and entered into this Oct 7, 2024 day of _____, in the year 2024, by and between the **GREATER ORLANDO AVIATION AUTHORITY,** hereinafter called the Owner, and **KIEWIT INFRASTRUCTURE SOUTH CO.,** hereinafter called the Contractor.

The Contractor, for and in consideration of the Total Contract Price specified below, hereby agrees to furnish all labor, equipment, materials, supplies and services, to complete the Work in conformity with the Contract Documents for **H-370, Airside 3 Apron PCC Slab Rehabilitation, Orlando International Airport**. The Contractor agrees to make payment of all proper charges for labor, equipment, materials, supplies and services, and to defend, indemnify, and hold harmless the Owner in accordance with the Contract Documents. If the Contractor shall fail to comply with any of the terms of the Contract Documents, the Owner may avail itself of any or all remedies provided in the Contract Documents. The acceptance of final payment by the Contractor shall be considered as a release in full of all claims against the Owner or any of their members, officers, agents, employees or servants, directly or indirectly relating to, arising out of, or by reason of, this Contract, except for those Claims that have been properly raised in accordance with the Contract Documents and specifically identified by the Contractor as unsettled in the final Application for Payment.

The Owner will pay the Contractor for the Work, according to the terms set forth in the Contract Documents the Total Contract Price of EIGHT HUNDRED EIGHTY-FIVE THOUSAND NINE HUNDRED NINETEEN AND NO/100 DOLLARS ($885,919.00) subject to approved Contract Modifications, if any.

The Contractor hereby certifies it will utilize the U.S. Department of Homeland Security's Employment Eligibility Verification System, in accordance with the terms governing the use of the system, to confirm the employment eligibility of persons employed by the Contractor, during the term of the Contract, to perform employment duties within Florida. The Contractor specifically represents that it will not discontinue use of the System until every Contract with the Owner has reached Final Completion and all contractual obligations have been fulfilled. The Contractor further certifies that it will include this provision in each Subcontract that involves work for the Owner.

W I T N E S S E T H

WHEREAS, by Agreement dated February 24, 2023, the Owner and Contractor entered into an agreement to provide continuing construction services at the Orlando International Airport, Orlando Executive Airport and other facilities operated by the Owner. Services under the Agreement shall be set forth in this addendum to the Agreement, hereinafter called the Contract; and

IN WITNESS WHEREOF, Owner has caused this Contract to be executed in its name by its Chief Executive Officer or an Aviation Authority Officer or Construction Committee Chairman; and the Contractor has caused this Contract to be executed in its name by Nicholas Sosa Vise President (Name), its _____ (Title), all on the day and year first above written.

GREATER ORLANDO AVIATION AUTHORITY

By: box SIGN 1V3Q39J4-1XX65738
Kevin J. Thibault, P.E.
Chief Executive Officer

Approved as to Form and Legality
(for the benefit of GOAA only)
this 1 day of Oct, 2024

Karen Ryan
By: box SIGN 1J8RLK51-1XX65738
NELSON MULLINS RILEY AND SCARBOROUGH, Legal Counsel
Greater Orlando Aviation Authority

KIEWIT INFRASTRUCTURE SOUTH CO.

By: _____
Contractor Signature

Nick Sosa VP
Contractor Typed Name/Title

(SEAL)



SECTION 00 65 19.29 - FINAL RELEASE FORM

GREATER ORLANDO AVIATION AUTHORITY

KNOW ALL PERSONS BY THESE PRESENTS, that the undersigned, **conditioned upon payment** of the sum of _____ DOLLARS ($_____) (final total Contract amount), paid by the Greater Orlando Aviation Authority (hereinafter referred to as "Owner"), does hereby fully and completely discharge and release the Owner from and waives any and all debts, accounts, promises, damages, liens, encumbrances, causes of action, suits, bonds, judgments, claims and demands whatsoever, in law or in equity, which the undersigned ever had, now has or might hereafter have on account of labor performed, material furnished or services rendered, directly or indirectly, for the Contract between the parties, dated_____, known as " H-00370, Airside 3 Apron PCC Slab Rehabilitation , Orlando International Airport," except for those claims, disputes and other matters arising out of or relating to said Contract which have been raised by written demand in accordance with the Contract Documents prior to this date and identified by the Contractor as unsettled in the final Application for Payment.

The undersigned further covenants that all subcontractors, suppliers, materialmen and any or all other persons supplying material, supplies, services or labor used directly or indirectly in or for the Work will be paid in full upon receipt of final payment from Owner.

The undersigned shall maintain in full force and effect the provisions of the Contract Documents respecting the guaranty against defective work, and any other special guaranties required by the Contract Documents, for the terms provided in the Contract Documents, which terms shall begin to run from the date specified in the Contract Documents.

The undersigned represents and warrants that the statements contained in the foregoing Release are true and correct.

IN WITNESS WHEREOF, I hereunto set my hand and seal this_____day of_____, 20 ____

WITNESSES:

_____
CONTRACTOR

_____ By:_____

_____ Title:_____

(CORPORATE SEAL)

Final Release Form must be signed by a corporate officer or such other representative of the Contractor with authority to bind the Contractor to this Release.

SECTION 00 65 19.33 - SUBCONTRACTOR FINAL RELEASE FORM

GREATER ORLANDO AVIATION AUTHORITY

KNOW ALL PERSONS BY THESE PRESENTS, that the undersigned, conditioned upon payment of the sum of _____ DOLLARS ($_____) (final total Contract amount), paid by the Contractor does hereby fully and completely discharge and release the Greater Orlando Aviation Authority from and waives any and all debts, accounts, promises, damages, liens, encumbrances, causes of action, suits, bonds, judgments, claims and demands whatsoever, in law or in equity, which the undersigned ever had, now has or might hereafter have on account of labor performed, material furnished or services rendered, directly or indirectly, for the Project known as " H-00370, Airside 3 Apron PCC Slab Rehabilitation , Orlando International Airport," except for those Claims made in accordance with the Contract Documents prior to this date and identified by the Contractor as unsettled in the Contractor's final Application for Payment.

This Final Release and Waiver is conditioned upon receipt of the final payment from the Contractor in the amount of_____Dollars ($_____) and is not effective until that payment is received.

The undersigned further covenants that all sub-subcontractors, suppliers, materialmen and any or all other persons supplying material, supplies, services or labor used, directly or indirectly, on or for the Project have been paid in full.

The undersigned shall maintain in full force and effect all guaranties against defective work, and any other special guaranties required by the Subcontract.

The undersigned represents and warrants that the statements contained in the foregoing Release are true and correct.

IN WITNESS WHEREOF, I hereunto set my hand and seal this_____day of_____, 20 ____

WITNESSES:

_____
SUB CONTRACTOR

_____ By:_____

_____ Title:_____

(CORPORATE SEAL)

Final Release Form must be signed by a corporate officer or such other representative of the Sub Contractor with authority to bind the Sub Contractor to this Release.

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SECTION 00 72 13 - GENERAL CONDITIONS OF THE CONTRACT FOR CONSTRUCTION

ARTICLE 1 GENERAL PROVISIONS

1.1 BASIC DEFINITIONS

1.1.1 Bid

The bid consists of the Bid Form, Bid Security, Exhibits, schedules and other documents required to be submitted by a bidder in accordance with the Instructions to Bidders.

1.1.2 Bid Documents

The Bid Documents consist of the Bid, Project Manual, Drawings, Specifications, written Instructions to Bidders, Invitation to Bid, Addenda, and the documents, reports and information referenced in such Bid Documents.

1.1.3 Contract Documents

The Contract Documents consist of the executed Agreement between the Owner and Contractor, the Bid Documents, and Contract Modifications issued after execution of the Agreement.

1.1.4 Conformed Contract Documents

For ease of administration of the Contract, the Owner may elect to have the Designer conform the Contract Documents. Conformed Contract Documents consist of the Bid Documents which are revised to incorporate information contained within the Addenda. If the Contract Documents have been conformed, the Contractor is responsible for verifying that the Addenda are accurately incorporated into the Conformed Contract Documents before relying on them for purposes of construction. Conformed Contract Documents are for convenience and do not supersede the information contained within the Contract Documents.

1.1.5 Contract

The phrase Contract may be used as an abbreviation for Contract Documents, which together form the Contract for Construction.

1.1.6 Record Documents

The Record Documents consist of those documents assembled by the Designer at the conclusion of the Contractor’s performance of construction or service. Record Documents are developed from as-built drawings, as-built specifications and any other documents required to be submitted by the Contractor for closing out the Project. The Record Documents shall accurately document the Work as constructed, including all Contract Modifications and Changes.

1.1.7 Contract Modifications

A Contract Modification is (1) a Change Order, (2) a Construction Change Directive, or (3) a Field Change Order.

1.1.8 Work

The "Work" means the construction and services required by the Contract Documents, whether completed or partially completed, and includes all other labor, materials, equipment and services provided or to be provided by the Contractor to fulfill the Contractor's obligations. The Work may constitute the whole or a part of the Project.

1.1.9 Project

The Project is the total construction of which the Work performed under the Contract Documents may be the whole or a part and which may include construction by the Owner or by separate contractors.

1.1.10 Project Manual

The Project Manual consists of one or more volumes of bound documents assembled for the Work which may include the bidding requirements, sample forms, Conditions of the Contract and Specifications.

1.1.11 Drawings

The Drawings are the graphic and pictorial portions of the Contract Documents, wherever located, showing the design, location and dimensions of the Work, generally including, plans, elevations, sections, details, schedules and diagrams.

1.1.12 Specifications

The Specifications are those portions of the Contract Documents consisting of the written requirements for materials, equipment, construction systems, standards and workmanship for the Work, and performance of related services.

1.1.13 Liquidated Damages

Liquidated Damages are those damages identified in the Instructions to Bidders that the Owner may assess against the Contractor and its Surety for the Contractor’s tardy Substantial or Final Completion of the Work.

1.1.14 Contract Time

Unless otherwise provided, Contract Time is the period of time, including adjustments authorized by a Contract Modification, to achieve Substantial Completion of the Work and is measured by actual calendar days.

1.1.15 Day

The term “day” as used in the contract documents shall mean calendar day unless otherwise specified. When any contractual obligation is measured by the number of days and the deadline date falls on a legal holiday or weekend when the Owner’s office is closed, the obligation will be allowed to be completed on the next business day without penalty.

1.1.16 Substantial Completion

Substantial Completion is the date when the Work, or designated portion thereof, is deemed by the OAR and Designer to be sufficiently complete in accordance with the requirements of the Contract Documents, agreed to by the Owner, and includes but is not limited to compliance with the requirements of Article 9 and Section 01 78 00, having been fulfilled.

1.1.17 Final Completion

Final Completion is the date when final acceptance of the Work in accordance with the Contract Documents is achieved and all other Contract requirements have been fully performed, including the delivery of all required close-out documentation.

1.1.18 Owner

The Owner is the Greater Orlando Aviation Authority.

1.1.19 Owner’s Authorized Representative (OAR)

The OAR is the person or entity that is selected by the Owner and identified at the Pre-Construction Conference to perform the OAR's responsibilities of the Contract Documents.

1.1.20 Contractor

The Contractor is the person or entity identified as such in the Agreement and is referred to throughout the Contract Documents as if singular in number.

1.1.21 Designer

The Designer is the person or entity lawfully licensed in Florida to provide architectural or engineering services identified as such in the Contract Documents and is referred to throughout the Contract Documents as if singular in number. The term "Designer" means the Designer or the Designer's authorized representative.

1.1.22 Claim

A Claim is a demand or assertion, made by written notice and quantified pursuant to Article 4, by the Owner or Contractor seeking, as a matter of right, adjustment or interpretation of Contract terms, payment of

money, extension of time or other relief with respect to the terms of the Contract.

1.1.23 Subcontractor

A Subcontractor is a person or entity who has a direct contract with the Contractor to furnish labor, material, or services for the Work. The term "Subcontractor" is referred to throughout the Contract Documents as if singular in number and means a Subcontractor or an authorized representative of the Subcontractor.

1.1.24 Sub-Subcontractor

A Sub-subcontractor is a person or entity who has a direct or indirect contract with a Subcontractor to furnish labor, material, or services for the Work. The term "Sub-subcontractor" is referred to throughout the Contract Documents as if singular in number and means a Sub-subcontractor or an authorized representative of the Sub-subcontractor.

1.2 EXECUTION AND INTENT

1.2.1 The applicable Contract Documents shall be signed by the Owner and Contractor.

1.2.2 The intent of the Contract Documents is to include all information necessary for the proper execution and completion of the Work by the Contractor. The Contract Documents are complementary, and what is required by one portion shall be as binding as if required by all. Performance by the Contractor shall be required only to the extent consistent with the Contract Documents and reasonably inferable as being necessary to produce the intended results. The Drawings indicate arrangements and results to be accomplished and the Contractor shall provide such necessary fastenings and accessories. If a conflict exists between the Contract Documents, the Order of Preference provision contained in Paragraphs 1.6.1 and 1.6.2 shall apply.

1.2.3 Organization of the Specifications into divisions, sections and articles, and arrangement of Drawings shall not control the Contractor in dividing the Work among Subcontractors or in establishing the extent of Work to be performed by any trade.

1.3 OWNERSHIP AND USE OF DESIGNER'S DRAWINGS, SPECIFICATIONS AND OTHER DOCUMENTS

1.3.1 All Drawings, Specifications and other documents prepared by the Designer are and shall remain the property of the Owner, and the Owner shall retain all common law, statutory and other reserved rights with respect thereto. They shall not be used on any other project without the prior written consent of the Owner, and the Contractor shall take such action as may be necessary to prevent their use on any other project or for additions to the Project outside the scope of the Work by any Subcontractor or material and equipment Supplier. The Contractor, Subcontractors, and material and equipment Suppliers are granted a limited license to use and reproduce applicable portions of the Drawings, Specifications and other documents prepared by the Designer appropriate to and for use in the execution of their Work under the Contract Documents. Submittals or distributions necessary to meet official regulatory requirements or for other purposes relating to completion of the Project are not to be construed as a publication in derogation of the Owner's copyright or other reserved rights.

1.4 CAPITALIZATION

1.4.1 Terms capitalized in these General Conditions include those which are: (1) specifically defined, and (2) the titles of numbered articles and identified references to Paragraphs in the document.

1.5 INTERPRETATION

1.5.1 In the interest of brevity, the Contract Documents frequently omit modifying words such as "all" and "any," and articles such as "the" and "an," but the fact that a modifier or an article is absent from one statement and appears in another is not intended to affect the interpretation of either statement.

1.5.2 Unless otherwise stated in the Contract Documents, words which have well-known technical or construction industry meanings are used in the Contract Documents in accordance with such recognized meanings.

1.6 ORDER OF PRECEDENCE

1.6.1 The Order of Precedence for the Contract Documents shall be as follows:

1. Contract Modifications
2. Executed Contract Agreement
3. Bid Addenda
4. Special Conditions
5. Supplemental Conditions
6. General Conditions
7. Specifications and Drawings. Drawings take precedence over Specifications as to quantity and location. Specifications take precedence over Drawings as to quality of materials and workmanship.
8. Unit Price Schedules contained in the Contractor's Bid
9. Instructions to Bidders and all portions thereof containing information required from the Contractor
10. Invitation to Bid
11. Measurements by Scale

1.6.2 The more stringent requirements shall apply in the event any conflicts cannot be resolved by applying the Order of Precedence.

1.7 STANDARD FORMS

The following forms shall be utilized in the execution of the Work:

1.7.1 REQUEST FOR INFORMATION (RFI): A RFI shall be utilized in the field to present any questions or interpretations requested by the Contractor. The OAR shall, upon receipt, secure a response from an appropriate source. The OAR will provide the Contractor with a written response to the RFI with reasonable promptness to avoid or minimize delay in the progress of the Work.

1.7.2 REQUEST FOR CHANGE ORDER (RCO): A RCO shall be utilized by the Contractor to formally present any request for monetary, time, or contractual adjustment. The RCO shall provide justification for entitlement to the change and shall be substantiated in accordance with Article 7.

1.7.3 DESIGNER'S SUPPLEMENTAL INSTRUCTION (DSI): A DSI shall be utilized by the Designer to provide clarifications or supplemental information to the Contractor. The intent of the DSI is for the Designer to clarify and supplement the existing requirements of the Contract. A DSI may not modify the scope of Work.

1.7.4 BULLETIN: A Bulletin shall be utilized by the OAR to indicate proposed modifications to the drawings or specifications. Upon receipt of a Bulletin, the Contractor shall submit a detailed breakdown of costs (adds or deducts) in the form of a Request for Change Order (RCO) for review by the Owner and OAR.

1.7.5 CHANGE ORDER (CO): A CO shall be utilized to formalize modifications to the Contract that are agreed to by the Owner and Contractor in accordance with Paragraph 7.2.

1.7.6 CONSTRUCTION CHANGE DIRECTIVE (CCD): A CCD shall be utilized in the absence of an agreement on a CO to express a written order by the Owner directing a change in the Work in accordance with Paragraph 7.3.

1.7.7 FIELD CHANGE ORDER (FCO): A FCO may be utilized for immediate direction and authorization to proceed with Changes in the Work in accordance with Paragraph 7.4.

1.7.8 JOB MEMORANDUM (JM): A JM shall be utilized by the OAR to communicate in writing to the Contractor either a deficiency in the Work or other action required of the Contractor. The Contractor shall provide a written response to the OAR with reasonable promptness.

ARTICLE 2 OWNER

2.1 INFORMATION AND SERVICES REQUIRED OF THE OWNER

2.1.1 The Owner shall furnish the Contractor with the name of the person or firm who shall be the OAR for the purpose of all communication required between the Owner and the Contractor.

2.1.2 The Owner shall not be responsible for furnishing surveys or other information as to the physical characteristics of or utility locations for the Project site.

2.1.3 The Owner disclaims all responsibility whatsoever with respect to the sufficiency or accuracy of test borings made, or of the logs of test borings, or of other investigations or records of subsurface conditions (including but not limited to, underground utility locations, or of the interpretations made thereof), and there is no warranty or guaranty, expressed or implied, that the conditions indicated by such test borings, logs, investigations, records, or information are representative of conditions existing throughout the Work site, or any part thereof, or that unforeseen developments may not occur. At the Owner's request, the Contractor shall make available to the Owner the results of any surface or subsurface investigations of the site, test borings, analyses, studies or other tests conducted by or in possession of the Contractor or any of its agents.

2.1.4 The Owner shall secure and pay for any easements, transportation and sewer benefit fees, Orlando Utilities Commission system development charges and threshold inspections associated with the Work. The Contractor shall secure and pay for all other permits, inspections, fees and notices, as set forth more particularly in Article 3.

2.2 OWNER'S RIGHT TO STOP OR SUSPEND THE WORK

2.2.1 If the Contractor fails to correct Work which is not in accordance with the requirements of the Contract Documents or fails to carry out Work in accordance with the Contract Documents within seven (7) days from the date of the OAR's written notice to the Contractor describing such failure, the Owner may order the Contractor to stop the Work, or any portion thereof, until the cause for such order has been eliminated. The right of the Owner to stop the Work shall not give rise to a duty on the part of the Owner to exercise this right for the benefit of the Contractor or any other person or entity. This right shall be in addition to, and not in restriction of, the Owner's other rights arising from the Contract Documents or law.

2.2.2 The Owner may suspend the Work, in whole or in part, for such period of time as it may deem necessary, due to abnormal inclement weather, or any other circumstances which, in the Owner's discretion, requires a suspension of the Work. An order by the Owner to suspend the Work shall be in writing except in cases of bona fide emergencies. In the event the Work is suspended under this paragraph, for reasons beyond the Contractor's control or for unforeseen circumstances not otherwise provided for in the Contract Documents which could not have reasonably been anticipated or avoided by the Contractor, the Contractor shall be granted an appropriate extension of Contract Time for the period of suspension, which shall not exceed the day-for-day period of suspension, and an equitable adjustment to the Total Contract Price for the increased direct costs of maintaining and securing the Project during the suspension period, subject to the limitations of Article 7.

2.2.3 The Contractor shall not be entitled to receive any increase in the Contract Time or the Total Contract Price for work stopped or suspended by the Owner under Paragraph 2.2.1 or for suspensions under Paragraph 2.2.2 which are either: (1) made at the request of the Contractor for its own convenience; (2) attributable to circumstances caused by the Contractor or those for which the Contractor is responsible; (3) attributable to circumstances which reasonably could have been anticipated or avoided by the Contractor; (4) attributable to inclement weather conditions usually experienced at the project site during the relevant time period (as defined in Article 7); or (5) attributable to circumstances otherwise anticipated in the Contract Documents.

2.3 OWNER'S RIGHT TO CARRY OUT THE WORK

2.3.1 If the Contractor defaults or neglects to carry out the Work in accordance with the Contract Documents and fails within a seven-day period after receipt of written notice from the Owner to commence and continue correction of such default or neglect with diligence and promptness, the Owner may, without prejudice to other remedies the Owner may have, commence and continue to carry out the Work or any portion thereof. In such case, an appropriate Change Order or Construction Change Directive shall be issued deducting from payments then or thereafter due the Contractor the cost of correcting such deficiencies, including compensation for the OAR's and Designer's additional services and for all other expenses made necessary by such default, neglect or failure and all damages, costs, expenses or losses caused by such default, neglect or failure. If payments then or thereafter due the Contractor are not sufficient to cover such amounts owed to the Owner, the Contractor shall pay the difference to the Owner within thirty days after receiving a demand for payment pursuant to a Contract Modification. The right of the Owner to carry out the Work shall not give rise to any duty on the part of the Owner to exercise this right for the benefit of the Contractor or any other person or entity.

ARTICLE 3 CONTRACTOR

3.1 REVIEW OF CONTRACT DOCUMENTS AND FIELD CONDITIONS BY CONTRACTOR

3.1.1 The Contractor acknowledges and declares that the Contract Documents are sufficient to

enable the Contractor to complete the Work as shown in the Contract Documents or, if not specifically shown, to perform the activities which may be reasonably inferred as necessary for completion of the Work in accordance with the requisite time frame, applicable laws, statutes, building codes, regulations, or as otherwise required by the Contract Documents.

3.1.2 The Contractor shall take field measurements, verify field conditions and carefully compare such field measurements and conditions and other information known to the Contractor with the Contract Documents before commencing activities. Errors, inconsistencies or omissions discovered shall be immediately reported in writing to the OAR. If the Contractor performs any construction activity which the Contractor knows or should have known contains an error, inconsistency or omission, the Contractor shall be responsible for such performance and shall bear the cost for correction.

3.1.3 The Contractor represents that it is familiar with the Project site and has received all information it needs concerning the conditions of the Project site. The Contractor represents that it has inspected the location of the Work and has satisfied itself as to the location and condition thereof, including, without limitation, the location and condition of all structures, utilities, and surface and subsurface conditions. At no additional cost to the Owner, the Contractor shall undertake all further investigations and studies as may be necessary or useful to determine the location and condition of structures, utilities, surface and subsurface conditions. The Contractor shall exercise special care in executing Work in proximity of known utilities, improvements, and easements. The Contractor shall be solely responsible for the location of any existing utilities. Based upon the foregoing inspections, understandings, agreements and acknowledgments, the Contractor agrees and acknowledges: (i) that the Total Contract Price is just and reasonable compensation for all the Work, including all reasonably foreseen and foreseeable risks, hazards, and difficulties in connection therewith; (ii) that the Contract Time is adequate for the performance of the Work; and (iii) that the Work shall not result in any unintended lateral or vertical movement of any existing structure. The Contractor shall have no claims for concealed or unknown conditions except as described in Paragraph 4.3.5.

3.2 SUPERVISION AND CONSTRUCTION PROCEDURES

3.2.1 The Contractor shall supervise and direct the Work, using the Contractor's best skill and attention. The Contractor shall be solely responsible for and have control over construction means, methods, techniques, sequences and procedures and for coordinating all portions of the Work under the Contract including coordination of the duties of all Subcontractors and Suppliers, unless the Contract Documents give other specific instructions concerning these matters.

3.2.2 The Contractor shall control its operations and those of its Subcontractors and Suppliers to assure the least inconvenience to the traveling public. Under all circumstances, safety shall be the most important consideration.

3.2.3 The Contractor shall be responsible to the Owner for acts and omissions of the Contractor's employees, Subcontractors and their agents and employees, and all other persons performing portions of the Work for which the Contractor is responsible.

3.2.4 The Contractor shall not be relieved of obligations to perform the Work in accordance with the Contract Documents either by activities or duties of the OAR in the OAR's administration of the Contract, or by tests, inspections, or approvals required or performed by persons other than the Contractor.

3.2.5 The Contractor shall be responsible for inspection or examination of portions of Work already performed under this Contract to determine that such portions are in proper condition to receive subsequent Work. The Contractor shall keep full detailed written records of all inspection or examination efforts. These

written records shall include dates, subject matter, persons present, results of inspections or examinations and shall be made available to the Owner, if requested.

3.2.6 If any of the Work is required to be inspected or approved by the Contract Documents or by any laws, ordinances, rules, regulations or orders of public authorities, the Contractor shall cause such inspection or approval to be performed. No test, inspection or examination performed or failed to be performed by the Owner, shall be a waiver of the enforcement of any of the Contractor's obligations.

3.2.7 The Contractor is fully responsible to provide a sufficient number of skilled workers, supervision, and project management personnel, to prosecute the Work and insure that the Work is completed within the Contract Time. Failure to fully staff the Project with skilled workers, supervision, or project management personnel shall be cause for termination of the Contract in accordance with Article 14 or such other remedies as set forth in the Contract Documents. The Contractor assumes all risks of delays or extra costs which may be associated with labor disputes involving the Contractor, its Subcontractors or Suppliers and in no event shall the Contractor be entitled to additional compensation or an extension of Contract Time due to any such labor disputes.

3.3 LABOR, SERVICES AND MATERIALS

3.3.1 Unless otherwise provided in the Contract Documents, the Contractor shall provide and pay for labor, services, materials, equipment, tools, construction equipment and machinery, water, heat, utilities, transportation, and all other facilities and services necessary for proper execution and completion of the Work, whether temporary or permanent and whether or not incorporated or to be incorporated in the Work. The Contractor shall not be entitled, under any circumstances, to any increased cost of doing business, including but not limited to, increased costs of materials, trucking, and fuel.

3.3.2 The Contractor shall enforce strict discipline and good order among the Contractor's employees, Subcontractors, and other persons carrying out the Work. The Contractor shall not permit employment of unfit persons or persons not skilled in tasks assigned to them.

3.3.3 The Contractor shall give preference to the employment of Florida residents, if Florida residents apply for a project specific job and have substantially equal qualifications to those of nonresidents.

3.4 WARRANTY

3.4.1 The Contractor warrants to the Owner that materials and equipment furnished under the Contract will be of good quality and new unless otherwise required or permitted by the Contract Documents and that the Work will conform to the requirements of the Contract Documents. Work not conforming to these requirements, including substitutions not properly authorized by the Owner, may be considered defective. If required by the OAR or Owner, the Contractor shall furnish satisfactory evidence as to the kind and quality of materials and equipment provided in the Work. Warranties required by the Contract Documents shall commence on the Date of Substantial Completion, unless otherwise provided in the Contract Documents. The Contractor shall deliver all required warranty documents before submitting the final application for payment. When the specifications require that a warranty shall be for longer than one year, the Contractor shall ensure that the warranty is issued directly to the Owner as the original purchaser warrantee. Any breach of the warranties will be a breach of this Contract.

3.5 TAXES

3.5.1 The Contractor shall pay all sales, consumer, use or similar taxes for the Work or portions thereof provided by the Contractor, unless otherwise specifically provided in the Contract Documents.

3.5.2 The Contract Price shall be equitably adjusted by Change Order for additional costs resulting from any changes in taxes enacted after the date the bids were received.

3.6 PERMITS, FEES, INSPECTIONS AND NOTICES

3.6.1 Pursuant to Florida Statute 218.70, the "Public Bid Disclosure Act," the Owner gives notice to the Contractor that the Owner does not issue permits for the Work and accordingly there is no fee assessed by the Owner. However, the City of Orlando and other governmental entities may require fees for building and other permits for the Work. Except for the Owner's non-refundable deposit paid to the City of Orlando for commercial permitting referenced in Section 00 72 13, the Contractor shall secure and pay for all required permits that are necessary for the proper execution and completion of the Work, including, but not limited to, all applicable site permits, building permits, engineering, dewatering, National Pollution Discharge Elimination System (NPDES) stormwater management and all other permits required to complete the Work. In addition, except as defined under Owner's responsibilities in Article 2, the Contractor shall procure all required certificates of inspection, use, occupancy and completion. The Contractor shall be responsible for coordinating and scheduling all such permitting agencies' tests and inspections. All required certificates of inspection, use, occupancy and completion shall be delivered to the Owner by the Contractor in sufficient time for occupancy of the Project in accordance with the schedule for the Work. All costs incurred in connection with obtaining any permit, license, test or inspection, including any required overtime in connection therewith, shall be included within the Total Contract Price.

3.6.2 The Contractor shall review the Contract Documents to determine the applicability of any and all laws, ordinances, rules, regulations and lawful orders of public authorities that may govern the Work. The Contractor shall comply with all laws, ordinances, rules, regulations and lawful orders of public authorities governing the Work and shall give all notices required in connection therewith. In addition, the Contractor shall not knowingly violate any zoning or setback requirement or any provision of any recorded covenant.

3.6.3 The Contractor shall notify the Owner and OAR of any discrepancy or potential conflict between the Contract Documents and any building codes or other law or regulations of which the Contractor has knowledge of or should be reasonably able to determine and if the resolution of the conflict actually impacts the Total Contract Price or Contract Time, a Contract Modification shall be issued in accordance with Article 7. If the Contractor performs Work contrary to laws, statutes, ordinances, building codes, rules or regulations, the Contractor shall correct the Work and be responsible for all costs associated therewith.

3.7 ALLOWANCES

3.7.1 Items covered by allowances shall be supplied for such amounts and by such persons or entities as the Owner may direct.

3.7.2 Unless otherwise provided in the Contract Documents:

1. materials and equipment under an allowance shall be selected by the Owner within the time frames required by the current accepted schedule;
2. allowances shall cover the cost to the Contractor of materials, supplies and equipment delivered at the site and all required taxes, plus mark-up in accordance with Paragraph 7.1.13, less applicable trade discounts;

3. whenever allowances are used, the remaining allowance amount, and the Total Contract Price shall be adjusted accordingly by a Contract Modification. The amount of the Contract Modification shall be calculated in accordance with Article 7 and shall reflect the difference between actual costs and the allowance amount and be supported by appropriate substantiating data.

3.7.3 Contractor shall not perform any work under an allowance without an approved Contract Modification. Additional requirements for allowances are contained in Division 1, Section 01 21 00.

3.8 CONTRACTOR'S KEY PERSONNEL

3.8.1 The Contractor shall employ a competent Project Manager and Superintendent during the performance of the Work. The Contractor's Superintendent shall be on the site at all times during the performance of the Work. The Project Manager shall represent the Contractor, and communications given to the Project Manager shall be binding on the Contractor.

3.8.2 The Owner shall have the right but not an obligation to require the Contractor to dismiss from the Project any of the Contractor's project personnel whose performance is not satisfactory to the Owner, and, in such event, the Contractor shall replace such personnel with personnel satisfactory to the Owner.

3.8.3 The resumes of the Contractor's key personnel, including but not limited to the Project Manager and Superintendent that the Contractor intends to use on the Project and an organizational chart shall be submitted to the OAR prior to the commencement of Work.

3.9 CONTRACTOR'S CONSTRUCTION SCHEDULES

3.9.1 Preliminary Schedule. The Contractor shall submit to the OAR a Preliminary Schedule within fourteen (14) days after the date of the Notice of Intent to Award the Contract. The Preliminary Schedule shall be in a bar chart format covering all major items of the Work including construction activities, milestone dates, and procurement of materials and equipment. The Preliminary Schedule shall identify approximate start and finish dates and the sequence in which the Contractor proposes to carry out the Work. The Preliminary Schedule shall be based upon the Contract Time specified in the Contract Documents. Upon receipt by the Contractor of the Notice to Proceed and until the Baseline Schedule is accepted by the OAR, the Contractor shall proceed with the Work in accordance with the Preliminary Schedule.

3.9.2 Baseline Schedule. Within thirty (30) days of the issuance of the Notice to Proceed, the Contractor shall submit to the OAR a proposed Baseline Schedule which shall be in the format as required by the Specifications and Drawings. The OAR will review the proposed Baseline Schedule and present the Contractor with any comments. The Contractor shall resubmit the proposed Baseline Schedule for review within fourteen (14) days after receipt of comments. Upon the OAR's acceptance of the Baseline Schedule, the Contractor shall proceed with the work in accordance with the accepted Baseline Schedule. The OAR's acceptance of the Baseline Schedule shall not impose on the Owner any responsibility to the Contractor for the accuracy or reasonableness of the Baseline Schedule nor shall the review and acceptance relieve the Contractor from full responsibility. Upon acceptance by the OAR, the Baseline Schedule shall be the basis for evaluation of all time related issues, unless and until a Progress Schedule is accepted which supersedes the Baseline Schedule logic. The Owner shall have no obligation to process or issue payment for an Application for Payment until the Contractor's baseline schedule has been accepted by the OAR.

3.9.3 Progress Schedules. Each month the Contractor shall submit a Progress Schedule to update the progress of the Work. Progress Schedules must be submitted with each Contractor's Application for

Payment and the data contained in the Progress Schedule must accurately correspond to the progress of the work information contained in the Contractor's Application for Payment. The Contractor's Progress Schedule must accurately reflect the actual progress of the Work as well as any revisions to the logic, sequence, durations of work activities, or level of detail of the number, description, or division of the work activities. The Owner may refuse to process or issue payment for an Application for Payment without the Contractor's submission of a current, accurate, and updated Progress Schedule that is satisfactory to the OAR. The Contractor's failure to submit such updated Progress Schedule with an Application for Payment shall result in a waiver by Contractor of all claims for the time extensions for the time period covered by the Application for Payment.

3.9.4 If the Contractor's Progress Schedule reflects that the completion of the contract or a contract milestone date is not within the Contract Time, then the Contractor must submit with the Progress Schedule the Contractor's proposed recovery plan for completing the Work within the Contract Time. In the event the Contractor claims entitlement to a time extension which is disputed by the Owner, the Contractor's recovery plan shall not be based upon receiving disputed time extensions.

3.9.5 The Contractor shall fully comply with all time and other requirements of the Contract Documents. The Owner's approval and payment of an Application for Payment, without the submission of a current, accurate Baseline or Progress Schedule, shall not constitute a waiver of either the requirement for such updates or the Owner's right to withhold payment, and the Contractor shall not be relieved from the obligation to complete the Work within the Contract Time.

3.10 DOCUMENTS AND SAMPLES AT THE SITE; AS-BUILT DOCUMENTS

3.10.1 The Contractor shall maintain at the site all approved Shop Drawings, Product Data, Samples and other required submittals and make such documents available to the Owner, Designer and OAR.

3.10.2 The Contractor shall maintain at the site As-Built Documents comprised of one copy of the Drawings, Specifications, Addenda, Change Orders and other Modifications, in good order and marked currently to accurately reflect all as-built conditions, including, but not limited to, all locations of utilities as actually determined or installed and all changes to the Work. These As-Built Documents shall be available to the Owner, Designer and OAR at all times. All As-Built Documents shall be delivered to the OAR for review and acceptance upon completion of the Work, signed by the Contractor to certify that they show complete and exact as-built conditions, stating dimensions, sizes, kinds of materials, and similar matters (including, but not limited to, piping and conduit locations). The Contractor shall be held responsible for all damages arising directly or indirectly out of the Contractor's failure to maintain complete and accurate As-Built Documents and other information.

3.10.3 The Contractor shall maintain at the site all permit Drawings in a manner so as to make them accessible to governmental inspectors and other authorized agencies. All final updated Permit Drawings shall be delivered to the OAR prior to Final Completion.

3.11 SUBMITTALS: SHOP DRAWINGS, PRODUCT DATA AND SAMPLES

3.11.1 Shop Drawings are drawings, diagrams, schedules and other data specially prepared for the Work by the Contractor or a Subcontractor, manufacturer, Supplier or distributor to illustrate some portion of the Work.

3.11.2 Product Data are illustrations, standard schedules, performance charts, instructions, brochures, diagrams and other information furnished by the Contractor to illustrate materials or equipment

for some portion of the Work.

3.11.3 Samples are physical examples which illustrate materials, equipment or workmanship and establish standards by which the Work will be accepted.

3.11.4 Shop Drawings, Product Data, Samples and similar submittals (all of which shall be referred to as "Submittals") are not changes to the Contract Documents, unless incorporated by a Contract Modification. The purpose of Submittals is to demonstrate for those portions of the Work for which Submittals are required, the manner in which the Contractor proposes to conform to the Contract Documents.

3.11.5 Unless the Specifications provide otherwise, the Contractor shall review, approve and submit to the OAR, for review, Submittals required by the Contract Documents with reasonable promptness and in such sequence as to cause no delay in the Work or in the activities of the Owner or of separate contractors. The Contractor shall furnish the Submittals in the format and quantity required by the specifications. By approving and submitting Shop Drawings, Product Data, Samples and similar submittals, the Contractor represents that the Contractor has determined and verified materials, field measurements and field construction criteria related thereto, or will do so, and has checked and coordinated the information contained within such Submittals with the requirements of the Work and of the Contract Documents. Submittals that have not been approved by the Contractor shall be returned by the OAR to the Contractor without review.

3.11.6 The Contractor shall perform no portion of the Work nor purchase any materials requiring review of Submittals until the relevant Submittal has been reviewed in the manner set forth in the Contract Documents. All Work shall be performed in accordance with Submittals which have been reviewed and returned by the OAR in accordance with the Contract Document. Review and return of the submittal does not constitute acceptance by the Owner of modification to the Contract Documents See Article 4.

3.11.7 If the Contractor proposes to deviate from the requirements of the Contract Documents, the Contractor shall separately submit, and identify prominently on the transmittal cover sheet(s) for the Submittal, all proposed deviations from the requirements of the Contract Documents. The Contractor shall provide detailed justification for any deviation request. The Contractor's transmittal cover sheet(s) shall direct, in writing, attention to the specific proposed deviations, and the Submittal shall contain all required data and supporting documentation necessary for evaluation of the proposed deviation. The Owner will make all final determinations for acceptance of the proposed deviation. Any Submittal containing deviations not identified as previously described shall be deemed rejected and require resubmission. When requesting a deviation, the Contractor shall also make the representations contained in the specifications. The Contractor's request for a deviation shall not entitle the Contractor to a time extension.

3.11.8 The Contractor shall direct specific attention, in writing, to revisions on resubmitted Submittals, other than those requested on previous Submittals.

3.11.9 Informational submittals identified in the Contract Documents do not require responsive action.

3.11.10 When the Contract Documents require the Contractor to submit professional certification of performance capabilities of materials, connections, assemblies, systems, equipment, or other aspects of the Work, the Owner shall be entitled to rely upon the accuracy and completeness of such calculations and certifications.

3.11.11 When Shop Drawings, Product Data or Physical Samples are returned to the Contractor stamped REJECTED, NOT APPROVED, RETURNED FOR CORRECTIONS or otherwise not accepted through no fault of the Owner, the Contractor may be required to reimburse the Owner for its additional

expenses incurred as a result of the Contractor's failure to comply with submittal requirements up to a maximum of:

Drawing Sheets	-	$400.00/Drawing Sheet
Product Data	-	$100.00/Cut Sheet
Physical Samples	-	$200.00/Sample

Such sums reflect the damages suffered by the Owner as a result of the Contractor's deficient performance, the actual amount of which cannot be accurately determined as of the time this Contract is awarded, and not as a penalty. The foregoing amounts may be withheld (cumulatively) from the Contractor's Application for Payment each month, as applicable. At or before the final completion, a deductive Contract Modification may be issued to the Contractor by the Owner to reflect all such deductions.

3.12 USE OF SITE AND COORDINATION

3.12.1 The Contractor shall confine operations at the site to the limits of construction shown on the Drawings and shall not unreasonably clutter the site with materials or equipment. The Contractor shall not dispose of debris or waste material on the Owner's property. Hazardous materials shall be disposed of pursuant to applicable state and federal statutes. At no additional cost to the Owner, the Contractor shall take all actions necessary to coordinate the Work with other activities at the Project, including, but not limited to, the ongoing operations of the Owner, and users of the Owner’s facilities.

3.13 CUTTING AND PATCHING

3.13.1 The Contractor shall be responsible for cutting, fitting or patching required to complete the Work or to make its parts fit together properly.

3.13.2 The Contractor shall not damage in whole or in part the Work, other work of the Owner or of separate contractors by cutting, patching or otherwise altering such construction, or by excavation. The Contractor shall not cut or otherwise alter such construction by the Owner or a separate contractor except with written consent of the Owner and of such separate contractor; such consent shall not be unreasonably withheld. The Contractor shall not unreasonably withhold from the Owner or a separate contractor the Contractor's consent to cutting or otherwise altering the Work.

3.14 CLEANING UP

3.14.1 The Contractor, on a daily basis, shall keep the premises and surrounding area free from the accumulation of waste materials or rubbish caused by operations under the Contract. At the completion of the Work, the Contractor shall remove from and about the Project waste materials, rubbish, the Contractor's tools, construction equipment, machinery and surplus materials caused by operations under the Contract. The Contractor shall not dispose of debris or waste material on the Owner’s property or in waste containers (dumpsters) leased by the Owner without prior approval of the Owner.

3.14.2 If the Contractor fails to keep the site clean as provided in the Contract Documents, then, following the Owner’s 48 hour written notice to the Contractor, the Owner may take appropriate action to clean the site and charge such costs to the Contractor.

3.15 ACCESS TO WORK

3.15.1 At all times, the Contractor shall, at no additional cost, provide the Owner, OAR and Designer access to the Work subject to the safety rules and insurance requirements of the particular work area. This access shall include the Contractor's providing reasonable assistance; including, but not limited to, providing ladders, equipment and workers to provide access to the Work or remove/replace heavy objects.

3.16 ROYALTIES AND PATENTS

3.16.1 The Contractor shall pay all royalties and license fees. The Contractor shall defend suits or claims for infringement of patent rights and shall hold the Owner and Designer harmless from loss on account thereof, but shall not be responsible for such defense or loss when a particular design, process or product of a particular manufacturer or manufacturers is required by the Contract Documents. However, if the Contractor has reason to believe that the required design, process or product is an infringement of a patent, the Contractor shall be responsible for such loss unless such information is promptly furnished to the OAR in writing.

ARTICLE 4 ADMINISTRATION OF THE CONTRACT

4.1 ROLE OF THE DESIGNER

4.1.1 The Designer will visit the Project site at appropriate intervals to become generally familiar with the progress and quality of the Work and to determine in general if the Work is being performed in a manner such that when the Work is completed it will be in accordance with the Contract Documents. The Designer will not make exhaustive or continuous on-site inspections to check quality or quantity of the Work unless otherwise provided in the Contract Documents.

4.1.2 The Designer will review and take appropriate action upon the Contractor's Submittals that are defined in the Contract Documents, but only for the limited purpose of checking for conformance with information given and the design concept expressed in the Contract Documents. The Designer's action will be taken with such reasonable promptness as to avoid or minimize delay in the Work or in the activities of the Owner, Contractor, or separate contractors, while allowing sufficient time to permit adequate review. Review of such submittals is not conducted for the purpose of determining the accuracy and completeness of other details such as dimensions and quantities, or for substantiating instructions for installation or performance of equipment or systems, all of which remain the responsibility of the Contractor as required by the Contract Documents. The Designer's review of the Contractor's Submittals shall not relieve the Contractor of the obligations of the Contract Documents. The Designer's review shall not constitute approval of safety precautions or, unless otherwise specifically stated by the Designer, of any construction means, methods, techniques, sequences or procedures. The Designer's review of and action concerning a specific item shall not indicate review of and action concerning an assembly of which the item is a component.

4.1.3 The Designer is the interpreter of the technical requirements and intent of the Contract Documents. The Designer, within a reasonable period of time after receipt of a written request therefore, shall render such interpretations in writing or in the form of drawings to the OAR for forwarding to the Contractor.

4.1.4 The Designer will conduct inspections with the OAR and Contractor to determine if the requirements for Substantial Completion have been satisfied, to prepare the Designer's Substantial Completion punch list, to ensure the Designer's punch list work has been completed and to confirm the

requirements for Final Completion have been satisfied. The OAR will receive and forward to the Designer for review written warranties and related close-out documents required by the Contract Documents and assembled by the Contractor.

4.1.5 The Designer will not have control over, charge of or be responsible for construction means, methods, techniques, or procedures, or for safety precautions and programs in connection with the Work. These are solely the Contractor's responsibility.

4.1.6 Based upon Designer's periodic site observations, the Designer will review the amounts approved by the OAR on each Application for Payment and will advise the Owner of any apparent issues with the amount approved by the OAR for payment.

4.2 ROLE OF THE OWNER'S AUTHORIZED REPRESENTATIVE (OAR)

4.2.1 The OAR shall provide administration of the Contract as described in the Contract Documents and shall be selected by the Owner. The specific person or entity which will perform the OAR's responsibilities shall be identified at the Pre-Construction Conference. The Owner may be the OAR and the Owner has authority to perform any of the actions that the OAR may perform.

4.2.2 The OAR is the party through whom all communications shall be transmitted to and from the Contractor unless otherwise provided in the Contract Documents. However, the Owner and Contractor are not precluded from direct communications. The Contractor shall copy the OAR with all communications between the Owner and the Contractor if such direct communication occurs. Communications by and with Subcontractors and material Suppliers shall be through the Contractor. The Contractor's communications with the Designer or with separate contractors shall be through the OAR.

4.2.3 The OAR will receive and process the Contractor's submittals, including transmitting the Submittals to the Designer and returning the Designer's and Owner's comments or approvals to the Contractor with such reasonable promptness as to avoid or minimize delay in the Work or the activities of the Owner, Contractor or separate contractors, while allowing sufficient time for the Designer's review, but not less than 14 days after receipt unless otherwise specified in the Contract Documents. The OAR's processing and review of the Submittals shall not relieve the Contractor of its obligations under the Contract Documents and shall not constitute approval of safety precautions or any means, methods, techniques, sequences or procedures.

4.2.4 The OAR is authorized to reject Work which does not conform to the Contract Documents. Whenever the OAR considers it necessary or advisable, the OAR is authorized to require additional inspection, examination or testing of the Work, regardless of the stage of completion or delivery of the Work. However, neither this authority of the OAR nor a decision made in good faith either to exercise or not to exercise such authority shall give rise to a duty or responsibility of the OAR to the Contractor, Subcontractors, material and equipment Suppliers, their agents or employees, or other persons performing portions of the Work.

4.2.5 The OAR will prepare or assist the Owner in preparing Change Orders, Construction Change Directives, and Field Change Orders. The OAR may authorize minor changes in the Work as provided in Article 7.

4.2.6 The OAR, in conjunction with the Designer and the Contractor, will conduct inspections to determine the date or dates of Substantial Completion and the date of Final Completion, will receive and forward to the Owner, for the Owner's review and records, written warranties and other documents required by the Contract Documents and assembled by the Contractor, and will issue a final Certificate for Payment

upon the Contractor's compliance with the requirements of the Contract Documents. Receipt by the OAR or Owner of warranties and other documents at variance with the requirements of the Contract Documents shall not be deemed acceptance of a modification to the Contract Documents or a waiver of any requirement of the Contract documents.

4.2.7 The OAR will not have control over, charge of or be responsible for construction means, methods, techniques, or procedures, or for safety precautions and programs in connection with the Work. These are solely the Contractor's responsibility. However, in the event the Contract Documents expressly require the Contractor to use specific means, methods, techniques, or procedures, the Contractor shall perform the Work in accordance with those express requirements.

4.3 CLAIMS AND DISPUTES

4.3.1 Time Limits and Claim Substantiation. All Claims by either party must be made within fourteen (14) days after occurrence of the event giving rise to such Claim or within fourteen (14) days after the claimant first recognizes the condition giving rise to the Claim, whichever is later. Claims must be initiated by written notice and contain a thorough description of the basis of the Claim with a copy to the other party and the OAR. Daily reports, Applications for Payments and other administrative documents required by the contract do not constitute written notice of a Claim.

4.3.2 The responsibility to substantiate a Claim shall rest with the party making the Claim. All Claims made by Contractor shall be substantiated and quantified within thirty (30) days of the written notice by an itemized, detailed cost breakdown sufficient to analyze the value and impact of the Claim, stating applicable cost and time impacts in accordance with the requirements of Article 7. Failure to comply with the time requirements for notices and substantiation of Claims shall result in a waiver of the applicable Claim. Under no circumstances shall the Contractor be entitled to any indirect, incidental, special, or consequential damages in any proceeding arising out of or relating to this Contract or the breach thereof.

4.3.3 Continuing Contract Performance. Pending final resolution of a Claim, including, but not limited to during the process set forth in Paragraphs 4.4 and 4.5, the Contractor shall proceed diligently with performance of the Work.

4.3.4 By making final payment, the Owner does not waive Claims that arise from: (a) liens, Claims, security interests or encumbrances arising out of the Contract and unsettled at the time final payment is made; (b) latent defects; (c) failure of the Work to comply with the Contract Documents; (d) terms of special warranties required by the Contract Documents; or (e) any claim for overpayment, including, but not limited to, those resulting directly or indirectly from any erroneous measurement, estimate or quantity.

4.3.5 Claims for Concealed, Unforeseen or Unknown Conditions. If conditions are encountered at the site that are (1) concealed physical conditions which differ materially from those indicated in the Contract or (2) unknown physical conditions of an unusual nature, which differ materially from those ordinarily found to exist and generally recognized as inherent in construction activities of the character provided for in the Contract, then the Contractor shall give written notice to the OAR promptly before conditions are disturbed and in no event later than seven (7) days after first observance of the conditions. This notice shall include a written description of the concealed or unknown condition and the Contractor's proposed method to resolve the concealed or unknown condition. If the OAR determines that the conditions at the site are not materially different from those indicated in the Contract and that no change in the terms of the Contract is justified, the OAR shall so notify the Owner and Contractor in writing. The Contractor shall notify the OAR of any opposition to the OAR's determination within seven (7) days after the OAR has given notice of its determination. Substantiation and quantification of any Claims related to concealed or unknown conditions must be provided within thirty (30) days of the date that the Contractor's Claim notice is received by the

OAR. If such concealed or unknown site conditions are encountered, and if the critical path is directly impacted as a result, the Contractor shall be entitled to an adjustment in the Total Contract Time for the delay caused by the correction of concealed or unknown conditions, subject to the requirements of Articles 7 and 8. If such concealed or unknown site conditions are encountered, requests for compensation for the reasonable direct costs that are caused solely by the delay are subject to the requirements of Article 7. If the concealed or unknown condition causes a decrease in the cost of performing the Work, the Owner shall be entitled to deduct the decreased cost from the Total Contract Price.

4.3.6 Injury or Damage to Person or Property. If either party to the Contract suffers injury or damage to person or property because of an act or omission of the other party, of any of the other party's employees or agents, or of others for whose acts such party is legally liable, written notice of such injury or damage, whether or not insured, shall be given to the other party no later than fourteen (14) days after first observance. The notice shall provide sufficient detail to enable the other party to investigate the matter.

4.4 MANDATORY PRE-SUIT MEDIATION

4.4.1 All Claims, disputes, or other matters in question arising out of or relating to the Contract, shall be subject to mandatory pre-suit mediation under the auspices of a mediator to be selected by the parties. Mediation must occur before a lawsuit is filed. Discovery prior to the scheduled mediation shall be limited to one (1) request for production of documents and two (2) depositions per party not exceeding 8 hours total time per deposition. Each party shall equally bear the costs of mediation and shall be solely responsible for its own attorneys' fees and other legal costs prior to and during the mediation process. In the event the case does not settle at mediation, the parties may re-depose either or both witnesses on non-repetitive matters.

4.5 CERTIFICATION OF SUBCONTRACTOR CLAIM

4.5.1 For any Claim made by the Contractor against the Owner, the basis of which includes a Claim by a Subcontractor, or any other person or entity under the Contractor's control, for acts or omissions allegedly attributable to the Owner, the Contractor must certify by affidavit that it has carefully examined each Subcontractor's Claim and has verified the truth and accuracy of each Claim. Such certification under oath must be made by the Contractor prior to the submission of any Subcontractor Claim to the Owner and shall constitute an express condition precedent to the Contractor having a cause of action against the Owner that includes a Subcontractor's claim. A copy of such certification shall be provided to the Owner contemporaneous with the submission of any Subcontractor Claim to the Owner. The Owner will not consider any Claim that has not been properly certified by the Contractor.

4.6 RESOLUTION OF DISPUTES

4.6.1 The parties agree that all legal proceedings that relate in any way to this Contract shall be brought only in the Circuit Court of the Ninth Judicial Circuit in and for Orange County, Florida.

4.6.2 The Contractor shall, within fifteen (15) business days from delivery of notice from the Owner or OAR, produce for examination by the Owner, OAR or an authorized representative of either of them, all of the Contractor's records related to the Work, including, but not limited to, books of account, bills, invoices, payrolls, Subcontracts, Subcontractor payment requests, time sheets/cards, progress records, daily logs, daily reports, and cost accounting records, regarding all of the Contractor's acts and transactions in connection with or relating to or arising by reason of the Contract, and provide appropriate personnel familiar with such records to explain such records and answer questions regarding any Claims made under

this Contract. The Contractor's failure to furnish the requested information or appear for examination shall result in the Contractor's waiver and release of all Claims arising out of, relating to, or by reason of this Contract, except for the sums certified by the OAR to be due under the provisions of the Contract. It is further stipulated and agreed that no person or entity has power to waive any of the foregoing provisions, and that in any action against the Owner to recover any sum in excess of the sums certified by the OAR to be due under or by reason of this Contract, the Contractor must allege in its complaint and prove, at the trial, compliance with the provisions of this Article 4. In addition to the foregoing, to the extent any Claim by the Contractor includes any claims by Subcontractors, arising under or by reason of this Contract, the Owner shall also have the right through its designees, upon written notice, to require the Subcontractor to produce the above described books and documents of the Subcontractor and to submit itself and persons in its employ to similarly explain its records and answer questions, within fifteen (15) business days from delivery of notice from the Owner.

ARTICLE 5 SUBCONTRACTORS

5.1 AWARD OF SUBCONTRACTS AND OTHER CONTRACTS FOR PORTIONS OF THE WORK

5.1.1 Unless otherwise stated in the Contract Documents or the bidding requirements, the Contractor, as soon as practicable after Notice of Intent to Award shall furnish in writing to the OAR the names of persons or entities (including, but not limited to, those who are to furnish specially fabricated materials or equipment) proposed for each portion of the Work, including Subcontractors. The Owner shall have the right, but not the obligation, to investigate and object, on a reasonable basis, to any such proposed person or entity. The OAR shall promptly notify the Contractor if any such objection exists.

5.1.2 The Contractor shall not contract with a proposed person or entity to whom the Owner or OAR has made reasonable and timely objection.

5.1.3 If the Owner has reasonable objection to a person or entity proposed by the Contractor, the Contractor shall propose another to whom the Owner has no reasonable objection. The Total Contract Price shall not be increased by the difference in cost occasioned by such change if the Owner's objection arises from the failure of such person or entity to conform to the requirements of the Contract Documents, or if the person or firm is proposed as a DBE, MWBE, or LDB/VBE, and is not certified in accordance with the Owner's Policies and Procedures. If the Owner’s objection is for some other reason, such as apparent lack of responsibility (i.e., poor performance on prior projects, lack of experience, capacity or financial viability), then the Contractor may be allowed an increase in the Total Contract Price provided that the Contractor has acted promptly and responsively in submitting substitute subcontractors.

5.1.4 Once the Contractor enters into a subcontract, the Contractor may only replace a Subcontractor when required by the Owner or when the Contractor can demonstrate to the Owner’s satisfaction that the Subcontractor lacks financial viability, cannot meet construction schedules, or produces inferior or substandard work. If the replacement results in a decrease in the Contractor's costs, Owner shall receive a deductive Change Order. If, however, the replacement results in an increase in the Contractor's costs, an increase in the Total Contract Price will only be allowed if the replacement is required by the Owner.

5.2 SUBCONTRACTUAL RELATIONS

5.2.1 The Contractor shall make available to each proposed Subcontractor, prior to the execution of the subcontract agreement, copies of the Contract Documents to which the Subcontractor will be bound, and, upon written request of the Subcontractor, identify to the Subcontractor terms and conditions of the

proposed subcontract agreement which may be at variance with the Contract Documents. Subcontractors shall similarly make copies of applicable portions of such documents available to their respective proposed Sub-subcontractors.

5.2.2 All work performed for the Contractor by a Subcontractor shall be pursuant to an appropriate written agreement between the Contractor and the Subcontractor. The Contractor shall provide to the Owner or OAR, if requested, copies of all Subcontracts within seven (7) days following the Owner's or OAR's request.

5.2.3 The Owner shall have no contractual liability or obligation to any Subcontractor for Work performed pursuant to their agreement with the Contractor. The Contractor shall be liable to the Owner for all acts and omissions of the Subcontractors and the Contractor shall be solely responsible for scheduling and coordinating the Work of all Subcontractors, suppliers and any other person performing work on the project.

ARTICLE 6 CONSTRUCTION BY OWNER OR BY SEPARATE CONTRACTORS

6.1 OWNER'S RIGHT TO PERFORM CONSTRUCTION AND TO AWARD SEPARATE CONTRACTS

6.1.1 The Owner reserves the right to perform construction or operations related to the Project with the Owner's own forces or to award separate contracts in connection with portions of the Project or other construction or operations on the Owner's property.

6.1.2 The OAR shall provide for coordination of the activities of the Owner's own forces and of each separate contractor with the Work of the Contractor, who shall cooperate with them. The Contractor shall participate with other separate contractors and the Owner in reviewing related construction schedules when directed to do so. The Contractor shall make any revisions to the Progress Schedule deemed necessary after a joint review and mutual agreement. The Progress Schedules shall then be used by the Contractor, separate contractors and the Owner until subsequently revised.

6.1.3 The OAR will be responsible for coordinating the Work of all contractors on the Project when the Project involves more than one contractor. The OAR and Owner have the right to make changes in the Contractor's sequence of operations if in their judgment and sole discretion changing Project conditions require changes in sequence. The Contractor shall modify its sequence of operations and procedures, as required by the OAR and Owner.

6.2 MUTUAL RESPONSIBILITY

6.2.1 The Contractor shall promptly afford the Owner and separate contractors reasonable opportunity for storage of their materials and equipment and performance of their activities and shall coordinate the Contractor's construction and operations with theirs as required by the Contract Documents.

6.2.2 If the proper execution of the Contractor's Work depends upon construction or operations by the Owner or a separate contractor, the Contractor shall, prior to proceeding with the affected portion of the Work, promptly report to the OAR, with a copy to the Owner, apparent discrepancies or defects in such other construction that would render it unsuitable for such proper execution. Failure of the Contractor to report discrepancies or defects shall constitute an acknowledgment that the Owner's or separate contractors' completed or partially completed construction is fit and proper to receive the Contractor's Work,

except as to defects which are not discoverable at that time through the exercise of reasonable diligence.

6.2.3 The Contractor shall promptly remedy damage caused by the Contractor to completed or partially completed construction or to property of the Owner or separate contractors as provided in Article 10.

6.2.4 Claims and other disputes and matters in question between the Contractor and a separate contractor shall be subject to the provisions of this Contract with respect to entitlement and recoverable costs. If a separate contractor initiates legal or any other proceedings against the Owner on account of any damage alleged to have been solely caused by the Contractor, the Owner shall notify the Contractor, who shall defend and indemnify the Owner in such proceedings at its own expense, or at the Owner's option, pay all defense costs of the Owner including attorney's fees, and if any judgment or award against the Owner arises therefrom, the Contractor shall pay or satisfy it and shall reimburse the Owner for all attorneys' fees and court or other costs which the Owner has incurred over and above those paid directly by the Contractor.

6.2.5 When separate contracts are performed within overlapping limits of construction, or areas which might result in congestion or interference, each contractor shall conduct its work so as not to interfere with or hinder the progress or completion of the work being performed by separate contractors.

6.2.6 Any difference or conflict which may arise between the Contractor and separate contractors shall be referred to the OAR for resolution. If the Work of the Contractor is delayed because of any acts or omissions of any separate contractor, then only an extension of Contract Time sufficient to compensate for the delay, as determined by the OAR, shall be granted to the Contractor as its sole and exclusive remedy. In no event shall the extension of Contract Time exceed the day-for-day period of delay experienced by the Contractor. The Contractor's entitlement to an extension of Contract Time for such delays shall be conditioned upon timely receipt by the OAR of written notice from the Contractor of the cause of the delay, indicating what measures, if any, the Contractor has employed to minimize the effect of the delay.

6.2.7 The Contractor shall be responsible for controlling all labor employed by it and its Subcontractors for performance of the Work so as to avoid any disruption of or disharmony with other labor being used by separate contractors now or hereafter working on the Owner's property. The Contractor further agrees that this provision will be included in all of its subcontracts.

6.3 OWNER'S RIGHT TO CLEAN UP

6.3.1 If a dispute arises among the Contractor, separate contractors and the Owner as to the responsibility under their respective contracts for maintaining the premises and surrounding area free from waste materials and rubbish as described in Article 3, the Owner may clean up and allocate the cost among those responsible as the OAR determines to be just.

6.4 MULTIPLE CONTRACTS WITH CONTRACTOR SETOFF

6.4.1 The Owner and Contractor may enter into more than one contract for the performance of labor or the provision of materials, equipment or supplies. The Owner shall be entitled to setoff any claims against the Contractor which it may have pursuant to the terms of the Contract Documents against any sums due or claimed to be due to the Contractor from the Owner under any other contract or agreement between the Owner and Contractor.

ARTICLE 7 CHANGES IN THE WORK

7.1 CHANGES

7.1.1 Contract Modifications may be made by (1) Change Order ("CO"), (2) Construction Change Directive ("CCD") or (3) Field Change Order ("FCO"). Both COs and CCDs must be approved by the Owner's Construction Committee or the Greater Orlando Aviation Authority Board in accordance with the Owner's Policies. A FCO may be issued by the Owner in accordance with the Owner's Policies.

7.1.2 When there is an agreement between the Owner and Contractor to modify the Work, Contract Price, Contract Time or other contract terms, a CO or FCO shall be signed by both the Contractor and the Owner.

7.1.3 When the Contractor and Owner do not agree to the terms of a proposed CO, the Owner may unilaterally issue a CCD. Once signed by the Owner, CCDs are made part of the Contract and the Contractor has a contractual obligation to complete the Work identified in the CCD.

7.1.4 Changes in the Work shall be performed in accordance with the applicable provisions of the Contract Documents.

7.1.5 If the FCO, CO or CCD provides for an adjustment of the Total Contract Price, the amount of the adjustment shall be based upon one of the following methods which shall be selected by the Owner:

1. a lump sum properly itemized and supported by sufficient substantiating data to permit evaluation which data shall include, at a minimum, copies of such books and records of the Contractor and its Subcontractors to verify actual material and equipment costs, labor costs, actual bond premiums, other allowable costs as defined in Article 7, and any estimates, work sheets, quotes, proposals or other data used by the Contractor in estimating the value of the changed Work; or
2. unit prices stated in the Contract Documents or subsequently agreed upon; or
3. in a manner otherwise agreed upon by the Owner and the Contractor; or
4. in accordance with the Force Account provisions of paragraph 7.5.

7.1.6 If unit prices are included in the Contract Documents, the Owner may authorize by FCO, CO or CCD increases or decreases in quantities of any Work Item without any change in the applicable unit price, provided that the aggregate change does not increase or decrease the aggregate quantity of a Work Item by an amount greater than twenty-five percent (25%). If the aggregate quantity of a Work Item changes (either increases or decreases) by more than twenty-five percent (25%), then the Owner and Contractor shall mutually agree upon an increase, decrease, or no change in the unit price for the Work Item.

7.1.7 Contractor shall submit a Request for Change Order (RCO) to the OAR for all proposed Contract Modifications. Each RCO must include a detailed breakdown of all proposed cost changes and the required schedule analysis and information for proposed changes in Contract Time.

7.1.8 Each RCO shall include the proposed equipment rates for major equipment owned or leased by the Contractor or by its Subcontractors and the proposed labor rates, excluding burden, for all major trades anticipated to be required on the Contract Modification, including those supplied by Subcontractors. This shall include written confirmation by the Contractor or Subcontractor where applicable, that the labor rates reflect actual compensation, excluding those items defined below to comprise labor burden. If the Contractor intends to request a labor burden rate greater than allowed by the Contract Documents, the complete substantiation for this request must also be submitted with the labor rates. The Contractor shall

also provide, if requested by the OAR, actual payroll records to support the labor rates. After review and approval by the OAR, these approved labor and Contractor owned and leased equipment rates shall be used on subsequent change orders requiring work by these same trades and equipment. In the event that additional trades or equipment are required for Contract Modifications the Contractor shall provide the same information defined above for these additional trades and equipment to the OAR for approval.

7.1.9 The RCO for a proposed change in contract cost must include a detailed breakdown of the allowable direct costs by Contractor, Subcontractors and Suppliers. The following allowable direct costs include direct labor, labor burden, equipment, material, sales taxes, additional bond costs and other costs further defined as follows:

1. Direct labor is all the labor required to perform the Work. Unless allowed in paragraph 7.1.9.9, direct labor does not include salaried employees on site, supervision (project manager, project engineer, superintendent) and home office costs, all of which are compensated as part of Contractor's mark-up. Each RCO shall include a complete breakdown for proposed direct labor by position with the proposed number of work hours for each position.

2. Contractor's burden on direct labor costs shall be limited to a maximum of 42% of labor costs for straight time and 30% for overtime, unless the Contractor justifies to the satisfaction of the Owner that the Contractor's actual costs for such items exceed these limits. Labor burden items are the net costs actually incurred by the Contractor for the following items: social security taxes (FICA); unemployment taxes (FUTA, SUTA); worker's compensation, medical and dental insurance premiums; pension, 401k and other types of retirement benefits and profit sharing plans; and paid time off, if applicable. For union labor, the burden rate shall be the actual amount defined by the union agreement in effect when the change order is negotiated. If the Contractor requests Owner's consideration of a burden rate exceeding these limits, the Contractor shall submit complete documentation of its higher costs to the OAR for approval.

   Equipment costs shall comply with the following:

   a. If the equipment is owned or leased by the Contractor or Subcontractor (of any tier), the equipment rates shall not be more than fifty percent (50%) of the properly adjusted rates indicated in the most recent Rental Rate Blue Book by Dataquest Inc. ("Blue Book"), applicable to the date additional work activity was approved, for the period of actual use of such equipment. Maximum rates for equipment not listed in the Blue Book shall be established by capacity comparisons to other listed equipment. No overtime charges shall be made for equipment operating longer than 8 hours per day and only daily or prorated weekly or monthly rates per day shall be allowed depending on the actual rental period. The Contractor's equipment daily rates shall be based on 1/30th of the monthly rates, and hourly rates (not to exceed a total of 8 hours per day) shall be based on 1/176th of the monthly rate. Operating costs, if not included in the Blue Book rates, shall be no greater than 15% of the rental rate for actual operating hours:
   b. For rental equipment, the Contractor shall provide copies of the rental agreement for each item of equipment required for the work. Compensation will be made for the anticipated amount of time required for the work, rounded to the next lowest minimum rental duration (typically per day).
   c. No payment will be made for repairs or repair down time.
   d. No payment will be made for the use of hand tools and other small equipment normally available at the Project site, which are compensated by Contractor's mark-up.

3. Material cost shall correspond to actual quantities of materials required to complete the Work. Invoices, prorated to these actual quantities, including freight to site, if not transported by trucks paid for otherwise, plus applicable sales tax, shall constitute the only reimbursable materials expenses. Material prices shall be consistent with or under values established by industry guides recording the lowest prices for Central Florida.

4. Actual increases in its performance and payment bond costs for the Project, but only to the extent supported by actual invoices which show the difference in cost resulting from the overall change in Total Contract Price. These additional costs are not included in change orders prior to the final change order for the Project. Contractor will be compensated for additional bonding costs such as Subguard or other similar bonding services, or for bonding costs for any Subcontractor or Supplier of any tier, but not both.

5. Actual increases in the cost of general liability insurance, but only to the extent supported by actual invoices which show the difference in cost resulting from any increase in insurance limits or other insurance-related requests by the Owner. No payment will be made without this specific documentation.

6. Actual increases in permitting costs, but only to the extent supported by actual invoices or receipts showing the difference between the permitting costs for the for the Work prior to any Contract Modifications and the final permitting cost after all Contract Modifications have been completed.

7. Transportation and living expenses for specialized personnel required to complete the Contract Modification that are based more than 50 miles from the Project site. Costs for transportation by private or rented vehicles shall not exceed the mileage costs established by the U.S. Internal Revenue Service. Public air and ground transportation costs must not exceed coach class fares documented by actual receipts. Living expenses (room and meals) shall not exceed the Per Diem rates established by the U.S General Services Administration for the location in which the Work is located.

8. In those cases where the Contract Documents allow for compensation related to the extension of Contract Time, the allowable costs are strictly limited to the following:

    a. Extended general conditions consisting of the cost for Contractor to maintain its site operations for the duration of the delay event,
    b. Demobilization and re-mobilization of equipment that is required for continuation of the Work after the delay event or reimbursement at the agreed equipment rates as defined above, whichever results in the lowest cost,
    c. Additional direct costs, if any, as defined above,
    d. Additional site supervision (project manager, project engineer, superintendent), direct labor costs, but only for supervision of any additional work during the period of extended contract time. If no additional work is performed, compensation for site supervision will not be allowed.
    e. Acceleration costs agreed to in advance, in writing, by the Owner.

7.1.10 RCOs that include a proposed adjustment of Contract Time shall comply with the following:

1. The Contractor’s RCO for an adjustment of Contract Time must be substantiated by an analysis of the critical path method schedules in use on the Project. For the delay event, the Contractor must utilize the accepted progress schedule with a data date immediately prior to the date that the alleged delay event occurred (or utilize the schedule update with a data date immediately prior to the date that the alleged delay event occurred), and compare the project critical path to the critical path of the accepted project schedule with a data date immediately

after the date the alleged delay event ended (or the schedule update with a progress schedule data date immediately after the date the alleged delay event ended). The comparison of these two accepted project schedules, or schedule updates, must show that the project completion date was delayed by the delay event and the number of days of delay caused by the delay event.

a. If the analysis shows that a delay has occurred to the project completion date due to the delay event, the Contractor must identify from this analysis the specific critical activities that have been delayed and the magnitude in calendar days of each delay.
b. For all delays identified as described above, the Contractor must identify the activities that the Contractor believes were delayed by the Owner and the reasons why it believes the Owner should be considered responsible for the delay. All other delays identified in the analysis will be considered the responsibility of the Contractor. The Contractor must also identify any delays that the Contractor believes are concurrent and describe how the Owner and the Contractor concurrently caused the delay.
c. In addition to the requirements set forth above, if abnormal inclement weather conditions are the basis for a request for an adjustment of Contract Time, such Claim shall be documented by National Weather Service data for Orlando International Airport (OIA) substantiating that weather conditions were abnormal for the period of time as compared to the average weather conditions for OIA over the preceding ten (10) years and could not have been reasonably anticipated. For rainfall, fog or temperature conditions the calendar month will be used as the period of time over which these effects are evaluated. Adjustments of Contract Time will not be allowed for recorded rainfall, fog or temperature conditions less than or equal to the monthly ten (10) year historical mean conditions. Significant rainfall accumulations, for or temperature conditions recorded above the historical monthly mean may be considered as a basis for a day for day adjustment of time due to abnormal inclement weather. No compensation will be allowed for delays resulting from abnormal inclement weather. All Claims for adjustments of time based on weather must be substantiated by showing the adverse effect on critical path construction activities.

2. If the Contractor is delayed in performance of the Work by any act or omission of the Owner, OAR or by any member, officer, employee, agent, servant, or representative of the Owner or OAR, or by any separate contractor or consultant engaged by the Owner or OAR, or by changes in the Work ordered by the Owner (as reflected in COs, CCDs, or FCOs), or by fire, or any unforeseen cause which the Contractor lacked any ability to control or manage, all of which occurred without any responsibility, fault or negligence on the part of the Contractor and, in the opinion of the Owner, neither could have been anticipated nor avoided by the Contractor, then the Contract Time shall be extended for an appropriate period of time to compensate the Contractor for the delay, which in no event shall exceed a day-for-day extension for the period of proven actual delay to the critical path as described above; provided that the Contractor has complied with the notice requirements of Paragraph 4.3 and submitted full documentation supporting the request. Neither labor disputes involving the Contractor, its Subcontractors or any other laborers or materialmen performing the Work, nor abnormal inclement weather conditions, shall be considered to be unforeseeable, unavoidable or unanticipated. An extension of the Contract Time shall be the Contractor's sole and exclusive remedy for any delay of any kind or nature, except to the extent the delays were solely caused by (1) material acts or material omissions by the Owner or parties for whom the Owner bears responsibility constituting active interference or (2) concealed or unknown conditions as set forth in Article 4.3.5. For these delays, the Contractor is only entitled to the reasonable actual costs that are caused directly and solely by the delay and allowed for Contract Modifications as set forth in Paragraph 7.1.9.9. The Owner’s exercise of any of its rights or remedies, including, without limitation, ordering changes in the Work, or suspending, rescheduling or

ordering correction of the Work, regardless of the extent or frequency of Owner's exercise of such rights or remedies, shall not be construed as active interference.

3. In no event, including circumstances in which it is alleged or proven that Owner intentionally interfered with the Contractor's performance of the Work, shall the Contractor be entitled to recover from the Owner, for itself or its Subcontractors, suppliers or other parties claiming a right or damage by or through Contractor, any of the following items or damages arising out of or related to this Contract or the breach thereof:

    a. loss of profits or anticipated profits
    b. inefficiency or loss of productivity
    c. acceleration costs not specifically agreed to in advance, in writing, by the Owner
    d. home office overhead
    e. any cost that is not specifically allowed by Article 7.1.9 and 7.1.10.
    f. indirect, incidental, consequential or special damages, including but not limited to, loss of bonding capacity, loss of bidding or loss of business or contracting opportunities or other impact costs.

7.1.11 The Contractor, on behalf of itself and its Subcontractors and Suppliers, represents that all allowable costs furnished by the Contractor to the Owner for any CO, CCD, FCO or Force Account Work, shall be fair, reasonable, accurate, complete and current at the time of submission. In addition to any other rights and remedies provided to the Owner by the Contract Documents, the Owner shall have the right to adjust the Total Contract Price to (1) exclude any amounts by which the Owner determines any CO, CCD, FCO or Force Account Work was increased due to inaccurate information and (2) recover interest on all excess amounts paid to the Contractor at the legal rate of interest. The Contractor and its Subcontractors shall be required to include these provisions in any Subcontracts entered into for this Project.

7.1.12 Mark-up is defined as the amount to be included in the Contract Modification as the Contractor's overhead and profit, and includes all compensation for all costs associated with general conditions, all home office costs, supervision (home office, project managers, project engineers and superintendents and all salaried employees of the Contractor that have been assigned to the Project), cost estimating services, consumables, small tools, layout, coordination, as-built drawings and all other costs not specifically allowed in Article 7.1.9. No separate payment shall be allowed for any expense that is included in the mark-up.

7.1.13 Unless otherwise agreed by the parties, the amount of mark-up shall be determined separately for each work item and is calculated as a percentage of the costs that are specifically allowed in Article 7.1.9. The amount of mark-up shall not exceed the following percentages:

Cost of Work Item	(A) Contractor's Mark-up on Work by Contractor's Own Forces	(B) Contractor's Mark-up on Work Performed by Subcontractors or Suppliers	(C) First Tier Subcontractors' Mark-up on All Work
$1 to $25,000	15%	10%	15%
$25,001 to $500,000	12%	8%	12%
$500,001 and above	10%	6%	10%

1. No mark-up is allowed for work items when the change in quantity is within the limits allowed by Article 7.1.6. If, pursuant to Article 7.1.6, it is necessary to revise the unit price, the mark-up included in the revised unit price shall not exceed the limits in the foregoing table.

2. The mark-up payable to the Contractor for administration of Work performed by its own forces shall not exceed the appropriate percentage in Column A. This mark-up does not apply to any Subcontractors or Suppliers of any tier.
3. The mark-up payable to the Contractor for administration of Work performed by Subcontractors or Suppliers shall not exceed the appropriate percentage in Column B. This mark-up shall be applied one time only by the Contractor on the total value of work performed by all Subcontractors and Suppliers of any tier. Distribution of this markup to Subcontractors and Suppliers, regardless of tier, is the responsibility of the Contractor.
4. The markup allowed for each first tier Subcontractor shall not exceed the appropriate percentage in Column C. This mark-up shall be applied one time only by each first tier Subcontractor on the total value of all work performed by the Subcontractor and all its lower tier subcontractors or suppliers. The first-tier Subcontractor is responsible for distribution of its mark-up among all lower-tier firms. No lower tier subcontractor is allowed to mark-up their own work since their mark-up is to be distributed by the first-tier Subcontractor.
5. For deductive changes, the amount of the credit shall be the net amount of the change plus a mark-up to be negotiated between the Owner and the Contractor.
6. There shall be no mark-up allowed on the cost of bonds, insurance, permitting, or transportation and living expenses.

7.2 CHANGE ORDERS (CO)

7.2.1 A CO is a written contract modification signed by the Owner and Contractor stating their agreement upon all of the following:

1. a change in the Work or the Contract Documents; and
2. the amount of the adjustment in the Total Contract Price, if any; and
3. the extent of the adjustment in the Contract Time, if any.

7.2.2 Provided the Contractor executes the CO, the Owner may issue a CO Notice to Proceed in accordance with the Owner’s Policies. The CO Notice to Proceed authorizes the CO work pending the Owner’s execution of the CO.

7.3 CONSTRUCTION CHANGE DIRECTIVES (CCD)

7.3.1 A CCD is a written order prepared and signed by the Owner directing a change in the Work or stating a proposed basis for adjustment, if any, in the Total Contract Price or Contract Time, or both. The Owner may, by CCD, without invalidating the Contract, order changes in the Work within the general scope of the Contract which the Contractor is required to complete, consisting of additions, deletions or other revisions, the Total Contract Price or Contract Time being adjusted accordingly.

7.3.2 A CCD shall be used in the absence of total agreement on the terms of a CO.

7.3.3 If the CCD provides for an adjustment of the Total Contract Price, the amount of the adjustment shall be based upon the Force Account provisions set forth below or the Owner’s best estimate of the actual cost of the Work.

7.3.4 Upon receipt of an Owner-executed CCD, the Contractor shall promptly proceed with the change involved and advise the OAR in writing of the Contractor's agreement or disagreement with the method, if any, provided in the CCD for determining the proposed adjustment in the Total Contract Price or Contract Time.

7.3.5 The Owner shall pay the Contractor for reasonable costs of the actual work performed by the Contractor on the basis of the CCD, pending final resolution of the changes in Total Contract Price and Contract Time. Any payments or adjustment hereunder, made in the Owner's discretion, shall not constitute an admission by the Owner of liability for those payments or adjustment and shall not constitute a waiver of any of the Owner's or Contractor's rights under the Contract Documents.

7.4 FIELD CHANGE ORDERS (FCO)

7.4.1 A FCO may be issued in accordance with the Owner's Policies, and is a written contract modification signed by the Owner and Contractor stating their agreement upon all of the following:

1. A change in the Work or the Contract Documents; and
2. The method intended for and the estimated amount of the adjustment in the Total Contract Price and Contract Time, if any.

7.4.2 A fully executed FCO authorizes the Contractor to immediately proceed with the changed Work. FCOs shall be incorporated into the Contract by appropriate CO or CCD. The Owner and Contractor shall cooperate together to ensure that FCOs are incorporated into the Contract by appropriate CO within thirty (30) days from the completion of the FCO work.

7.5 FORCE ACCOUNT WORK

7.5.1 Force Account Work shall only include the same costs as those allowed by Article 7.1.9 and shall be documented and verified jointly by the Contractor and the OAR. The Contractor bears the responsibility for obtaining daily approval of all allowable Force Account charges described below. The Contractor shall not be paid for claims arising from unapproved charges. The Contractor shall provide documentation requested by the OAR including but not limited to:

1. Time sheets which shall be approved daily by the OAR (or authorized site representative, designated for this purpose) for the actual hours spent for manpower and equipment listed.
2. Labor cost accounting records that evidence the net direct cost of the Contractor's labor and foremen while directly performing the Force Account Work activity, but excluding any costs associated with any of the Contractor's superintendents, project engineers, or project managers
3. Equipment cost accounting records that evidence the cost of rented equipment or the Contractor's equipment.
4. Material cost accounting records that evidence the net costs of materials foe the Force Account Work activity.

7.5.2 Within seven (7) days of the completion of the Force Account Work, the Contractor shall compile and submit to the OAR a Force Account Claim that contains the backup documentation for each element of the Force Account Work. The Contractor's final mark-up for overhead and profit shall be determined according to the cumulative cost of the Force Account Work in accordance with Article 7.1.13.

7.5.3 The Contractor specifically agrees that no other Claims shall be asserted against the Owner for such Force Account Work. If the Project includes multiple changes that are to be paid by Force Account, each Force Account Claim shall be documented and processed separately.

7.5.4 Upon verification of the Force Account Claim, the OAR will prepare a CO for the Force Account Work.

7.6 MINOR CHANGES IN THE WORK

7.6.1 A minor change in the Work may be issued by the OAR when there is no cost for the change and when no adjustment to the Contract Time will be made. A minor change may be issued as a Designer's Supplemental Instruction, as a written response to a Request for Information or in any other manner that the OAR deems appropriate.

ARTICLE 8 TIME

8.1 PROGRESS AND COMPLETION

8.1.1 The date of commencement of the Work is the effective date of the Notice To Proceed. The date shall not be postponed by the Contractor's failure to act or by such failures of persons or entities for which the Contractor is responsible. Time limits stated in the Contract Documents are of the essence of the Contract. The Contractor, by executing the Agreement, confirms that the Contract Time is a reasonable period for performing the Work.

8.1.2 The Contractor shall not commence operations for the Work on the Owner's property prior to the effective date of a Notice to Proceed and prior to the effective date of the Contractor's compliance with Article 11.

8.1.3 The Contractor shall proceed expeditiously with adequate forces and shall achieve Substantial and Final Completion within the time frames established by the Contract Documents.

8.2 DELAYS AND EXTENSIONS OF TIME

8.2.1 The Contract Time shall be adjusted only by CO, CCD or FCO in accordance with the limitations of the Owner's Policies.

8.2.2 RCOs and Claims relating to Contract Time shall be made in accordance with applicable provisions of Paragraph 4.3 and Article 7.

8.2.3 If any portion of the Work remains uncompleted after the expiration of the Contract Time, as adjusted by Contract Modifications, if any, the Owner will incur substantial injury, including loss of use of facilities and inconvenience to the public. Damages arising from such injuries cannot be calculated with any degree of certainty. It is agreed that if Substantial or Final Completion is not achieved within the established Contract Time as adjusted by Contract Modifications, if any, the Contractor and the Contractor's Surety shall be liable to the Owner for Liquidated Damages as identified in the Instructions to Bidders. Allowing the Contractor to finish the Work after the expiration of the Contract Time established by the Contract Documents shall in no way operate as a waiver by the Owner of any of its rights under this Contract or allowed by law.

8.2.4 The Work under this Contract is only a part of the Owner's construction program. As a result, Work under this Contract may be required to be completed by certain milestone dates set forth in the Contract Documents ("milestone dates") in order to interface with the work on other components of the Owner's construction program. The schedule for the Owner's construction program or the specification of milestone dates is not intended to take the place of complete Work scheduling by the Contractor, but is provided to show certain critical milestone dates for various phases of the Work on which the Contractor's Baseline Schedule or Progress Schedules must be based. There shall be no changes in the milestone

dates, except by CO, FCO or CCD. In the event that the Contractor fails to complete any required portions of the Work by the milestone dates, the Contractor and its Surety shall be liable to the Owner for the Liquidated Damages identified in the Instructions to Bidders. In the event that the Contractor completes any required portions of the Work ahead of the milestone dates or is precluded from doing so by acts of the Owner or third parties, the Contractor shall not be entitled to damages against the Owner for completing or failing to complete the Work earlier.

8.2.5 The Contractor shall cooperate with the OAR in order to maintain the progress of the Work in accordance with the Contractor's current accepted schedule and Contract Time requirements. In addition to the requirements of Paragraph 3.9.3 regarding Progress Schedule updates, if the Owner or OAR determines that the Contractor is failing to maintain the progress of the Work, through no fault of the Owner, the Contractor must, within seventy-two (72) hours of written request of the OAR, submit a written response detailing the Contractor's plan of action to recover lost time in order to maintain the progress of the Work in accordance with the Contractor's current accepted schedule or Contract Time requirements. In such event, the Contractor shall comply with the OAR's written orders to take whatever steps are necessary to recover lost time and maintain the progress of the Work. These steps may include, but are not limited to, re-sequencing the Work activities, increasing the number of Contractor's shifts, workforce, supervision, work days, overtime operations, equipment resources, or expediting delivery of materials or equipment. Regardless of the manner in which the schedule is recovered, the Contractor shall not be entitled to additional compensation for actions that relate to the recovery of the schedule.

8.2.6 In addition to other remedies available to the Owner, if the Contractor fails to maintain the progress of the Work in accordance with the Contractor's current accepted schedule or Contract Time requirements, the Owner may, upon seven (7) days written notice to the Contractor and its Surety, order the Contractor to suspend or cease all or a portion of the Work and the Owner may demand that the Contractor's Surety prosecute all or a portion of the Work in accordance with the Contract Documents. Failure of the Surety to so perform within seven (7) days of receipt of such notice shall be grounds for the Owner to prosecute the Work at Surety's and Contractor's expense.

ARTICLE 9 PAYMENTS AND COMPLETION

9.1 TOTAL CONTRACT PRICE

9.1.1 The Total Contract Price is the amount stated in the Agreement plus any adjustments included in a Contract Modification and is the total amount payable by the Owner to the Contractor for performance of the Work under the Contract Documents.

9.2 SCHEDULE OF VALUES

9.2.1 Before the first Application for Payment on lump sum contracts, including those which contain unit prices for certain portions of the Work, the Contractor shall submit to the Owner and OAR for approval, a schedule of values allocated to various portions of the Work, prepared in such form and supported by such data to substantiate its accuracy and reasonableness (in relationship to actual costs) as the Owner or OAR may require. The Schedule of Values shall be prepared in such a manner that each major item of Work and each subcontracted item of Work is shown as a separate line item on the Owner’s form of AIA Document G702, Application and Certificate for Payment, Continuation Sheet or other form acceptable to the OAR.

9.2.2 The Contractor’s Schedule of Values must contain a separate line item for General Conditions

which are defined as general overhead and administrative charges for onsite personnel, office space, and other costs included in the definition of mark-up in Article 7. The total amount for General Conditions must be reasonable in relationship to the Work and approved by the Owner and OAR. Payment for General Conditions shall be prorated according to the work-in-place (excluding stored materials) reported in the approved application for payment.

9.3 APPLICATION AND CERTIFICATE OF PAYMENT

9.3.1 The Contractor shall submit to the OAR two (2) original itemized Applications for Payment for work completed in accordance with the approved schedule of values or unit price schedule. Applications for payment shall be submitted no later than the 5th of the month for all work completed the prior month. Each Application for Payment shall include only work completed and/or costs incurred through the submission date of the Application for Payment, but not previously invoiced. No payment will be made for work not yet completed. Each Application for Payment must clearly identify the submission date (a/k/a the "period ending date"). Each Application for Payment shall be notarized and supported by such data required by the Contract Documents substantiating the Contractor's right to payment (such as copies of requisitions from Subcontractors and material Suppliers) and reflecting the amount of retainage in accordance with Paragraph 9.5.2, unless otherwise provided in the Contract Documents or agreed to, in writing, by the Owner at its sole discretion. The OAR shall be deemed the Authority's agent for purposes of Chapter 718, Florida Statutes. If an OAR is not assigned to this project, the Owner's agent or employee responsible for receiving and processing payment applications will be identified, in writing, at the pre-construction conference.

9.3.2 Each Application for Payment shall contain Certifications stating the following:

"Contractor hereby certifies that, except as indicated on the attached documents, there are no Claims of Contractor, its Subcontractors or Suppliers as of the date of this Application for Payment that have not been completely resolved, that the Contractor has no knowledge of any unsolved Claims by Subcontractors or Suppliers, that all Subcontractors and Suppliers have been paid to date from funds received for previous Applications for Payment, that there is no known basis for the filing of any Claim on the Work and Contractor, and upon receipt of funds due in this Application for Payment, hereby releases the Owner from any claims arising from the Work, except for retainage. Contractor further certifies that the amounts contained in the Application for Payment have been verified and are correct."

9.3.3 Upon request by the Owner, the Contractor shall submit waivers of lien/bond rights and other documentation from Subcontractors and Suppliers to evidence the status of payments.

9.3.4 Applications for Payment may not include requests for payment of amounts the Contractor does not intend to pay to a Subcontractor or material Supplier because of a dispute or other reason.

9.3.5 Applications for Payment may include requests for payment on account of changes in the Work which have been included in fully executed CCDs or FCOs and properly authorized COs that have been executed by the Contractor.

9.3.6 The failure to comply with the requirements of this Article may result in the withholding of approval of the Application for Payment until compliance is achieved.

9.3.7 Within fifteen (15) business days after the OAR's receipt of the Contractor's Application for Payment, the Owner and OAR shall either (1) approve the Application for Payment by signing the Application in the appropriate places or (2) the OAR shall notify the Contractor in writing of reasons for withholding approval in whole or in part and the action necessary to make Application acceptable.

9.3.8 The OAR may withhold approval, in whole or in part, to the extent reasonably necessary to protect the Owner, if the OAR cannot certify that the Work has progressed to the point indicated and that the quality of the Work is in accordance with the Contract Documents. In addition, notwithstanding anything to the contrary contained in the Contract Documents, the Owner may withhold any payment to the Contractor, if, and for so long as a good faith dispute exists, which may include the Contractor's failure to perform any of its obligations hereunder, in the Contractor's default under any of the Contract Documents or there is reasonable evidence indicating that the Work will not be completed within the Contract Time, as may be adjusted by Contract Modifications, and the unpaid balance would be insufficient to cover the anticipated Liquidated Damages; provided, however, that any such holdback shall be limited to an amount sufficient in the reasonable opinion of the Owner to cure any such default or failure of performance by the Contractor. In addition, if the Owner or OAR subsequently discovers that an Application for Payment was improperly paid, the Owner or OAR may withhold payment on any future Applications for Payment, in whole or in part, to the extent necessary to recover the funds improperly paid. If the Owner determines that the reasons for withholding payment no longer exist, the Owner will so notify the Contractor and will make payment for the amount of the holdback within ten (10) business days.

9.3.9 Upon notification that an Application for Payment is not approved, the Contractor and the OAR shall conduct discussions to determine whether a revised Application for Payment can be agreed upon. If no agreement is reached within ten (10) business days after notification, the OAR or Owner will adjust the original Application for Payment to delete the disputed amounts and will then approve payment for the undisputed amount and send a copy of the adjusted Application for Payment to the Contractor. If an agreement can be reached on the disputed portions of the Application within ten (10) days, the Contractor will submit a revised and signed Pay Application for the agreed amount, if any, to the OAR and Owner for approval. Payment will be made within ten (10) business days after the Owner's approval of the revised Application for Payment.

9.3.10 The Owner's signature on the Application for Payment does not constitute approval and acceptance of the Work.

9.3.11 At all times during the processing of an Application for Payment, including resolution of any related disputes, the Contractor shall continue to expeditiously prosecute the Work.

9.3.12 Concurrent with the Contractor's submission of an Application for Payment, the Contractor shall submit an updated Progress Schedule, prepared in accordance with the Contract Documents, and make available for review and inspection by the Owner or OAR an updated version of the As-built Drawings, prepared in accordance with the Contract Documents, reflecting all items of Work for which the Contractor is seeking payment. Failure to have the updated As-built Drawings available for review or to reflect items of Work on the updated As-built Drawings for which payment is sought may result in the Owner's withholding payment or partial payment from the Contractor until such time as properly updated As-built Drawings are prepared.

9.4 STORED MATERIALS

9.4.1 At the Owner's sole discretion, payment may be made for the net cost of materials and equipment delivered and suitably stored at a location approved by Owner, in its sole discretion, for subsequent incorporation in the Work. In order for stored material to qualify for early payment hereunder, the value of the materials must exceed $10,000 and not be scheduled to be incorporated into the Work within sixty (60) days, unless otherwise allowed by Owner. Payment for such stored items shall not relieve the Contractor of its obligations to furnish and install the items in accordance with the Contract Documents. Payment for such stored items shall be conditioned upon the following information and documentation being obtained by Contractor and provided to Owner:

1. Inventory schedule detailing the specific type of stored materials for which payment is requested, including but not limited to, quantities, types and sizes;
2. Invoices evidencing the costs of such stored materials, attached as back-up documentation to the Application for Payment under which payment for stored materials is sought;
3. A bill of sale, invoice or other documentation evidencing that the Owner has received the stored items free and clear of all claims and liens. This evidence shall be submitted to the Owner in Contractor's next pay application; Failure to comply with this requirement may result in the Owner withholding payment until the evidence is furnished;
4. A consent of surety for the Owner's payment for such stored items;
5. A certificate of insurance evidencing that stored materials not located on the Owner's property, are insured for the full replacement value of the stored materials for which payment is requested. Failure of the Contractor to obtain and maintain insurance coverages required herein shall give rise to a breach of this Contract, thereby allowing Owner all recourse permitted by law, including recovery under the payment and performance bonds posted for this Project.

9.4.2 Contractor agrees to separately mark and identify the stored materials with the Project name and name of the Contractor. All such stored materials shall be made available for Owner's periodic inspections. Contractor shall be responsible for all loss or damage to such stored materials arising from theft, malicious mischief or vandalism until Substantial Completion is achieved. Contractor assumes all risk of transit with respect to such stored materials.

9.4.3 If so requested by the Owner, the Contractor shall submit, within 30 days after the date of commencement of the Work and thereafter as the Owner requires, material delivery schedules for each category or subcontract for which application for payment for stored materials will be made, which schedules shall include items, quantities, value or unit prices with extensions and the month in which Application for Payment with respect thereto is expected to occur. Schedules shall be updated on a monthly basis and submitted as an attachment to the Contractor's Application for Payment. The Owner has no obligation to pay the Contractor if the updated monthly schedule is not provided.

9.4.4 The Contractor warrants that title to all Work covered by an Application for Payment will pass to the Owner no later than the time of payment on such Application for Payment by the Owner to the Contractor. The Contractor shall be responsible for adequately securing and protecting from weather damage all materials and equipment stored on the Owner's property. The Contractor further warrants that upon submittal of an Application for Payment all Work for which Certificates for Payment have been previously issued and payments received from the Owner shall be free and clear of liens, claims, security interests or encumbrances in favor of the Contractor, Subcontractors, material Suppliers, or other persons or entities making a claim by reason of having provided labor, materials and equipment relating to the Work.

9.5 PROGRESS PAYMENTS AND RETAINAGE

9.5.1 The Owner shall make payment to the Contractor of the amount specified in the approved Application for Payment (which shall provide for all applicable retentions, including, but not limited to the proper amount of retainage on all progress payments as provided for in the following paragraph), within twenty-five (25) business days from the date that the payment application is stamped as received by the OAR. If the payment has not been made within that time, Contractor may deliver an overdue notice to the Owner. Within four (4) business days after receipt of the overdue notice, either payment shall be made or the OAR shall notify the Contractor in writing that the approval of the Application for Payment has been withdrawn. Otherwise, in accordance with Section 218.735(1)(a), the payment request shall be deemed accepted, except for any portion of the request that is fraudulent or misleading. Payment by the Owner shall not constitute approval or acceptance of any item of cost in the Application for Payment. No partial

payment made hereunder shall be or be construed to be final acceptance or approval of that portion of the Work to which such partial payment relates or relieve the Contractor of any of its obligations hereunder.

9.5.2 Retainage

1. The Owner may withhold up to five percent (5%) of the payment certified as due to the Contractor as retainage.
2. After achieving Substantial Completion, the Contractor may request payment for the retainage; provided, however, the Owner shall continue to retain an amount equal to the estimated cost of completion of the punch list, in addition to any anticipated Backcharges, anticipated Liquidated Damages, and any other changes to the Work, as deemed necessary by the Owner it its sole discretion.
3. The OAR may withhold approval of the Application and Certificate for Payment for the release of the retainage, if there is a good faith dispute, claim, or demand that exceeds the amount being withheld, as long as it complies with the notice requirement contained in Article 9.3.

9.5.3 Subcontractor Payments

1. The Contractor shall pay each Subcontractor and Supplier, within ten (10) days following receipt of payment from the Owner, out of the amount paid to the Contractor on account of each Subcontractor's portion of the Work, the amount to which each Subcontractor is entitled, subject to amounts actually retained from payments to the Contractor on account of each Subcontractor's portion of the Work.
2. The Contractor shall, by appropriate agreement with each Subcontractor, require each Subcontractor to make payments to Sub-subcontractors within seven (7) days after receipt of payment from the Subcontractor,
3. If required by the Owner, within fifteen (15) business days of receipt of payment from the Owner, the Contractor shall send to the Owner copies of checks paid for all items of the Contractor's costs listed in the Application for Payment that were not paid prior to the date on which the Application for Payment was submitted.
4. If the Contractor fails to pay a Subcontractor or Supplier within ten (10) days of receipt of funds from the Owner, then the Owner may, at its option, following a request from the unpaid Subcontractor or Supplier, pay such Subcontractor or Supplier the applicable sums paid the Contractor on account of the Subcontractor’s work or Supplier’s materials, and deduct such sums from any monies due the Contractor in the future unless the Contractor can furnish information satisfactory to the Owner that the payment should not be made and Contractor is actively taking steps to resolve a dispute, if applicable. The Owner’s options in this paragraph are in addition to any other rights set forth in the Contract.
5. Upon satisfactory completion of each Subcontractor’s work, Contractor shall timely return to the Subcontractor any retainage held, regardless of whether the retainage has been paid to the Contractor.
6. At any time, the Contractor may request payment from Owner for Subcontractor’s retainage. At the time such retainage is requested, Contractor must provide Owner with a Final Release Form from each Subcontractor for which retainage payments are requested. Any early reduction of a portion of retainage shall have no effect on Contractor’s warranty and other obligations that are preliminary to Substantial or Final Completion. Contractor shall remain liable to Owner for all items of work in accordance with the Contract Documents notwithstanding any early release of Contractor’s retainage.

9.5.4 DBE Sub-subcontractor Payments

1. If any Subcontractor fails to pay any DBE Sub-subcontractor within seven (7) days of receipt of funds from the Contractor, then the Owner may, at its option, following a request from the unpaid DBE Sub-subcontractor, pay such DBE Sub-subcontractor, the applicable sums paid the Contractor on account of the Sub-subcontractor's work, and deduct such sums from any monies due the Contractor in the future unless the Contractor can furnish information satisfactory to the Owner that the payment should not be made and Contractor is actively taking steps to resolve a dispute, if applicable. The Owner's options in this paragraph are in addition to any other rights set forth in the Contract.
2. Upon satisfactory completion of each DBE Sub-subcontractor's work, the Contractor shall, by appropriate agreement with each Subcontractor, require each Subcontractor to pay each DBE Sub-subcontractor's retainage within seven (7) days after payment from the Contractor is received.
3. At any time, the Contractor may request payment from Owner on behalf of any Subcontractor for any DBE Sub-subcontractor's retainage. At the time such retainage is requested, Contractor must provide Owner with a Final Release Form from the DBE Sub-subcontractor for which retainage payments are requested. Any early reduction of a portion of retainage shall have no effect on Contractor's warranty and other obligations that are preliminary to Substantial or Final Completion. Contractor shall remain liable to Owner for all items of work in accordance with the Contract Documents notwithstanding any early release of Contractor's retainage.
4. Neither the Owner, OAR, nor Designer shall have any obligation to pay or to assure the payment of money to a Subcontractor for Work on the Project. The Owner may, however, demand sworn statements of accounts from Subcontractors or Suppliers and, at the Owner's sole discretion, pay Subcontractors or Suppliers by joint checks or directly for those amounts agreed by the Contractor as due and owing. In such event, the Contractor agrees any such payments shall be treated as a direct payment to the Contractor's account.
5. Contractor shall include in all subcontracts language providing that Contractor and Subcontractor will resolve payment disputes by alternative dispute resolution mechanisms. Contractor shall promptly take the initiative to commence such resolution process if Contractor has withheld a payment to a Subcontractor for cause that is disputed by Subcontractor. Contractor shall make every effort to resolve such payment disputes with its Subcontractors quickly and in a reasonable manner, so as not to delay the work.

9.6 CONTINUED PERFORMANCE PENDING PAYMENT

9.6.1 The Owner's obligation to make timely payments and the Contractor's obligations to diligently prosecute the Work shall continue uninterrupted during the resolution of any dispute between the Owner and the Contractor.

9.7 SUBSTANTIAL COMPLETION

9.7.1 The Substantial Completion date is the point at which, as certified in writing by the Contractor and agreed to by the Owner, OAR and Designer that the Work is at the level of completion and in conformance with the requirements of the Contract Documents, where:

1. The Certificate of Occupancy or Completion has been issued by the City of Orlando and all required sign-off by the Authorities Having Jurisdiction (AHJ) and other public regulatory authorities has been given. The date of the Certificate of Occupancy or Completion does not establish the date of Substantial Completion.

2. The Owner has received all required warranties (draft form), Operation & Maintenance Manuals, As-built drawings and other documentation required by the Contract Documents; and
3. The Owner will have complete use or occupancy and may use, operate, and maintain the Work in all respects, for its intended purpose and without undue interference by the Contractor's Final Completion efforts.

9.7.2 When the Contractor considers that the Work or designated portion thereof is close to being Substantially Complete, the Contractor shall prepare and submit to the OAR a comprehensive punch list of items to be completed or corrected and the schedule to complete each item. The punch list shall be transmitted to the OAR a minimum of 5 business days prior to Contractor's anticipated date of achieving Substantial Completion. The Contractor shall proceed promptly to complete and correct items on the list. Failure to include an item on the punch list does not alter the responsibility of the Contractor to complete all Work in accordance with the requirements of the Contract Documents.

9.7.3 Upon notice to the OAR by the Contractor that its punch list has been completed and the Work is ready for the Substantial Completion Inspection, the OAR will conduct a preliminary inspection to determine whether the Work or designated portion thereof is Substantially Complete. If the OAR's preliminary inspection discloses any item that is not in accordance with the requirements of the Contract Documents, whether or not included on the Contractor's punch list, the OAR shall so notify the Contractor and the Contractor shall add the items to its punch list. The Contractor shall proceed to complete or correct every item on the revised punch list and request re-inspection from the OAR. If the OAR determines that the Work is ready, the Substantial Completion Inspection will be scheduled at a minimum of three (3) business days after the OAR's preliminary inspection.

9.7.4 The OAR, the Designer and others, during the Substantial Completion Inspection, will prepare the Owner's preliminary Substantial Completion punch list of all remaining work to be completed or corrected. The OAR shall combine the items from all parties into one Substantial Completion punch list. Failure to include an item on the Substantial Completion punch list does not alter the responsibility of the Contractor to complete all Work in accordance with the requirements of the Contract Documents. The OAR shall distribute the Substantial Completion punch list to the Contractor within a maximum of fifteen (15) business days after the date of Substantial Completion. All items on the substantial completion punch list must be completed prior to the date of Final Completion.

9.7.5 When the Work or designated portion thereof is Substantially Complete, the OAR shall prepare a Certificate of Substantial Completion signed by the OAR and Designer which shall establish the date of Substantial Completion, shall establish the responsibilities of the Owner and Contractor for security, maintenance, operations, cleaning and housekeeping, heating and cooling, utilities, damage to the Work and insurance, and shall fix the time within which the Contractor shall finish all items on the combined punch list accompanying the Certificate. The Certificate of Substantial Completion shall be submitted to the Contractor for appropriate acceptance and signature. Warranties required by the Contract Documents shall commence on the date of Substantial Completion of the Work or designated portion thereof unless otherwise provided in the Contract Documents.

9.8 PARTIAL OCCUPANCY OR USE

9.8.1 The Owner may occupy or use any completed or partially completed portion of the Work at any stage and, if the Owner chooses such partial occupancy, the Contractor and Owner shall designate by an agreement the conditions of such partial occupancy, provided such occupancy or use is consented to by the Owner's insurer as required under Article 11 and authorized by public authorities having jurisdiction over the Work. Such partial occupancy or use may commence whether or not the portion is Substantially

Complete, provided the Owner and Contractor have accepted in writing the responsibilities assigned to each of them for payments, retainage if any, security, maintenance, operations, cleaning and housekeeping, heating and cooling, utilities, damage to the Work and insurance, and have agreed in writing concerning the period for correction of the Work and commencement of warranties required by the Contract Documents. Even if an agreement is reached as to partial occupancy or use, the parties shall still comply with the requirements for Substantial Completion under the Contract Documents for that portion of the Work. Consent of the Contractor to partial occupancy or use by the Owner shall not be unreasonably withheld.

9.8.2 Immediately prior to such partial occupancy or use, the Owner, OAR, Contractor and Designer shall jointly inspect the area to be occupied or portion of the Work to be used in order to determine and record the condition of the Work.

9.8.3 Unless otherwise agreed upon, partial occupancy or use of a portion or portions of the Work shall not constitute acceptance of Work which is not in conformance with the requirements of the Contract Documents.

9.9 FINAL COMPLETION AND FINAL PAYMENT

9.9.1 Final completion shall be achieved by the Contractor within sixty (60) days of Substantial Completion unless otherwise required in the Contract Documents. Upon receipt of written notice that the Work is ready for final inspection and acceptance and upon receipt of a final Application for Payment, the Designer and OAR will promptly make such inspection with the Contractor and, when the Designer and OAR find the Work acceptable under the Contract Documents and the Contract fully performed, including the delivery of all close-out documentation required in Paragraph 9.9.2, the OAR will promptly issue a final Certificate for Payment stating that to the best of their knowledge, information and belief, and on the basis of the OAR’s observations and inspections, the Work has been completed in accordance with the terms and conditions of the Contract Documents and that the amount noted in the final Certificate for Payment has been earned, subject to the Owner's claims, Liquidated Damages or backcharges, if any. The OAR’s execution of the final Certificate for Payment will constitute a further representation that the conditions precedent to the Contractor's being entitled to final payment have been fulfilled.

9.9.2 Neither final payment nor final retainage shall become due until the Contractor submits to the OAR all close-out documentation, which is defined as all of the following: (1) an affidavit that payrolls, bills for materials and equipment, and other indebtedness connected with the Work have been paid or otherwise satisfied; (2) a certificate evidencing that insurance required by the Contract Documents to remain in force after final payment is currently in effect and will not be canceled or allowed to expire until at least 30 days prior written notice has been given to the Owner; (3) a written statement that the Contractor knows of no substantial reason that the insurance will not be renewable to cover the period required by the Contract Documents; (4) consent of surety, if any, to final payment; (5) if required by the Owner, other data establishing payment or satisfaction of obligations, such as receipts, releases and waivers of liens, claims, security interests or encumbrances arising out of the Contract, to the extent and in such form as may be designated by the Owner; (6) all required As-built Drawings, operating and maintenance instructions and manuals, and acceptable warranty/guaranty documents; (7) Subcontractor Final Release Forms; and (8) Final Release Form. If a Subcontractor refuses to furnish the release required by the Owner, the Owner may retain all money that the Owner may be compelled to pay in discharging such claim, including all costs and reasonable attorneys' fees. However, the Owner may elect not to retain any monies if the Contractor certifies that it is proceeding diligently and in good faith to resolve its dispute with the Subcontractor in accordance with the Subcontract Dispute Resolution Process and the Contractor’s Surety consents to the Owner’s payment to the Contractor despite such claim.

9.9.3 Acceptance of final payment shall constitute a waiver of all claims by the Contractor, Subcontractor or Supplier, except those Claims previously made in accordance with Article 4 and identified by the Contractor as unsettled on the final Application for Payment.

9.9.4 Payment of Liquidated Damages

1. If the Owner, in its sole discretion, determines that Liquidated Damages are due in accordance with the Contract, the amount of Liquidated Damages shall be subtracted from the amount of retainage on the final application for payment. If there is insufficient retainage to compensate the Owner for the Liquidated Damages, the Contractor and its Surety shall pay to the Owner the amount due within ten (10) business days of receiving written notification of the shortage. Failure to make the required payment to the Owner will result in the Owner's enforcement of its right to receive the payment in any manner allowed by law and Contractor may be prohibited from bidding on future projects with the Owner as a result.

9.10 OWNER'S AUDIT RIGHTS

9.10.1 The Contractor's records, including both electronic and traditional paper files, shall be open to inspection and subject to audit or reproduction by the Owner or its authorized representative to the extent necessary to adequately permit examination, evaluation and verification of the Cost of the Work, and any invoices, Change Orders, Construction Change Directives, Field Change Orders, Force Account payments or Claims submitted by the Contractor or any of its Subcontractors or Suppliers pursuant to the execution of the Contract. The Contractor's records include but are not limited to the following: accounting records (including monthly job cost detail, detailed job cost history, monthly labor distribution detail, total job labor distribution, daily foreman reports, daily superintendent reports, detailed subcontract status reports, executed subcontracts, subcontract change orders and all documentation supporting all job costs, such as subcontractor payment applications, vendor invoices, internal cost charges), written policies and procedures, time sheets, payroll registers, payroll records, cancelled payroll checks, subcontract files (including proposals of successful and unsuccessful bidders, bid recaps and negotiation notes), original estimates, estimating work sheets, correspondence, change order files (including documentation covering negotiated settlements), backcharge logs and supporting documentation, the general ledger for the project along with all supporting data, information detailing cash and trade discounts and rebates earned, insurance policies, payments and all documents that relate to any insurance claim, documents described in Article 7 and any other data or evidence deemed necessary by the Owner or that may have a bearing on matters of interest to the Owner (all foregoing hereinafter referred to as "Contractor's Records"). The Contractor's records described above shall be maintained and made available to the Owner or its authorized representative for not less than ten (10) years after date of final payment or longer if required by law. Owner or its authorized representative may (without limitation) conduct verifications such as counting employees on the Project witnessing the distribution of payroll, verifying information and amounts through interviews and written confirmations with Contractor employees, field and agency labor, Subcontractors, and vendors.

9.10.2 Audits may require inspection, scanning and copying from time to time and at reasonable times and places of any and all information, materials and data of every kind and character, including without limitation, the Contractor's Records listed in the preceding paragraph, books, papers, documents, subscriptions, recordings, agreements, purchase orders, leases, contracts, commitments, arrangements, notes, daily diaries, superintendent reports, drawings, receipts, vouchers and memoranda, and any and all other agreements, sources of information and matters that may in the Owner's judgment have any bearing

on or pertain to any matters, rights, duties or obligations under or covered by any Contract Document. Such Contractor's Records subject to audit shall also include, but not be limited to, those Contractor's Records necessary to evaluate and verify direct and indirect costs (including overhead allocations), as they may apply to costs associated with this Contract.

9.10.3 The Owner or its authorized representative shall be afforded access to all of the Contractor's Records, and shall be allowed to interview any and all of the Contractor's current or former employees, pursuant to the provisions of this article throughout the term of this Contract and for a period of ten years after final payment.

9.10.4 The Contractor shall require all Subcontractors and Suppliers to comply with the provisions of this article by insertion of the requirements hereof in a written contract agreement between the Contractor and its Subcontractors and Suppliers. Such requirements will also apply to Sub-subcontractors and Subcontractors' Suppliers. The Contractor will cooperate fully and will cause all of the Contractor's Subcontractors (including those entering into lump sum Subcontracts) to cooperate fully in furnishing or in making available to Owner from time to time whenever requested in an expeditious manner any and all such information, materials and data.

9.10.5 The Owner, OAR and Designer or their authorized representative shall have access to the Contractor's facilities, shall have access to all necessary Contractors' Records, and shall be provided adequate and appropriate work space, in order to conduct audits in compliance with this article.

9.10.6 If an audit inspection or examination in accordance with this article, discloses overcharges (of any nature) by the Contractor to the Owner in excess of one percent (1%) of the total contract billings, the actual cost of the Owner's audit shall be reimbursed to the Owner by the Contractor. Any adjustments or payments which must be made as a result of any such audit or inspection of the Contractor's Records shall be made within a reasonable amount of time (not to exceed 90 days) from presentation of the Owner's finding to the Contractor. Any overpayments to the Contractor by the Owner shall include the legal rate of interest, from the date such additional amounts were overpaid by the Owner.

ARTICLE 10 PROTECTION OF PERSONS AND PROPERTY

10.1 SAFETY PROGRAM

10.1.1 The Contractor shall be responsible for initiating, maintaining and supervising all safety precautions and implementing and monitoring a safety program in connection with the performance of the Work including but not limited to those requirements in this Article 10. The Contractor shall submit to the Owner a copy of its safety plan within ten (10) business days of issuance of the Notice to Proceed. The Contractor's Safety Plan shall, at a minimum, meet the requirements of the latest edition of ANSI/ASSE A10.38.

10.1.2 In the event the Contractor fails to initiate, maintain, supervise and monitor the safety of its operations during the performance of the Work, including the operations of its Subcontractors, Suppliers and any others for whom the Contractor is responsible, then the Owner may, without reservation, pursue any rights or remedies against the Contractor that are available, under this Contract or by law, including withholding of payment.

10.2 PROTECTION OF PERSONS AND PROPERTY

10.2.1 The Contractor shall comply with, and give notices required by, applicable laws, ordinances, codes, rules, regulations and lawful orders of public authorities bearing on safety of persons or property or their protection from damage, injury or loss.

10.2.2 The Contractor, in addition to Article 10.2.1, shall take reasonable precautions for safety of, and shall provide reasonable protection to prevent causing or contributing to the damages, injury or loss to:

1. employees and other persons who may be affected in, on, or around the Project site and thereby;

2. the Work, materials and equipment to be incorporated therein, whether in storage, on or off the site, that is under the care, custody or control of the Contractor or the Contractor's Subcontractors; and

3. other property improvements and infrastructure at the site or adjacent thereto, including but not limited to trees, shrubs, lawns, walks, pavements, roadways, structures and utilities not designated for removal, relocation or replacement in the course of construction.

10.2.3 The Contractor shall erect and maintain, as required by existing conditions and the Contract Documents, reasonable safeguards for safety and protection, including posting danger signs and other warnings against hazards, promulgating safety regulations and notifying the owners and users of adjacent sites and utilities of the safeguards and of hazardous or dangerous conditions.

10.2.4 When use or storage of hazardous materials or equipment or unusual methods are necessary for execution of the Work, the Contractor shall exercise utmost care and carry on such activities under supervision of properly qualified personnel and within federal, state & local regulations applicable to such hazardous materials.

10.2.5 The Contractor shall promptly remedy all damage and loss (other than damage or loss insured under property insurance required by the Contract Documents) to property referred to in Paragraphs 10.2.1.2 and 10.2.1.3 caused in whole or in part by the Contractor, a Subcontractor or anyone directly or indirectly acting on their behalf, or by anyone for whose acts any of them may be responsible for, to the extent the damage or loss is not attributable to acts or omissions of the Owner, OAR or Designer or anyone directly or indirectly employed by any of them, or by anyone for whose acts any of them may be liable. The foregoing obligations of the Contractor are in addition to the Contractor's obligations under Article 11.

10.2.6 The Contractor shall designate a responsible member of the Contractor's organization as the onsite safety representative whose duty shall be the safety of persons and property. This person shall be the Contractor's Superintendent unless otherwise designated by the Contractor in writing to the Owner and OAR. The Contractor shall notify the Owner and OAR immediately when a serious injury occurs on the Project and shall provide written notice of the injury on the same business day of the occurrence, if at all possible. The notice shall provide a description of the incident, including the location and time of the incident, the names of the people involved and the names of witnesses, if any. The Contractor shall cooperate with any investigation of the incident.

10.2.7 The Contractor shall not load (for example, by delivery of materials, structural or physical loads) or permit any part of the construction or site to be loaded so as to endanger the safety of the traveling public, the airlines, tenants, or other airport users, the Owner, OAR, Designer, Contractor or their agents, representatives or employees.

10.2.8 The Contractor shall protect adjoining private or municipal property and shall provide barricades, temporary fences, and covered walkways required to protect the safety of passers-by, as

required by prudent construction practices, local building codes, ordinances or other laws, or the Contract Documents.

10.2.9 The Contractor shall take all reasonable precautions to protect and keep the Work, materials and equipment free from injury or damage from inclement weather conditions, such as but not limited to rain, wind, storms, frost or heat. If extreme adverse weather conditions arise, preventing the Contractor from continuing operations safely in spite of having implemented weather precautions, the Contractor shall coordinate approval from the Owner and the OAR for cessation of Work until deemed safe to resume operations. The Contractor shall not permit open fires on the Project site.

10.2.10 The Contractor shall, at its sole cost and expense, promptly repair any damage or disturbance to walls, utilities, sidewalks, curbs and the property of the Owner or any other person (including municipalities) resulting from the performance of the Work, whether by it or by its Subcontractors at any tier. The Contractor shall maintain streets and working roads within the project site and areas which it or its subcontractors may use to access the project site, in good repair and in an acceptable and usable condition.

10.3 HAZARDOUS MATERIALS

10.3.1 In the event the Contractor encounters on the site any material reasonably believed to be hazardous material, such as asbestos or polychlorinated biphenyl (PCB), the Contractor shall immediately stop work in the area affected and verbally report the condition to the Owner and OAR, followed by notification in writing. The Contractor shall not resume Work in the affected area until written agreement between the Owner and Contractor, after the material has been determined by an independent laboratory or consultant to be not hazardous, or the Contractor has agreed to remove and or remediate the hazardous material, as applicable, in a Contract Modification.

10.3.2 The Contractor shall not be required to perform without its consent any Work relating to hazardous material.

10.4 EMERGENCIES

10.4.1 In an emergency affecting the safety of persons or property, the Contractor shall act so as to prevent threatened damage, injury or loss. Additional compensation or extension of time claimed by the Contractor on account of an emergency shall be determined in accordance with Article 4 and Article 7.

ARTICLE 11 INSURANCE AND BONDS

11.1 CONTRACTOR'S INSURANCE. At its sole expense, Contractor shall maintain the following insurance and bonds throughout the term of this Agreement, including any extensions or renewals, and such insurance requirements shall provide coverage for the Contractor, its subcontractors, representatives, and anyone directly or indirectly employed by any of them, or by anyone for whose acts any of them may be liable.

11.1.1 Contractor shall provide evidence of insurance reflecting compliance with the insurance requirements as listed in Section 00 21 13 and the Contract Documents. Certificate(s) of Insurance shall be remitted using an ACORD form, or in a form acceptable to the Owner and submitted to the Owner's Contracts and Grants Manager prior to contract execution. Any deductible or self-insurance retention must be indicated on the Certificate of Insurance.

11.1.2 Owner may elect to utilize a third party for the collection and monitoring of Contractor's insurance. Contractor shall respond to all correspondence from this third party in a timely manner.

11.1.3 Upon written request, Contractor shall provide or obligate its insurer to provide a copy of its insurance policies, including all forms and endorsements.

The following insurance and bonds requirements are as follows:

11.2 LIABILITY INSURANCE

11.2.1 Commercial General Liability insurance covering property damage and bodily injury (including death), which shall include, but not be limited to, premises, products and completed operations, contractual liability with limits as set forth in the Instructions to Bidders. Completed Operations coverage for the entire period of repose under Chapter 95 of the Florida Statutes is required. This insurance shall be written on an occurrence basis.

11.2.2 Automobile Liability insurance covering motor vehicles, including, but not limited to owned, non-owned, or hired vehicles, used in conjunction with the performance of the Work, resulting in property damage or bodily injury (including death) with limits of liability as set forth in the Instructions to Bidders.

11.2.3 The Greater Orlando Aviation Authority and the City of Orlando and their members (including without limitation, members of the Owner's board and the City Council and members of the citizens' advisory committees of each), the OAR, and the Designer shall be named as additional insured under the coverage required in section 11.2.1 and 11.2.2 above.

11.2.4 Workers' Compensation in statutory limits in accordance with Florida law and Employer's Liability insurance covering all Contractor's employees or persons acting at the direction of the Contractor in the performance of the Work with policy limits as set forth in the Instructions to Bidders. If Contractor is self-insured, Contractor shall provide evidence of authorization from State of Florida to be self-insured. Owner does not accept State of Florida exemptions. Contractor agrees that any insurance or self-insurance shall include a waiver of any rights to subrogation against Owner.

11.2.5 If required by the Instructions to Bidders, Pollution Liability insurance covering any liability including clean-up expenses, resulting from any pollution or environmental impairment, which arises out of or in connection with the performance of the Work with a limit of liability as set forth in the Instructions to Bidders. If coverage is provided on a claims-made basis, such insurance shall be maintained or include tail coverage for three (3) years from the date the Agreement is terminated or expired or from the date of Final Completion. The Greater Orlando Aviation Authority and the City of Orlando and their members (including without limitation, members of the Owner's board and the City Council and members of the citizens' advisory committees of each) shall be named as additional insured without limitations.

11.2.6 If required by the Instructions to Bidders, Privacy Liability Insurance covering Contractor for claims, losses, and expenses resulting from the compromise, breach, or release of confidential information or security information, whether in electronic or physical form, due to wrongful act or failure to secure such data in the care, custody and control of Contractor with limits as set forth in the Instructions to Bidders.

11.2.7 Contractor hereby agrees to the following as it relates to the above required insurance:

11.2.7.1 Insurance shall be carried with an insurance company (or companies) authorized to do business in the State of Florida and have a current financial rating by A.M. Best of A- VII or better and written on forms and endorsements acceptable to Owner.

11.2.7.2 Insurance shall be primary and not contributory to any other insurance (or self-insurance) maintained by the Owner, including any deductibles or self-insured retentions and that any other insurance shall be considered excess insurance only.

11.2.7.3 The policy limits required herein may be met by the combination of a primary liability insurance policy and an Umbrella or Excess Liability insurance policy, which will be written on a follow-form basis.

11.2.7.4 Contractor shall immediately notify Owner, in writing, of any adverse material change in Contractor's required insurance. For the purpose of this insurance section, adverse material change shall mean any reduction in the limits of the insurer's liability, any reduction of any insurance coverage, any increase in Contractor's deductible or self-insured retention, or any non-renewal or cancellation of required insurance.

11.2.7.5 Self-insured retentions and deductibles shall not exceed the requirements set forth in the Instructions to Bidders.

11.2.7.6 Costs of insurance premiums, deductibles, or self-insured retentions shall not be charged back to Owner unless included in an approved Contract Modification. Owner shall have the right to alter the monetary limits or the coverages required during the term of this Contract, and Contractor shall comply with all reasonable requests with respect thereto. Any additional insurance premium to Contractor for the mid-term change in insurance requirement must be justified as specific to the Project, before Owner considers changes in Total Contract Price for chargeback to Owner.

11.2.7.7 The Owner may at its sole discretion suspend or terminate all Work pursuant to Article 14 pending Contractor's inability to meet insurance requirements herein this Agreement or Contractor's failure to renew or replace insurance. Owner's acceptance of Contractor's proof of insurance shall not be deemed a waiver of the insurance requirements herein.

11.3 PERFORMANCE BOND

11.3.1 The Contractor shall provide a Performance Bond and a Payment Bond in the exact form attached hereto, each in an initial amount of not less than the Total Contract Price. A certified copy of the power-of-attorney appointing the attorney-in-fact for the surety and appointing the Florida licensed agent shall be attached.

11.3.1.1 The Penal Sum of the Performance Bond and the Payment Bond shall be increased or decreased automatically during the course of the Work in the event that Contract Modifications increase or decrease the Total Contract Price so that the Penal Sum of each bond shall be in an amount equal to the Total Contract Price Sum at the completion of the Work.

11.3.1.2 The Bonds shall be written through a licensed Florida agent on behalf of a surety company licensed to do business in Florida with a financial rating by A.M. Best of not less than A-VIII.

11.3.1.3 The Contractor shall, before commencing with the Work, record a copy of the Performance and Payment Bonds in the Orange County clerk's office pursuant to Florida Statute 255.05. Upon request of any person or entity appearing to be a potential beneficiary of bonds covering payment of obligations arising under the Contract, the Contractor shall promptly furnish a copy of the applicable bond or shall permit a copy to be made.

11.3.1.4 If the Surety on any bond furnished by the Contractor is declared bankrupt or becomes insolvent or its right to do business is terminated or suspended in any state or it ceases to meet the requirements defined in Article 11.3.1, or any such bond is otherwise void or defective for any reason, the

Contractor shall within ten (10) business days thereafter substitute Performance and Payment Bonds from a different Surety that fulfills the requirements of the Contract Documents. The Owner may at its sole discretion suspend all Work pursuant to Article 14.3 pending Contractor procuring substitute bonds.

11.4 PROPERTY INSURANCE

11.4.1 Unless otherwise addressed in the Contract Documents, the Owner shall, on behalf of itself, Contractor, and subcontractors, procure and maintain an “All Risk” property insurance policy, including builder’s risk coverage and equipment breakdown, resulting in damages or loss to real and personal property, including materials procured related to Work at the Project.

11.4.2 Coverage under the Owner’s property insurance program does not include any coverage for any equipment or tools of the Contractor, its Subcontractors or suppliers of any tier. Contractor agrees to inform its Subcontractors and suppliers that the Owner shall not be responsible for damages or loss (or theft) to tools and equipment while on Owner’s property, whether at the Project jobsite or otherwise.

11.4.3 Coverage under the Owner’s property insurance program does not include any coverage for the Contractor’s or its Subcontractors loss of income, business interruptions, extra expense or other time element loss, including, without limitation, any such loss arising from a covered claim.

11.4.4 Coverage under the Owner’s property insurance program does not include coverage for any materials stored off-site, including in transit, for which the Contractor or its Subcontractors or Suppliers has responsibility for care, custody and control. Contractor shall ensure it or any party with whom materials are in its care, custody and control, shall be responsible for the full replacement cost arising from any damages or loss (including theft). Any insurance on such stored materials or materials in transit shall be evidenced to Authority (or designated OAR) upon request.

11.4.5 Contractor shall be responsible for the first One Hundred Thousand Dollars ($100,000) deductible for each occurrence for any claim under Owner’s Property Insurance Program, for damages or loss (including theft, malicious mischief, or vandalism).

11.4.6 Property insurance coverage, including equipment breakdown, shall remain in effect from the commencement date of the Work and shall terminate at the earliest of the following dates: (i) as to the Work covered by the fully executed Partial Occupancy and Use Agreement (POUA), the effective date set forth in the POUA; (ii) upon any portion of Work permanently abandoned or terminated by Contractor prior to Substantial Completion; (iii) upon termination of this Contract by Owner; or (iv) upon date of Substantial Completion as certified in accordance with Article 9.7.

11.4.7 Any damage or loss (including theft) to Owner’s property, including Work at Project site, materials, appurtenant property, arising from the actions, errors, omission or improper performance by Contractor or its Subcontractors of any tier shall not prohibit Owner from making a claim under the Property Insurance Program. Any claim covered by this Property insurance program shall not absolve Contractor or its subcontractors from any responsibility or liability of claim, damages, or loss. Owner or its insurer, on its behalf, does not waive any right to recover from Contractor, its Subcontractors, or each of its insurers for such damages or loss.

11.4.8 If Contractor requests in writing that this insurance extend to the Contractor and its subcontractors for portions noted above as not covered or for other special hazards not described herein; then Contractor agrees to reimburse Owner for premiums paid at current market rate for such increase in coverage and accepts responsibility for deductibles.

11.4.9 Owner shall notify Contractor in writing, prior to the Commencement of Work, if the Owner does not intend to provide property insurance. In that event, Contractor shall then procure such insurance as

will protect the interests of the Owner, Contractor and Subcontractors, and by appropriate Change Order, shall be reimbursed for the actual cost of such insurance.

11.4.10 All proceeds paid by the Owner's property insurance shall be payable to Owner, as fiduciary for the insureds, as their interest may appear. Any portion of such proceeds (less applicable deductible) allotted to insured(s), other than Owner, shall be paid to Contractor. Contractor shall be responsible for distribution of any proportion of proceeds in similar manner to its Subcontractors.

11.5 CONTRACTOR'S PROPERTY

11.5.1 Contractor shall maintain insurance or require a third party to maintain insurance coverage for any real or personal property used in conjunction with the Work and materials stored or in transit in preparation for the Work. Such coverage shall be on a replacement cost basis. Any failure to respond to Owner's claim for recovery for damages or loss by repair or replacement, Contractor shall be deemed in breach in contract for which the Contractor shall be held liable. Contractor shall be responsible for first dollar of claim for damages, regardless of deductible, self-insured retention, failure to insure, or self-insurance by Contractor, Subcontractor, suppliers, or storage/warehouse provider.

11.6 REPORTING INCIDENTS THAT MAY GIVE RISE TO AN INSURANCE CLAIM

11.6.1 Contactor shall notify the Owner, within three business days, and document in detail any incident occurring during the performance of Work or arising directly or indirectly from the Project that may give rise to a claim by a third party against Owner, Contractor, and/or Subcontractors of any tier shall be documented in detail.

11.6.2 Contractor shall provide written notice, no less than quarterly, to Owner and OAR of any claims and incidents that may give rise to a claim. Contractor shall retain this documentation in accordance with Article 9.10.

11.6.3 Contractor shall cooperate with Owner and its agents or representative, in the investigation and resolution of any incident that may give rise to a claim or actual claim made against Owner, Contractor or Subcontractor of any tier arising directly or indirectly from the Project. Any action taken by Contractor, Subcontractor, or its insurer to resolve, settle or release itself from a claim shall be coordinated with Owner and OAR. No release shall be executed without final approval from Owner, which shall not be unreasonably withheld.

11.6.4 Upon written request and at completion of the Work, Contractor agrees to provide a detailed claims history of incidents and claims arising directly or indirectly from the Project.

11.7 INDEMNIFICATION

11.7.1 To the fullest extent permitted by law, Contractor shall indemnify and hold completely harmless the Owner, City of Orlando, (including, without limitation, their officers, agents, employees and all members of the governing boards and the Citizen Advisory Committees of each), as well as the OAR, State of Florida, Department of Transportation, and the officers, agents, and employees of each of them (the "Indemnified Parties") from and against any and all claims, suits, demands, judgments, losses, costs, fines and penalties (including any assessed by the FAA or TSA, and any required or recommended investigation and security training, incurred as a result of any violation of federal regulations, including the Airport Security Plan), damages, expenses, liabilities (including statutory liabilities under Workers Compensation laws) and reasonable expenses (including, but not limited to, fees for attorneys, expert witnesses, scene recreations, legal support expenses) ("Damages"), which may be incurred by or charged to Indemnified Parties, to the extent caused in whole or in part by any negligent act, omission, recklessness or intentional misconduct by the Contractor, any Subcontractor, or any of their officers, directors, partners, employees, agents, or

suppliers, or anyone directly or indirectly employed by any of them or anyone for whose acts they may be liable, arising directly or indirectly from (i) the Work or Project or this Contract, (ii) work performed under warranty, or (iii) the failure of the Contractor to keep, observe or perform its responsibilities and obligations contained in or arising from this Contract. . This indemnification obligation shall apply and not be limited by any limitation on the amount or type of compensation or benefits under worker's compensation laws, disability benefits, or other employee benefits. The obligations of this paragraph shall not be construed to negate, abridge, or reduce other rights or obligations of indemnity which would otherwise exist under law or this Contract. Nothing in this Contract shall be deemed a waiver by Owner of its sovereign immunity rights under the laws of the State of Florida, other than those specifically waived by virtue of this Contract.
11.7.2 This indemnification shall survive the expiration or termination of this Contract.

11.7.3 If the above indemnity provisions are deemed void in whole or in part under Florida law, then the following indemnification obligations shall apply to the extent such provisions are deemed void: Contractor shall indemnify and hold harmless the Owner, its officers and employees, from liabilities, damages, losses and costs, including but not limited to, reasonable attorney's fees, to the extent caused by the negligence, recklessness, or intentional wrongful misconduct of the Contractor and persons employed or utilized by the Contractor in the performance of the Contract.

ARTICLE 12 UNCOVERING AND CORRECTION OF WORK

12.1 UNCOVERING WORK

12.1.1 If any portion of the Work is covered contrary to the OAR's or Designer's request or to requirements specifically expressed in the Contract Documents, it must, if required in writing by the OAR, Designer, Owner or any governmental authority, be uncovered for their observation and be recovered or be corrected at the Contractor's expense without change in the Contract Time.

12.1.2 If a portion of the Work has been covered which the OAR, Designer, Owner or any applicable governmental authority has not specifically requested to observe prior to its being covered, the OAR or Designer may request to see such Work and it shall be uncovered by the Contractor. If such work is in accordance with the Contract Documents, the Owner will approve a Contract Modification in accordance with Article 7 for the direct costs of uncovering and restoring the Work. If such Work is not in accordance with the Contract Documents, the Contractor shall pay such costs unless the condition was caused by the Owner or a separate contractor in which event the Owner shall be responsible for payment of such costs.

12.2 CORRECTION OF WORK

12.2.1 The Contractor shall promptly correct Work rejected by the OAR, Designer, Owner or any governmental authority that fails to conform to the requirements of the Contract Documents, whether observed before or after Substantial Completion and whether or not fabricated, installed or completed. The Contractor shall bear all costs of correcting such rejected Work, including additional testing and inspections and compensation for the OAR's and Designer's services and expenses incurred by the Owner.

12.2.2 If, within one year after the date of Substantial Completion of the Work or designated portion thereof, or after the date for commencement of warranties or by terms of an applicable special warranty required by the Contract Documents, any of the work is found to be not in accordance with the requirements of the Contract Documents, the Contractor shall, at its cost, correct it promptly after receipt of written notice from the Owner or OAR to do so unless the Owner has previously given the Contractor a written acceptance of that specific condition. This period of one year shall be extended with respect to portions of Work first

performed after Substantial Completion by the period of time between Substantial Completion and the Final Completion of the Work. The obligations under this paragraph shall survive acceptance of the Work under the Contract and termination of the Contract. Even after the expiration of the one-year period, the Contractor shall cooperate with the Owner to resolve any issues that may arise with product warranties provided under this Contract.

12.2.3 The Contractor shall remove from the site portions of the Work which are not in accordance with the requirements of the Contract Documents and are neither corrected by the Contractor nor accepted by the Owner.

12.2.4 If the Contractor does not correct such nonconforming Work within the reasonable time set forth in the written notice, the Owner may correct or remove such nonconforming work and all costs for such corrections or removals shall be assessed against the Contractor.

12.2.5 The Contractor shall bear the cost of correcting destroyed or damaged Work, whether completed or partially completed, of the Owner or separate contractors caused by the Contractor's performing correction or removal of Work which is not in accordance with the requirements of the Contract Documents.

12.2.6 Nothing contained in Paragraph 12.2 shall be construed to establish a period of limitation with respect to other obligations which the Contractor might have under the Contract Documents. Establishment of the time period of one year as described in Paragraph 12.2.2 relates only to the specific obligation of the Contractor to correct the Work, and has no relationship to the time within which the obligation to comply with the Contract Documents may be sought to be enforced, nor to the time within which proceedings may be commenced to establish the Contractor's liability and damages with respect to the Contractor's obligations other than specifically to correct the Work. Nor shall anything contained in this subsection be construed to limit any other remedies available to the Owner under the Contract or Florida law.

12.3 ACCEPTANCE OF NONCONFORMING WORK

12.3.1 If the Owner prefers to accept Work which is not in accordance with the requirements of the Contract Documents, the Owner may do so instead of requiring its removal or correction. If the Owner accepts the Work under such circumstances, the Total Contract Price will be reduced in an equitable manner through a Contract Modification, whether or not final payment has been made.

ARTICLE 13 MISCELLANEOUS PROVISIONS

13.1 GOVERNING LAW

13.1.1 The Contract shall be governed by the laws of Florida.

13.2 SUCCESSORS AND ASSIGNS

13.2.1 The Contractor binds itself, its successors, assigns and legal representatives to the Owner and the Owner’s successors, assigns and legal representatives in respect to covenants, agreements and obligations contained in the Contract Documents. The Contractor shall not assign the Contract in whole or in part without written consent of the Owner, which consent may be granted or withheld in the Owner’s sole discretion.

13.2.2 Any transfer of this Contract by merger, consolidation or liquidation or (unless the stock of the Contractor is traded on a national stock exchange or in a generally recognized over the counter securities market) any change in ownership of or power to vote a majority of the outstanding voting stock or ownership interests of the Contractor shall constitute an assignment of this Contract for the purposes of this Contract. In the event the Contractor assigns or attempts to assign any right or obligation arising under this Contract without the Owner's prior written consent, the Owner shall be entitled to terminate this Contract, in the Owner's sole discretion.

13.3 WRITTEN NOTICE

13.3.1 Written notice shall be deemed to have been duly served if delivered in person, by regular mail, by facsimile, or by certified mail to those persons identified as representatives of the Owner, Contractor and OAR in the Pre-Construction Conference (as to the Owner and OAR) and the Contractor's Bid (as to the Contractor) unless changed in writing.

13.4 RIGHTS AND REMEDIES

13.4.1 Duties and obligations imposed by the Contract Documents and rights and remedies available thereunder shall be in addition to duties, obligations, rights and remedies otherwise imposed or available by law.

13.4.2 The invalidity of any part or provision of the Contract Documents shall not impair or affect in any manner the validity, enforceability or effect of the remaining provisions of the Contract Documents.

13.5 TESTS, EXAMINATIONS AND INSPECTIONS

13.5.1 The Contractor shall give the OAR timely notice of when each portion of the Work shall be ready and available for tests, examinations and inspections. All materials and each part or detail of the Work shall be subject to inspection by the OAR. The OAR shall be allowed access to all parts of the Work and shall be furnished with such information and assistance by the Contractor, at no additional cost, as is required to make a complete and detailed inspection. If requested at any time by the Owner or OAR, the Contractor shall furnish satisfactory evidence as to the kind and quality of material and equipment provided in the Work.

13.5.2 Any Work done or materials used without supervision or inspection by an authorized representative of the Owner may be ordered removed and replaced at the Contractor's expense unless the OAR failed to inspect after having been given reasonable notice in writing that the Work was to be performed.

13.5.3 Should the Work include relocation, adjustment, or any other modification to existing facilities, not the property of the Owner, authorized representatives of the owners of such facilities shall have the right to inspect such Work. Such inspection shall in no sense make any facility owner a party to the Contract, and shall in no way interfere with the rights of the parties to this Contract.

13.5.4 The Owner or OAR may make arrangements for any tests, examinations and inspections with any testing laboratories or entities. The Owner shall bear the costs of such tests, examinations and inspections that the Owner so arranges, unless the testing, examination, inspection or approval procedure reveal that the Work fails to meet the requirements of the Contract Documents. In that case, the Contractor shall bear all costs arising from the failure, including, but not limited to, the costs to correct the Work and

the costs of tests, examinations, inspections and services performed by the OAR, Designer and Owner in connection with such tests, examinations, inspections, or approval procedures necessary to establish that the Contractor's work conforms with the requirements of the Contract Documents.

13.5.5 Tests, inspections or approval procedures conducted pursuant to the Contract Documents shall be performed to avoid unreasonable delay in the Work.

13.6 INTEREST

13.6.1 All interest due and payable by the Owner to the Contractor or by the Contractor to the Owner shall be at the legal rate of interest.

13.7 REPRESENTATIONS AND WARRANTIES

13.7.1 The Contractor and Owner represent and warrant to the other that (1) the execution and delivery of the Contract Documents and the performance of the acts and obligations to be performed by each of them have been duly authorized by all necessary corporate (or, if appropriate, partnership) resolutions or actions; and (2) the Contract Documents do not conflict with or violate any agreements to which either party is bound, or any judgment, decree or order of any court against or affecting such party.

13.8 NON-DISCRIMINATION

13.8.1 During the performance of this Contract, the Contractor, for itself, its assignees and successors in interest (hereinafter referred to as the "Contractor") agrees as follows:

1. Compliance with Regulations. The Contractor (herein after incudes consultants) will comply with the Title VI List of Pertinent Nondiscrimination Acts and Authorities, as they may be amended from time to time , which are herein incorporated in full by reference, and made a part of this Contract.
2. Nondiscrimination. The Contractor, with regard to the work performed by it during the Contract, will not discriminate on the grounds of race, color, or national origin in the selection and retention of Subcontractors, including procurements of materials and leases of equipment. The Contractor will not participate either directly or indirectly in the discrimination prohibited by the Nondiscrimination Acts and Authorities, including employment practices when the Contract covers any activity, project, or program set forth in Appendix B of 49 CFR Part 21. The Owner may from time to time adopt additional or amended nondiscrimination provisions concerning this Contract, and the Contractor agrees that it will adopt and be bound by any such requirements as a part of this Contract.
3. Solicitations for Subcontracts, Including Procurements of Materials and Equipment. In all solicitations, either by competitive bidding or negotiation, made by the Contractor for work to be performed under a subcontract, including procurements of materials or leases of equipment, each potential Subcontractor or supplier shall be notified by the Contractor of the Contractor's obligations under this Contract and the Nondiscrimination Acts and Authorities on the grounds of race, color, or national origin.
4. Information and Reports. The Contractor shall provide all information and reports required by the Nondiscrimination Acts and Authorities, the Regulations, and directives issued pursuant thereto and shall permit access to its books, records, accounts, other sources of information, and its facilities as may be determined by the Owner or the Federal Aviation Administration to be pertinent to ascertain compliance with such Nondiscrimination Acts and Authorities, orders, and

instructions. Where any information required of a Contractor is in the exclusive possession of another who fails or refuses to furnish this information, the Contractor shall so certify to the Owner or the Federal Aviation Administration, as appropriate, and shall set forth what efforts it has made to obtain the information.

5. Sanctions for Noncompliance. In the event of the Contractor's noncompliance with the nondiscrimination provisions of this Contract, the Owner shall impose such contract sanctions as it or the Federal Aviation Administration may determine to be appropriate, including, but not limited to:

    a. Withholding of payments to the Contractor under the Contract until the Contractor complies, and/or
    b. Cancellation, termination, or suspension of the Contract, in whole or in part.

6. Incorporation of Provisions. The Contractor shall include the provisions of paragraphs 6.3.1 through 6.3.6 in every subcontract, including procurements of materials and leases of equipment, unless exempt by the Nondiscrimination Acts and Authorities, the Regulations or directives issued pursuant thereto. The Contractor shall take such action with respect to any subcontract or procurement as the Owner or the Federal Aviation Administration may direct as a means of enforcing such provisions including sanctions for noncompliance. Provided, that if the Contractor becomes involved in, or is threatened with, litigation with a Subcontractor or supplier because of such direction, the Contractor may request the Owner to enter into such litigation to protect the interests of the Owner.In addition, the Contractor may request the United States to enter into such litigation to protect the interests of the United States.

    Failure by the Contractor to carry out these requirements is a material breach of this Contract, which may result in the termination of this Contract or such other remedy as the Owner deems appropriate.

13.8.2 Title VI List of Pertinent Nondiscrimination Acts and Authorities.

During the performance of this Contract, the Contractor, for itself, its assignees, and successors in interest (hereinafter in this section referred to as the “Contractor”) agrees to comply with the following nondiscrimination statutes and authorities; including but not limited to:

a. Title VI of the Civil Rights Act of 1964 (42 U.S.C. § 2000d *et seq*., 78 stat. 252), (prohibits discrimination on the basis of race, color, national origin);

b. 49 CFR part 21 (Non-discrimination In Federally-Assisted Programs of The Department of Transportation—Effectuation of Title VI of The Civil Rights Act of 1964);

c. The Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970, (42 U.S.C. § 4601), (prohibits unfair treatment of persons displaced or whose property has been acquired because of Federal or Federal-aid programs and projects);

d. Section 504 of the Rehabilitation Act of 1973, (29 U.S.C. § 794 *et seq*.), as amended, (prohibits discrimination on the basis of disability); and 49 CFR part 27;

e. The Age Discrimination Act of 1975, as amended, (42 U.S.C. § 6101 *et seq*.), (prohibits discrimination on the basis of age);

f. Airport and Airway Improvement Act of 1982, (49 USC § 471, Section 47123), as amended, (prohibits discrimination based on race, creed, color, national origin, or sex);

g. The Civil Rights Restoration Act of 1987, (PL 100-209), (Broadened the scope, coverage and applicability of Title VI of the Civil Rights Act of 1964, The Age Discrimination Act of 1975 and Section 504 of the Rehabilitation Act of 1973, by expanding the definition of the terms “programs or activities” to include all of the programs or activities of the Federal-aid recipients, subrecipients and contractors, whether such programs or activities are Federally funded or not);

h. Titles II and III of the Americans with Disabilities Act of 1990, which prohibit discrimination on the basis of disability in the operation of public entities, public and private transportation systems, places

of public accommodation, and certain testing entities (42 U.S.C. §§ 12131 – 12189) as implemented by Department of Transportation regulations at 49 CFR parts 37 and 38;

i. The Federal Aviation Administration's Non-discrimination statute (49 U.S.C. § 47123) (prohibits discrimination on the basis of race, color, national origin, and sex);

j. Executive Order 12898, Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations, which ensures non-discrimination against minority populations by discouraging programs, policies, and activities with disproportionately high and adverse human health or environmental effects on minority and low-income populations;

k. Executive Order 13166, Improving Access to Services for Persons with Limited English Proficiency, and resulting agency guidance, national origin discrimination includes discrimination because of limited English proficiency (LEP). To ensure compliance with Title VI, you must take reasonable steps to ensure that LEP persons have meaningful access to your programs (70 Fed. Reg. at 74087 to 74100);

l. Title IX of the Education Amendments of 1972, as amended, which prohibits you from discriminating because of sex in education programs or activities (20 U.S.C. 1681 et seq).

13.9 PUBLIC RECORDS

1. When the Contractor receives any request to inspect or copy any records that relate to this Contract, it shall promptly provide the Owner with a copy of the request. The Owner will respond to each such request on behalf of itself and the Contractor and the Contractor agrees to fully cooperate with the Owner with regard to all records requests and comply with all decisions made by the Owner regarding the production/disclosure. The Contractor shall: Keep and maintain public records that ordinarily and necessarily would be required by the Owner in order to perform the services being performed by the Contractor.
2. Provide the public with access to public records on the same terms and conditions that the Owner would provide the records and at a cost that does not exceed the cost provided in chapter 119, Florida Statutes, as amended, or as otherwise provided by law.
3. Except as authorized by law, ensure that public records that are exempt or confidential and exempt from public records disclosure requirements are not disclosed for the duration of the Contract term as well as following completion or termination of the Contract if the Contractor does not transfer the records to the Owner.
4. Upon completion or termination of the Contract, transfer, at no cost, to the Owner all public records in possession of the Contractor or keep and maintain the public records required by the Owner and the law to perform the service. If the Contractor transfers all public records to the Owner upon completion or termination of the Contract, the Contractor shall destroy any duplicate public records that are exempt or confidential and exempt from public records disclosure requirements. If the Contractor keeps and maintains public records upon completion or termination of the Contract, the Contractor shall meet all applicable requirements for retaining public records. All records stored electronically must be provided to the Owner in a format that is compatible with the information technology systems of the Owner.
5. . Failure to grant such public access or otherwise comply with the Owner's request for records will be grounds for immediate termination of this Contract by the Owner. In the event of such failure, the Owner shall also enforce the Contract provisions in accordance with this Contract.
6. Failure to provide the public records to the Owner within a reasonable time may also subject the Contractor to penalties under section 119.10, Florida Statutes.
7. If a civil action is filed against Contractor to compel production of public records relating to this Contract, Contractor will be solely responsible and liable for its attorney's fees and any resulting damages.

13.9.1 IF THE CONTRACTOR HAS QUESTIONS REGARDING THE APPLICATION OF CHAPTER 119, FLORIDA STATUTES, TO THE CONTRACTOR'S DUTY TO PROVIDE PUBLIC RECORDS RELATING TO THIS CONTRACT, THE CONTRACTOR MUST CONTACT THE OWNER'S CUSTODIAN OF PUBLIC RECORDS, WHO CAN BE REACHED AT: www.orlandoairports.net/publicrecords; (407) 825-7105 (PHONE NUMBER); AND "GREATER ORLANDO AVIATION AUTHORITY, PUBLIC RECORDS" ONE JEFF FUQUA BOULEVARD, ORLANDO, FLORIDA 32827.

ARTICLE 14 TERMINATION OR SUSPENSION OF THE CONTRACT

14.1 TERMINATION BY THE CONTRACTOR

14.1.1 The Contractor may terminate the Contract because the Work has been stopped for a period of more than 30 days through no act or fault of the Contractor or a Subcontractor or their agents or employees or any other persons performing portions of the Work under contract with the Contractor, provided the Contractor notifies the Owner and OAR in writing of such intent and the Owner has not cured the Work stoppage within fourteen (14) days of receipt of such notice, for any one of the following reasons:

1. issuance of an order a court or other public authority having jurisdiction which requires all Work to be stopped; or
2. an act of government, such as a declaration of national emergency which requires all Work to be stopped; or
3. because the OAR has not approved an Application for Payment and has not notified the Contractor of the reason for withholding approval, or because the Owner has not made payment within the time stated in the Contract Documents.

14.1.2 If repeated suspensions, delays or interruptions by the Owner constitute in the aggregate more than 100 percent of the total number of days scheduled for completion, or 120 days in any 365-day period, whichever is less, then the Contractor may terminate the Contract unless the Owner has approved a Contract Modification for the increased time and cost in accordance with Article 2.

14.1.3 If the Contractor terminates the Contract per Paragraph 14.1.1 or 14.1.2, the Contractor may recover from the Owner payment for Work executed and actual reasonable costs incurred with respect to materials, equipment, tools, and construction equipment and machinery, including reasonable overhead, profit earned to the date of termination, subject to the limitations in Article 7. There is no entitlement to anticipatory profits, unless agreed to by the Owner as part of a final Contract Modification that fully resolves all outstanding issues on the Project. The Contractor shall substantiate its request for payment as requested by the Owner.

14.1.4 Termination of the Contract or a portion thereof pursuant to Paragraphs 14.1.1 or 14.1.2 shall neither relieve the Contractor or its Surety of their responsibilities for the completed Work nor shall it relieve the Contractor and Surety of their obligation for and concerning any Claim arising out of the Work performed.

14.2 TERMINATION BY THE OWNER FOR CAUSE

14.2.1 The Owner may terminate the Contract if the Contractor:

1. fails to perform the Work; fails to provide a sufficient number of adequately skilled workers or supervisory staff who actively staff the job and prosecute the Work, or fails to have available at the site proper equipment or materials to assure completion of the Work in accordance with the terms of the Contract Documents, or
2. performs the Work unsuitably or neglects or refuses to remove materials or to perform anew such Work as may be rejected as unacceptable and unsuitable, or
3. fails to commence the Work, maintain adequate progress towards completion of the Work or discontinues the prosecution of the Work, or
4. fails to carry out the requirements of the Owner's MWBE, LDB/VBE or DBE Participation Program, or
5. allows any final judgment against it to remain unsatisfied for a period of thirty (30) days, or
6. makes an assignment for the benefit of creditors, or
7. fails to carry on the Work in accordance with the Contract Provisions, or
8. consents to the appointment of a receiver, trustee or liquidator of all or substantially all of the property of Contractor, or
9. is the subject of any order or decree of any court or governmental authority or agency having jurisdiction, appointing a receiver, trustee or liquidator to take possession or control of all or substantially all of the Contractor's property for the benefit of creditors, or
10. if at any time the Surety executing the bond is determined by the Owner to be unacceptable and the Contractor fails to furnish an acceptable substitute Surety within ten (10) business days after notice from the Owner. This ten (10) day notice and cure period is in lieu of the seven (7) day period set forth in Article 14, or
11. fails to fulfil the insurance requirements of Article 11 or fails to remedy an insurance deficiency within a reasonable time as determined by the Owner, or
12. for contracts that exceed One Million Dollars ($1,000,000.00), Owner may terminate this Agreement if the Contractor is found to have submitted a false certification or has been placed on the Scrutinized Companies with Activities in Sudan List, the Scrutinized Companies with Activities in the Iran Petroleum Energy Sector List.

14.2.2 When any of the above reasons exists, the Owner may without prejudice to any other rights or remedies of the Owner and after giving the Contractor and the Contractor's Surety seven (7) days written notice and provided the Contractor, within such seven (7) day period, has not commenced in good faith to cure such cause or breach (or if having commenced such cure, is not proceeding diligently to complete such cure), terminate employment of the Contractor, in whole or in part, and may, subject to any prior rights of the Surety, finish the Work by whatever reasonable method the Owner may deem necessary, including taking possession of the site and of all materials, equipment, tools, and construction equipment and machinery thereon owned by the Contractor.

14.2.3 When the Owner terminates the Contract for one of the reasons stated in Paragraph 14.2.1, the Contractor shall not be entitled to receive further payment until the Work is completed.

14.2.4 If the unpaid balance of the Total Contract Price exceeds the costs of finishing the Work, including compensation for the Designer's or OAR’s services and other expenses made necessary thereby, such excess shall be paid to the Contractor. If the costs of finishing the Work exceed the unpaid balance, the Contractor shall pay the difference to the Owner. The amount to be paid to the Contractor or Owner, as the case may be, shall be certified by the Designer and agreed to by the OAR and this obligation for payment shall survive termination of the Contract. Termination of the Contract or a portion thereof pursuant to Paragraph 14.2 shall neither relieve the Contractor of its responsibility for the completed Work nor shall it relieve its Surety of its obligation for and concerning any Claim arising out of the Work performed.

14.3 SUSPENSION OR TERMINATION BY THE OWNER FOR CONVENIENCE

14.3.1 The Owner may, without cause, by written order direct the Contractor to suspend, delay or interrupt the Work in whole or in part for such period of time as the Owner may determine.

14.3.2 An extension of Contract Time equal to the period of suspension shall be the Contractor's sole and exclusive remedy for a suspension by the Owner unless Paragraph 2.2.2 applies to such suspension. No adjustment to Contract Time shall be made to the extent:

1. that performance is, was or would have been so suspended, delayed or interrupted by another cause for which the Contractor is responsible; or
2. that an equitable adjustment is made or denied under another provision of this Contract.

14.3.3 The Owner may terminate this Contract in whole or in part at any time for its convenience by giving the Contractor seven (7) days' written notice. The Owner shall have the right, in that event, to take over any or all of the Contractor's material, supplies, equipment, or Subcontractors in order to complete the Work and the Contractor shall assign to the Owner such material, supplies, equipment, or Subcontracts/purchase orders. The Contractor shall proceed to complete any part of the Work, as directed by the Owner, and shall attempt to settle all Subcontractor/Supplier claims and obligations under the Contract with the Owner. Subject to the limitations in Article 7, the Contractor shall be compensated by the Owner for the Contractor's reasonable costs actually expended and profit earned on Work that has been fully completed and accepted by the Owner. There is no entitlement to anticipatory profits, unless agreed to by the Owner as part of a final Contract Modification that fully resolves all outstanding issues on the Project. The Contractor shall substantiate its request for payment as requested by the Owner.

14.3.4 The Owner shall terminate the Contract or portion thereof by written notice when the Contractor is prevented from proceeding with the Contract as a direct result of an Executive Order of the President of the United States. When the Contract, or any portion thereof, is terminated pursuant to this paragraph before completion of all items of work in the Contract, payment will be made, subject to the limitations of Article 7, for the actual number of units or items of work completed at the contract price or as mutually agreed to for items of Work partially completed or not started. No Claims for loss of anticipatory profits shall be permitted. Reimbursement for other overhead expenses (when not otherwise included in the Contract) and moving equipment and materials to and from the job will be considered, the intent being that an equitable settlement will be made with the Contractor. Acceptable materials obtained or ordered by the Contractor for the Work which are not incorporated in the Work shall, at the option of the Owner, be purchased from the Contractor at actual cost as shown by receipted bills and actual cost records at such points of delivery as may be designated by the OAR. Termination of the Contract or a portion thereof pursuant to this paragraph shall neither relieve the Contractor of its responsibilities for the completed Work nor shall it relieve its Surety of its obligation for and concerning any Claim arising out of the Work performed.

ARTICLE 15 WHISTLEBLOWER REPORTING LINE

The Owner is committed to the highest level of integrity in its operations and is fully committed to protecting the organization, its operations, and its assets against fraud, waste and abuse. The Owner has established a Whistle-Blower Reporting Line with a third-party service provider as a means to report suspected fraud, waste or abuse of Owner resources in connection with Owner operations. Should Contractor suspect any fraud, waste or abuse in connection with any Work under this Contract, including any work of its subcontractors or laborers, it shall promptly report such activity by calling 1-877-370-6354, through email to GOAA@integritycounts.ca or through the online reporting form at www.integritycounts.ca/org/GOAA. The Contractor shall include this reporting requirement in all subcontracts and vendor agreements. The Contractor is further encouraged to report any suspected fraud, waste or abuse it suspects in connection

with any other airport operation or project.

ARTICLE 16 E-VERIFY

Effective January 1, 2021, the Contractor shall register with and utilize the U.S. Department of Homeland Security's Employment Eligibility Verification System (E-Verify), in accordance with the terms governing the use of the system, to verify the work authorization status of all newly hired employees, performing work in the United States. The Contractor shall include an express provision in all Subcontracts requiring the Subconsultants and Subcontractors to do the same and require all Subconsultants and Subcontractors to provide the Contractor with an affidavit stating that the Subconsultant/Subcontractor does not employ, contract with, or subcontract with an unauthorized alien. The Contractor must retain all such affidavits for the duration of the Contract. In accordance with Florida Statutes §448.095, the Owner shall terminate this Contract if Owner has a good faith belief that the Contractor knowingly employs an unauthorized alien or has otherwise violated Florida Statute §448.09(1). The Owner shall require the Contractor to terminate the contract of a Subconsultant/Subcontractor if Owner has a good faith belief that the Subconsultant/Subcontractor has knowingly violated Florida Statute §448.09(1). The Contractor may challenge any such termination in accordance with Florida Statutes §448.095. Consequences for a violation of this subsection also include liability for the Owner’s costs as a result of the termination and debarment for at least one (1) year in accordance with Florida Statutes §448.095.

END OF SECTION 00 72 13

SECTION 00 73 00 – SUPPLEMENTARY CONDITIONS OF THE CONTRACT FOR CONSTRUCTION

The following supplements modify the “General Conditions,” GOAA Document Section 00 72 13. Where a portion of the General Conditions is modified or deleted by these Supplementary Conditions, the unaltered portions of the General Conditions shall remain in effect.

END OF SECTION 00 73 00

SECTION 00 73 19.13 - HAZARDOUS MATERIALS

PART 1 - GENERAL

1.1. SECTION INCLUDES

A. Alerting Contractors against the presence of hazardous materials in certain items in the building and alerting against the use of hazardous materials.

1.2. DEFINITION

A. As used in this Section, Hazardous Materials shall mean any hazardous substance as defined in 42 USC Section 9601 or regulations adopted pursuant to that Section or any material listed on the Florida Substance List required by Section 442.103, Florida Statutes.

1.3. CONSTRUCTION

A. Asbestos, asbestos containing material, lead or other hazardous materials are not allowed during the construction of new work or renovations at the Airport.

B. The Contractor will identify hazardous materials that are currently used in the construction process and in the way of new construction and shall seek specific approval, both as to the type of hazardous material and as to limits of usage, from the Owner.

PART 2 - PRODUCTS (Not Applicable)

PART 3 - EXECUTION (Not Applicable)

END OF SECTION 00 73 19.13

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SECTION 00 73 93 - SPECIAL CONDITIONS REGARDING CONSTRUCTION AT AIRPORT FACILITIES

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SECTION 00 73 93 - SPECIAL CONDITIONS REGARDING CONSTRUCTION AT AIRPORT FACILITIES

ARTICLE 1 AIRPORT LAYOUT PLAN CHANGE REQUEST

1.1 Prior to the start of construction, the Contractor shall be required to review the FAA permit for the construction equipment and machinery planned to be used at the Airport for the Project. If there is any modification required, an amendment shall be filed to the FAA by the Contractor through the OAR. The review and approval process requires a minimum of forty-five (45) days. No construction equipment or machinery shall be permitted on the Airport property without prior approval from the FAA and the Owner. This construction equipment and machinery, with the approval, shall be marked and lighted in accordance with the FAA requirements or as shown and specified in the construction documents.

ARTICLE 2 RESTRICTIONS REGARDING AIR OPERATIONS AREA

2.1 The Contractor shall control its operations and the operations of its Subcontractors and Suppliers so as to provide for the free and unobstructed movement of aircraft in the Air Operations Area ("AOA") of the Airport. When the Work requires the Contractor to conduct its operations within the AOA, the Work shall be coordinated with the Owner's operations department (through the Owner's Authorized Representative-OAR) at least seventy-two (72) hours prior to commencement. The Contractor shall not close an AOA until authorized by the OAR and until the necessary temporary markings and lighting are in place as provided in Paragraph 4, AOA CLOSURES.

ARTICLE 3 CONTRACTOR OPERATIONS ON THE AOA

3.1 Aircraft traffic will continue to use existing runways, aprons, and taxiways of the Airport during the time that Work under the Contract is being performed. The Contractor shall at all times conduct its Work so as to create no hindrance, hazard or obstacle to aircraft using the Airport and must, at all times, conduct the Work in conformance with requirements of the Owner and the FAA Chief Control Tower Operator or authorized representatives.

3.2 The Contractor shall identify each motorized vehicle or piece of construction equipment in conformance to the current edition FAA Advisory Circular 150/5370-2F, Operational Safety on Airports During Construction.

3.3 All runways, taxiways, and aprons which have been used by the Contractor's vehicles or equipment shall be returned to the condition existing prior to any closing or crossing and prior to the reopening of these areas to aircraft traffic. All existing wooded or grassed areas beyond the limit of Work damaged by the Contractor's operations shall be restored to its original condition by the Contractor.

3.4 If the Contractor is given approval to work at night, the Contractor shall provide lights at the work site and along the access route. Type, direction, number and location of lights shall be subject to the approval of the Owner and FAA Chief Control Tower Operator.

3.5 Open flame type lighting is prohibited on the AOA.

3.6 The Contractor is to develop and provide the Safety Plan Compliance Document (SPCD) for the project in conformance with the current edition of FAA Advisory Circular 150/5370-2F Operational Safety at Airports During Construction.

ARTICLE 4 AOA CLOSURES

4.1 If absolutely essential, in order to permit construction, runways or taxiways may be closed to aircraft operations during periods when weather or other conditions do not require its use by aircraft, upon advance written application by the Contractor to the Owner or its OAR on a form to be provided by the Owner. The Contractor will schedule and organize its Work so that a minimum of closings or crossing of runways and taxiways will be required during the performance of the Work.

4.2 When the Work requires closing an AOA of the Airport or portion of such area, the Contractor shall furnish, erect and maintain temporary markings and associated lighting conforming to the requirements of the current edition FAA Advisory Circular 150/5240-1L, Standards for Airport Markings.

ARTICLE 5 NAVAIDS AND OTHER SIGNALS

5.1 There are installed on the Airport FAA NAVAIDs or Owner NAVAIDs and other electronic and visual signals (hereinafter collectively NAVAIDS) which may include but not be limited to, ASR, UHF, NDB and VHF Receivers and Transmitters, National Weather Service Facilities, lighting, electric cables and controls relating to such NAVAIDs and facilities and other electric power cables serving other facilities. Such NAVAIDs, National Weather Service and other facilities and electric cables must be fully protected during the entire construction time. Work under this Contract can be accomplished in the vicinity of these facilities and cables only at approved periods of time, which approval is subject to withdrawal at any time because of changes in the weather, emergency conditions on the existing airfield areas, anticipation of emergency condition and for any other reason as determined by the OAR acting under the orders and instructions of the Owner or the designated FAA representative. Any instructions to the Contractor to clear any given area, at any time by the OAR, the Airport Vice Presdient of Operations or the Air Traffic Control Tower (by radio or other means) shall be immediately executed. Construction work will be commenced in the cleared area only when additional instructions to this effect are issued. To the extent that they are known, the approximate locations of NAVAIDs, National Weather Service and other facilities have been indicated on the Contract Drawings. The Owner does not warrant or guaranty the accuracy or completeness of the location information relating to NAVAIDs, National Weather Service and other facilities appearing on the Contract Drawings. Any inaccuracy or omission shall not relieve the Contractor of its responsibility to protect such existing facilities from damage or unscheduled interruption of service.

5.2 Power and control cables leading to and from any NAVAIDs, National Weather Service and other facilities will be marked in the field by the Contractor, before any work in its general vicinity is started. Thereafter, through the entire time of this construction, they shall be protected from any possible damage.

5.3 These special provisions intend to make perfectly clear the need for protection of FAA NAVAID's, National Weather Service and other facilities and cables by this Contractor at all times.

5.4 The Contractor shall immediately repair at its expense, with identical material by skilled workers, any underground cables serving FAA NAVAIDs, National Weather Service and other Airport facilities, which are damaged by its workers, equipment or work. Prior approval of the FAA must be obtained for the materials, workers, time of day or night, method of repairs, or for any temporary or permanent repairs the Contractor proposes to make to any FAA NAVAIDs, National Weather Service facilities or other cables and controls serving such NAVAIDs and facilities which are damaged by the Contractor. Prior approval by the Owner must be obtained for the materials, workers, time of day or night, method of repairs for any temporary or permanent repairs the Contractor proposes to make to any of the airport facilities and cables damaged by the Contractor.

ARTICLE 6 FAA REQUIRED PROVISIONS

6.1 Agreements with the United States and State of Florida.

This Contract shall be subject to all restrictions of record affecting the Airport and the use thereof, all Federal and Florida laws and regulations affecting the same, and shall be subject and subordinate to the provisions of any existing agreement between the Owner and the United States of America or the State of Florida, their boards, members, agencies or commissions and to future agreements between the foregoing relative to the operation or maintenance of the Airport, the execution of which may be required as a condition precedent to the expenditure of Federal or state funds for the development of the Airport, or as a condition precedent to the use of the Airport, or any part thereof, by the Contractor, the Owner or otherwise. All provisions hereof shall be subordinate to the right of the United States of America to terminate the right of the Contractor, the Owner, or others, to occupy or to use the Airport, or any part thereof, during the time of war or national emergency.

6.2 Fair Prices.

If the Contractor shall furnish any services to the public at the Airport, it shall furnish said services on a fair, equal and non-discriminatory basis to all users thereof and shall charge fair, reasonable and non-discriminatory prices for each unit of service, provided that the Contractor shall be allowed to make reasonable and non-discriminatory discounts or rebates or other similar types of price reductions to volume purchasers, if any.

6.3 Non-Discrimination

During the performance of this Contract, the Contractor, for itself, its assignees and successors in interest (hereinafter referred to as the "Contractor") agrees as follows:

1. Compliance with Regulations. The Contractor shall comply with the Regulations relative to nondiscrimination in federally assisted programs of the Department of Transportation (hereinafter, "DOT") Title 49, Code of Federal Regulations, Part 21, as they may be amended from time to time (hereinafter referred to as the Regulations), which are herein incorporated by reference and made a part of this Contract.
2. Nondiscrimination. The Contractor, with regard to the work performed by it during the Contract, shall not discriminate on the grounds of race, color, or national origin in the selection and retention of Subcontractors, including procurements of materials and leases of equipment. The Contractor shall not participate either directly or indirectly in the discrimination prohibited by section 21.5 of the Regulations, including employment practices when the Contract covers a program set forth in Appendix B of the Regulations. The Contractor agrees to comply with pertinent statutes, Executive Orders and such rules as are promulgated to assure that no person shall, on the grounds of race, creed, color, national origin, sex, age, or disability be excluded from participating in any activity conducted with or benefiting from Federal assistance. This provision binds the Contractor and subcontractors of all tiers and subcontractors of all tiers from the bid solicitation period through the completion of the contract. This provision is in addition to that required of Title VI of the Civil Rights Act of 1964.

3. Solicitations for Subcontracts, Including Procurements of Materials and Equipment. In all solicitations either by competitive bidding or negotiation made by the Contractor for work to be performed under a subcontract, including procurements of materials or leases of equipment, each potential Subcontractor or supplier shall be notified by the Contractor of the Contractor's obligations under this Contract and the Regulations relative to nondiscrimination on the grounds of race, color, or national origin. 4. Information and Reports. The Contractor shall

provide all information and reports required by the Regulations or directives issued pursuant thereto and shall permit access to its books, records, accounts, other sources of information, and its facilities as may be determined by the Owner or the Federal Aviation Administration (FAA) to be pertinent to ascertain compliance with such Regulations, orders, and instructions. Where any information required of a Contractor is in the exclusive possession of another who fails or refuses to furnish this information, the Contractor shall so certify to the Owner or the FAA, as appropriate, and shall set forth what efforts it has made to obtain the information.

5. Sanctions for Noncompliance. In the event of the Contractor's noncompliance with the nondiscrimination provisions of this Contract, the Owner shall impose such contract sanctions as it or the FAA may determine to be appropriate, including, but not limited to:

   a. Withholding of payments to the Contractor under the Contract until the Contractor complies, and/or
   b. Cancellation, termination, or suspension of the Contract, in whole or in part.

7. Incorporation of Provisions. The Contractor shall include the provisions of paragraphs 1 through 5 in every subcontract, including procurements of materials and leases of equipment, unless exempt by the Regulations or directives issued pursuant thereto. The Contractor shall take such action with respect to any subcontract or procurement as the Owner or the FAA may direct as a means of enforcing such provisions including sanctions for noncompliance.

   Provided, however, that in the event a Contractor becomes involved in, or is threatened with, litigation with a Subcontractor or supplier as a result of such direction, the Contractor may request the Owner to enter into such litigation to protect the interests of the Owner and, in addition, the Contractor may request the United States to enter into such litigation to protect the interests of the United States.

   Failure by the Contractor to carry out these requirements is a material breach of this Contract, which may result in the termination of this Contract or such other remedy as the Owner deems appropriate.

6.4 Miscellaneous Provisions:

1. The Contractor will not erect or permit the erection on the Airport property of any permanent or temporary structure or facility which would interfere materially with the use, operation or future development of the Airport, or permit the generation of electronic emissions that would interfere with communications and navigation by aircraft using the Airport.
2. This Contract confers no right upon the Contractor to use any landing area or air navigation facility at the Airport, and hence, nothing contained in this Contract shall be construed to grant, or to authorize the granting of, an exclusive right for the use of any such landing area or air navigation facility in violation of Section 308 of the Federal Aviation Act of 1958.
3. The Contractor shall comply with all applicable Transportation Security Administration (TSA) regulations concerning Airport security, including but not limited to 49 CFR 1542 and the Airport Security Plan (ASP).
4. The Contractor shall not, in its operations hereunder, generate any odors, fumes, smoke, noise, glare, vibration, electronic emissions, soot, dust or atmospheric pollution, sewage, industrial or other wastes, in violation of any applicable law, regulation or procedure of any Federal, state, county or city authority having jurisdiction with respect to such matters.
5. The Owner reserves unto itself, its successors and assigns, for the use and benefit of the public, a right of flight for the passage of aircraft in the airspace above the surface of the Airport, together with the right to cause in said airspace such noise as may be inherent in the operation of aircraft, now known or hereafter used, for navigation or flight in the said airspace, and for use of said airspace for landing on, taking off from or operating on the Airport.

6. The Contractor expressly agrees for itself, its successors and assigns, to restrict the height of structures, objects of natural growth and other obstructions on the Airport to such a height so as to comply with Federal Aviation Regulations, Part 77.
7. The Contractor agrees for itself and its Subcontractors to require any lights on the Airport to be constructed, focused or arranged in a manner that will prevent the lights from casting beams in an upward direction so as to interfere with the vision of pilots in aircraft.
8. If the FAA determines that any right or claim of right in or to the property herein creates an undue risk or interference with the operation of the Airport or the performance of or compliance with any covenants and conditions to which the use of the Airport is subject, said right or claim shall be extinguished or modified in a manner acceptable to the FAA.

ARTICLE 7 USE OF SITE

7.1 Personal vehicles of employees and vehicles operated by vendors of goods or services will not be permitted beyond the Contractor's parking area.

7.2 No signs shall be placed on the site, nor shall any photographs be taken without the OAR's prior written consent. No visitors other than persons engaged in the Work shall be permitted on the construction site without the OAR's prior written consent.

ARTICLE 8 BARRICADES, WARNING SIGNS AND HAZARD MARKINGS

8.1 For work on the AOA, the following requirements are in addition to those prescribed in Section 01 50 00, Temporary Facilities and Controls.

8.2 The Contractor shall furnish, erect and maintain markings and associated lighting of open trenches, excavations, temporary stock piles and parked construction equipment that may be hazardous to the operation of emergency fire-rescue or maintenance vehicles on the Airport in reasonable conformance to the current edition FAA Advisory Circular 150/5370-2F, Operational Safety on Airports During Construction.

8.3 The Contractor shall furnish and erect all barricades, warning signs, and marking for hazards prior to commencing work which requires such erection and shall maintain the barricades, warning signs, and markings for hazards until their dismantling is approved in writing by the OAR.

8.4 The Contractor shall identify each motorized vehicle or piece of construction equipment in reasonable conformance to the most current version of AC 150/5370-2F, Operational Safety on Airports During Construction and AC 150/5210-5D, Painting, Marking, and Lighting of Vehicles Used on an Airport.

8.5 All cranes used on the site shall be marked in the following manner:

1. During daylight hours, a flag shall be installed at the highest point of the equipment. The flag shall be aviation surface orange and be a minimum of five (5) feet square.
2. During non-daylight hours, at least one steady burning light should be installed at the highest point of equipment on a horizontal plane in a manner to insure unobstructed visibility of aircraft at any normal angle of approach.

ARTICLE 9 CONTRACTOR'S RESPONSIBILITY FOR UTILITY SERVICE AND FACILITIES OF OTHERS

9.1 For work on the AOA, the following requirements are in addition to those prescribed in Section 01 50 00, Temporary Facilities and Controls.

9.2 To the extent that such public or private utility services, FAA or National Oceanic and Atmospheric Administration (NOAA) facilities, or utility services of other governmental agency are known by the Owner to exist within the limits of the Contract Work, the approximate locations have been indicated on the Contract Drawings.

9.3 The Contractor shall cooperate with the owner of any public or private utility service, FAA or NOAA, or a utility service of another governmental agency that may be authorized by the Owner to construct, reconstruct or maintain such utility services or facilities during the progress of the Work. In addition, the Contractor shall control its operations to prevent the unscheduled interruption of such utility services and facilities.

ARTICLE 10 ARCHAEOLOGICAL AND HISTORICAL FINDINGS

10.1 Unless otherwise specified in the Contract Documents, the Contractor is advised that the site of the work is not within any property, district or site, and does not contain any building, structure or object listed in the current National Register of Historic Places published by the United States Department of the Interior.

10.2 Should the Contractor encounter, during its operations, any building, part of a building, structure, or object which is incongruous with its surroundings, the Contractor shall immediately cease operations in that location and notify the OAR. The OAR will investigate the Contractor’s finding and will direct the Contractor to either resume or suspend operations.

ARTICLE 11 INSPECTION BY OTHERS

11.1 Pursuant to a Public Transportation Grant Agreement between the State of Florida Department of Transportation and the Owner, the State of Florida may pay a portion of the costs of this improvement. The construction work and labor shall be done in accordance with the laws affecting and regulations of the State of Florida Department of Transportation. The construction work and materials, therefore, will be subject to inspection by the State of Florida Department of Transportation or its agents as it or they may deem necessary; provided, however, that such inspections shall not be construed so as to make the State of Florida Department of Transportation a party to this Contract and shall not interfere with the performance of the obligations of any party to this Contract.

END OF SECTION 00 73 93

SECTION 00 73 93.01 - SECURITY AND BADGING AT AIRPORTS

PART 1 - GENERAL

1.1. RELATED DOCUMENTS

A. The Contractor and their subcontractors shall comply with all security requirements specified herein.

1.2. DEFINITIONS

A. AOA – Aircraft Operating Area

B. Airport Identification Media – identification badge issued by the Owner

C. Photo ID Badges (security) – photo identification badge issued by the Owner for Secured, Sterile and/or AOA areas

D. Photo ID Badges (white) – photo identification badge issued by the Owner for non-security areas only

E. Non-photo ID Badges (construction) – identification badge issued by the Owner for escorted access to Secured, Sterile and AOA areas

F. Non-photo ID Badges (white) – identification badge issued by the Owner for escorted access to non-security areas only

G. Automobile Decal – Owner issued emblem displayed on vehicle

1.3. CONTRACTOR PERSONNEL SECURITY ORIENTATION

A. Prior to working in the construction area, the Contractor shall inform all Contractor personnel of these requirements and, from time to time, other security provisions adopted by the Owner. All new employees shall also be briefed on these requirements prior to working in the construction area. All authorized unescorted employees requiring access will receive security training prior to being issued identification media. All authorized signatories for each company requesting access will receive specialized training from the Access Control Office regarding processes, access and required documentation as well as fees.

1.4. ACCESS TO SITE

A. Contractors access the site as shown on the plans or as directed by the OAR. The Contractor shall not permit any unauthorized construction personnel or traffic on the site. The Contractor shall be responsible for traffic control to and from the various construction areas on the site. The Contractor is responsible for immediate cleanup of any debris deposited along any access road as a result of his/her construction traffic. Directional signage at the access gate and along the delivery route to the storage area or work site shall be as directed by the OAR. Should a construction gate access

the AOA, the Contractor shall coordinate with the Owner's Security through the Owner/OAR to request access point and schedule the Owner's security staff.

1.5. MATERIAL DELIVERY TO THE SITE

A. All Contractor's material orders for delivery to the site shall use as a delivery address the access point at the Contractor's storage site at the airport to avoid delivery trucks from entering into the airport or taking short cuts through the perimeter gate and entering into aircraft operations areas inadvertently. Deliveries to the terminal facility or the AOA shall be arranged with the OAR prior to delivery to ensure no operational interruptions and the Owner will make arrangements for placement on the vendor list.

1.6. CONSTRUCTION AREA LIMITS

A. The location of construction material storage areas, equipment storage areas, parking areas and other areas required for the Project will be requested by the Contractor and approval will be coordinated by the OAR. The Contractor shall erect and maintain suitable fencing, marking and/or warning devices suitable for both day/night use to delineate the perimeter of all such areas.

PART 2 - PRODUCTS (not applicable)

PART 3 - EXECUTION

3.1. AIRPORT IDENTIFICATION MEDIA, AUTOMOBILE DECALS AND KEY REQUEST APPLICATIONS

A. Authorization to apply for any Airport Identification Media (badges), Automobile Decals and Key Requests will be in the form of an Introduction Letter signed by GOAA. Introduction letters will be provided for the Contractor and its subcontractors.

B. The Contractor and each Subcontractor shall designate representatives, in writing on company letterhead (format to be provide by the Access Control Office), to be the authorized signatories for badge, decal and key requests. All authorized signatories must receive required training, even if they are not applying for an ID.

C. All personnel applying for a pictured ID badge must attend an Airport Security Training Program class and, if applicable, a Vehicle Operating Class and/or Movement Area Training Class. The Computer Based Training Classes are provided on a walk in basis. The training office hours in Access Control Office are Monday through Friday from 0730 – 1400 hours.

D. Any outstanding fees for badges, decals or keys will be deducted from Contractor's final payment.

3.2. BADGE APPLICATION PROCESS

A. All new applicants requiring unescorted access to a Secured or Sterile area of the airport must undergo a Criminal History Records Check (CHRC), a Security Threat Assessment (STA), and are

subject to the requirements of Title 49 of the Code for Federal Regulations Part 1542 or 1544 and the Airport Security Improvement Act of 2000. The CHRC and STA typically take less than 7-10 calendar days but may take longer depending on applicant's history. If granted access, a pictured ID badge will be issued in a color representative of the work area.

B. If an applicant has a Criminal History Record, their application must be reviewed by the Airport Security Coordinator. The applicant may be required to submit additional documentation. If an individual has ever pleaded guilty or nolo-contendere (no contest) to, had an adjudication withheld, been convicted or found not guilty by reason of insanity to any of the crimes listed in Title 49 of the Code of Federal Regulations, they may be prohibited access.

C. Non-photo ID badges do not require a CHRC or fingerprinting.

D. Badges will be issued for the duration of the project but no badges will be issued for longer than two years. In the event the project exceeds two years, an additional introduction letter requesting an extension will need to be submitted to the Access Control Department. Contractor personnel with movement area designations on their badge will be issued a badge with duration of one year from the date of the movement area training class. In the event a badge expires prior to renewal, Applicant will need to follow all new applicant procedures which include attendance of classes and fingerprinting. All outstanding and/or expired or non-returned badges and/or keys must be resolved, by paying fees or physically returning the badges(s) and/or key(s), before renewals, extensions or new badges and/or keys will be authorized.

3.3. FEES ASSOCIATED WITH ACCESS CONTROL MEDIA

A. Identification Badges – new or renewal $500.00

B. Identification Badges – add or remove insignia, name change, damaged badge, etc. $25.00

C. Non-returned Badges - (fee charged to employer) $1000.00

D. Lost identification badge – Replacement $500.00

E. Stolen Identification badge - No charge with proper documentation $00.00

F. Fingerprints $27.00

G. Security Background Check $11.00

H. Keys $50.00

I. Lost key replacement $500.00

J. Non-returned keys - (fee charged to employer) $500.00

K. AOA Vehicle Decals $25.00

L. Fees can be paid by company check or cash at time of processing. The Owner will not reimburse Contractor for any fees or costs associated with the security requirements.

3.4. AUTOMOBILE DECAL REQUIREMENTS

A. Applications for vehicle access to the AOA shall be obtained from the Authority's Construction Department. Applicant and vehicle must be covered by the Contractor's or Subcontractor's general and automobile liability insurance policies of not less than Five Million Dollars ($5,000,000) for each policy and proof of insurance must be submitted, along with a copy of the vehicle registration, with the AOA Decal Form. A $25.00 payment, per vehicle, must be submitted at this appointment.

B. Automobile decals will expire on the expiration date of either the Project or the insurance, whichever is sooner.

C. All vehicles must have AOA decals on the front and rear windows and have appropriate company logos on the right and left side of the vehicles. Logos shall be of a size to be seen from 100 feet and may be magnetic. Unless escorted, all drivers of vehicles on the AOA must attend a "Vehicle Operations" class and have the appropriate symbol added to the ID badge. Only employees with photo ID badges, permitted for driving, are allowed to drive on the AOA or to escort other vehicles.

D. In the event a vehicle needs terminal access only, access to the terminal must be approved and company added to the authorized vendor list. A parking location must be obtained to park under the terminal.

3.5. VEHICLE REQUIREMENTS ENTERING AND DRIVING ON THE AOA TO ACCESS TERMINAL/AIRSIDES

A. All unescorted vehicles must display valid AOA vehicle decals and appropriate company signage on exterior of vehicle.

B. All vehicles will be searched before entering the AOA.

C. Vehicles can be left unattended/parked in designated areas while on the AOA, including being parked in the baggage makeup areas, if authorized by OAR to be parked for project purposes.

D. Vehicles left unattended shall remain unlocked with keys available.

E. Coordinate with the Owner's Operations about parking in and around aircraft at Airsides, particularly international aircraft.

F. Coordinate with the Owner's Operations regarding parking in the baggage makeup areas – vehicles will be towed if parked in non-designated areas.

3.6. VEHICLE REQUIREMENTS ENTERING AND DRIVING UNDER TERMINAL BUILDING

A. All vehicles must display appropriate company signage on exterior of vehicle.

B. All vehicles will be searched before entering terminal first level parking and loading dock areas.

C. Vehicles can be left unattended while parked in the terminal first level parking and loading dock areas if permission from OAR is received.

D. Vehicles must always be locked when left 'unattended'.

3.7. VEHICLE REQUIREMENTS NEAR TERMINAL AND TERMINAL TOP PARKING AREA

A. OAR must coordinate authorization for access and parking near the Terminal, including Curbs, and Terminal Top parking area. Authorization will be project specific.

B. All vehicles will be attended by contractor personnel at all times when located/parked at all commercial lanes, ticketing and baggage ramps, loading/off-loading operations.

C. All contractor vehicles parked at the terminal building, commercial lanes, ticketing and baggage ramps, loading/off-loading operations must have the contractors name and logo on both sides of the vehicle.

D. All contractor vehicles are subject to search when located near the terminal building.

3.8. CONSTRUCTION SITES/LAYDOWN AREAS

A. Demising areas will be locked at all times with Owner's lock, unless attended by contractor personnel. Lock is available from Owner's lock shop.

B. Stored materials located within the terminal/airsides area will be enclosed with demising wall/fencing and will be subject to searches.

C. Dumpsters located within 300 feet of the terminal will be located inside a demised/fenced enclosure and will not be required to have a photo ID badged monitor.

D. Dumpsters located in a public area (outside of a demised/fenced enclosure) will be required to have a photo ID badged monitor.

E. Dumpsters will be emptied by the end of every business day.

F. There shall also be a means to remove the dumpster within reasonable time due to an emergency or security issues.

G. All prohibited items in the Sterile Area must be secured or controlled at all times.

3.9. SECURITY VIOLATIONS

A. The Owner will enforce all security procedures. Any violators will have their Access removed for a minimum period of seven calendar days.

B. An individual who has had access privileges removed may not be escorted into any security are during that time. Remedial security training must also be taken for security violations.

DURING PERIODS OF HEIGHTENED HOMELAND SECURITY ALERT LEVELS, ADDITIONAL SECURITY MEASURES WILL BE IMPOSED.

END OF SECTION 00 73 93.01

SECTION 00 73 93.02 - FIS/CBP ACCESS PROCEDURES AT OIA

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and General Conditions/Provisions of Contract, including Contractual Conditions and other Division 01 Specification Sections, apply to this Section.

B. Security and Badging at Airports 00 73 93. 01

C. Special Conditions Regarding Construction at Airport Facilities 00 73 93

1.2 DESCRIPTION

A. General: The U.S. Customs Border Protection (CBP) spaces, including the Federal Inspection Station (FIS) at Orlando International Airport, require CBP approval to access, regardless of the time of day. All persons entering the FIS must be vetted and approved by U.S. Customs and Border Protection before obtaining either a Temporary badge or a Hologram designation on their ID Badge. GOAA Contractors, Consultants and Owner's Authorized Representatives (OARs) are allowed to apply for a Hologram designation on GOAA Security Photo ID badges. Contractors and their sub-contractors with personnel using GOAA Escort required ID Badges must ensure the personnel granted entry into FIS, regardless of the time of day, have been vetted by CBP.

1.3 DEFENITIONS:

A. FIS Interior: All interior areas controlled by USCBP. Contractors are not allowed in the FIS while an International aircraft is processing.

B. FIS Exterior: The exterior area inside the perimeter road. No exterior work is to occur while an International aircraft is processing; see attached exhibits for Airside 1 and Airside 4.

1.4 REQUIREMENTS:

A. The General Contractor and Major subs including: Mechanical, Electrical, Site and Exterior shell must have the continuous bond. Holograms are required for any work conducted independently at the interior or exterior. Any work outside of the demised areas requires a hologram.

B. Coordinate all schedules with the OAR. At any time, the Authority reserves the right to require holograms.

C. GOAA OAR CBP Liaison: Contractors must have GOAA approval prior to contacting CBP for any

temporary badges or holograms. The GOAA OAR CBP Liaison will assess the projects and facilitate the process.

D. Duration of Access: For Contractors, the duration for access will be tied to the Construction Project schedule.

E. Contractors and OARs: Contractors and OARs must establish a Person as a "CBP Coordinator". The Coordinator is the point of contact for that company and is responsible for submitting applications to CBP among other things. The Coordinator must take a special training class given by CBP. The training must be scheduled at the USCBP office at Landside across from the Lost and Found. All documents must flow through the Coordinator to CBP. CBP will contact the Coordinator if there are any issues with the vetting process for any persons in that company. Individuals other than the Coordinator should not come to the CBP Landside office unless requested by CBP. Access to the FIS is for project business only. Access to the FIS is not allowed for breaks or meeting and greeting of passengers.

F. Bonding: All companies requesting access to CBP security areas are required to post a bond, which must be posted before entry is granted. The following list is provided as an example; Final coordination required with CBP. The bonding process is as follows:

1. Post a continuous CF 301 Bond (Type 1 or 2) or an Airport Security Bond. The bond is obtained from an authorized surety company as referenced in 19CFR113.37. The face value of the bond depends upon how many employees will require access to the Customs security areas.

   a) Less than 15 - $25,000.00

   b) Between 15 and 25 - $50,000.00

   c) More than 25 - $100,000.00

2. The CF 301 Bond can be designated as an import/broker bond, warehouse bond, international carrier bond, or a non-specific Airport Security Bond.

3. The Revenue Division will be responsible for resolving any problems/issues on the Type 1 bonds with the bond filer. Additional information may be located at http://cbp.gov/xp/cgov/import/communications to industry/pilot program.

4. Premiums on the continuous bond are paid yearly to their respective insurance agents.

5. The bond must be registered with U.S. Customs and Border Protection Bond Desk, 9043 Tradeport Drive, Orlando, Florida 32827.

6. A copy of the continuous CF 301 bond or an original Airport Security Bond must be filed in the CBP Security Office.

7. Employers must immediately notify the CBP Security Office in writing of any change in the status of the company bond (lapsed, terminated, company name or address change,

reduced bond amount etc.). All pertinent bond information must be the same as the company (company name, address, IRS number).

8. An insufficient bond amount may result in a requirement to increase bond coverage and may result in revocation of CBP access for employees covered under the insufficient bond.

9. Violations of CBP Airport Security rules and regulations will subject an employer to liquidated damages of $1000.00 per violation.

G. Temporary Badges: Information to be submitted for vetting for Temporary badge for day access only (up to 60 days) includes:

1. All persons must be vetted.

2. Temporary badge access forms required by CBP

3. Name, Date of Birth, Social Security Number, copy of Photo ID such as a Driver's License with current address

4. Note that if workers need access after their temporary badge expires, then they must go through the vetting process again.

5. Note: for temporary badges less than 30 days, a continuous bond is not required.

6. Note: for temporary badges more than 30 days, a continuous bond is required; the temporary badge for the same contractor may be extended for 30 days, if the Contractor has a continuous bond in place.

H. Temporary badges for single day access:

1. Temporary day badges can be obtained at either AS1 or AS4;

2. All persons must be vetted. Once accepted, the badge holder must leave a driver’s license or other picture ID with CBP.

3. At the end of the day, the badge holder must return the Temporary day badge and at that time, the picture ID will be returned.

4. Temporary badge holders must be escorted by a badge holder with a hologram seal.

I. Hologram Designation: Documents to be submitted for vetting and obtaining a Hologram designation include:

1. CBP Form 3078, two-page -must be neat and readable.

2. Cover memo to U.S. Customs and Border Protection indicating what type of work is to be performed, areas of access and time frame for the work.

3. Driver’s License (copy)

4. Social Security Card (copy)

5. Birth Certificate or Passport or Certificate of Naturalization (copy)

   a) Puerto Rico recently issued a new Birth Certificate – you must include the new one

   b) If non US Citizen, provide Work Authorization Document

6. Other CBP forms as required

J. Vetting Process: During the vetting process, CBP may require interviews. If a person does not pass the vetting process, they are not allowed in the FIS. The vetting process will take up to 2 weeks. In scheduling work in the FIS, by either the general or subcontractors, include the GOAA Badging and CBP vetting process in construction work schedules.

K. Escorting: OARs and Contractors may escort others only if they have a hologram designation on their badge. If Construction related personnel are going to be accessing the FIS for extended periods of time, then holograms need to be obtained.

L. Issuance of Hologram on Security Badge: GOAA Badging will notify and issue the hologram designation on the badge at the GOAA Badging office on Cargo Road, following the submission of the applications and vetting by the CBP.

M. Access to USCBP spaces including the FIS must be coordinated through the OAR:

1. All Contractor access must be coordinated through the OAR. The OAR will coordinate with GOAA OPs and CBP. For FIS spaces, Contractors with a hologram designation can be in the FIS at night without a CBP Officer. Prior to entering the FIS during these hours, OAR's and/or Contractors are to call the Airport Operations Center (AOC) at 407-825-3840, informing them that a badged person with a hologram is entering the FIS and escorting vetted personnel with GOAA escort required badges. The OAR Night Inspector will be present for any night work in the FIS area.

2. Night access to FIS: Hours of work (as of August 18, 2015 are approximately 8 pm to 4 am for AS4 only). OARs and Contractors must check flight schedules prior to entering the FIS area. OARs and Contractors are not allowed in the FIS when passengers are processing. If there are any questions about flights, please call GOAA Ops (AOC) at 407-825-3840. The OAR must submit names of Contractor and OAR personnel who will enter the FIS prior to 4:00 p.m. the day of night access. The OAR must send this request to CBP and to the AOC. Only vetted persons will be allowed access to the FIS. If the staffing is known for an entire week, then that list can be submitted. However, any changes to the staffing plan submitted, must be updated and submitted.

3. Day access to the FIS: Day access must be coordinated in advance with CBP by the GOAA OAR CBP Liaison. OARs and Contractors must check flight schedules prior to entering the FIS area. OARs and Contractors are not allowed in the FIS when passengers are processing. If there are any questions about flights, please call GOAA Ops (AOC) at 407-825-3840.

4. Access to CBP office areas: The GOAA OAR CBP Liaison will coordinate any special access to CBP office areas.

5. Daytime Check in required at FIS: for AS4 please check in at room 1770 to let the CBP personnel know of the visit. For AS1 please check in at room 1563 to let the CBP personnel know of the visit.

6. Emergency Access: Emergency access is allowed. However, Contractors and Consultants must check in at AS4 at room 1770 and AS1 at room 1563.

7. City of Orlando Inspections: City Inspections can occur during the day and at night when there are no passengers. Inspections should be coordinated through the OAR. City of Orlando Inspectors must be vetted and can be escorted by badge holders with a hologram seal.

N. Protection of space and end of work shift clean up: All spaces must be returned to existing conditions as found at the beginning of the shift. Spaces and equipment must be covered during the work shift especially while conducting overhead ceiling work. All spaces must be dusted and vacuumed at the end of the shift. All construction debris must be completely removed from the FIS. Contractor equipment and tools must also be removed from the FIS. To the extent possible, ceiling and wall penetration areas must be completely closed up at the end of each shift.

1.5 DOCUMENT HISTORY:

A. CBP Approved on March 29, 2012

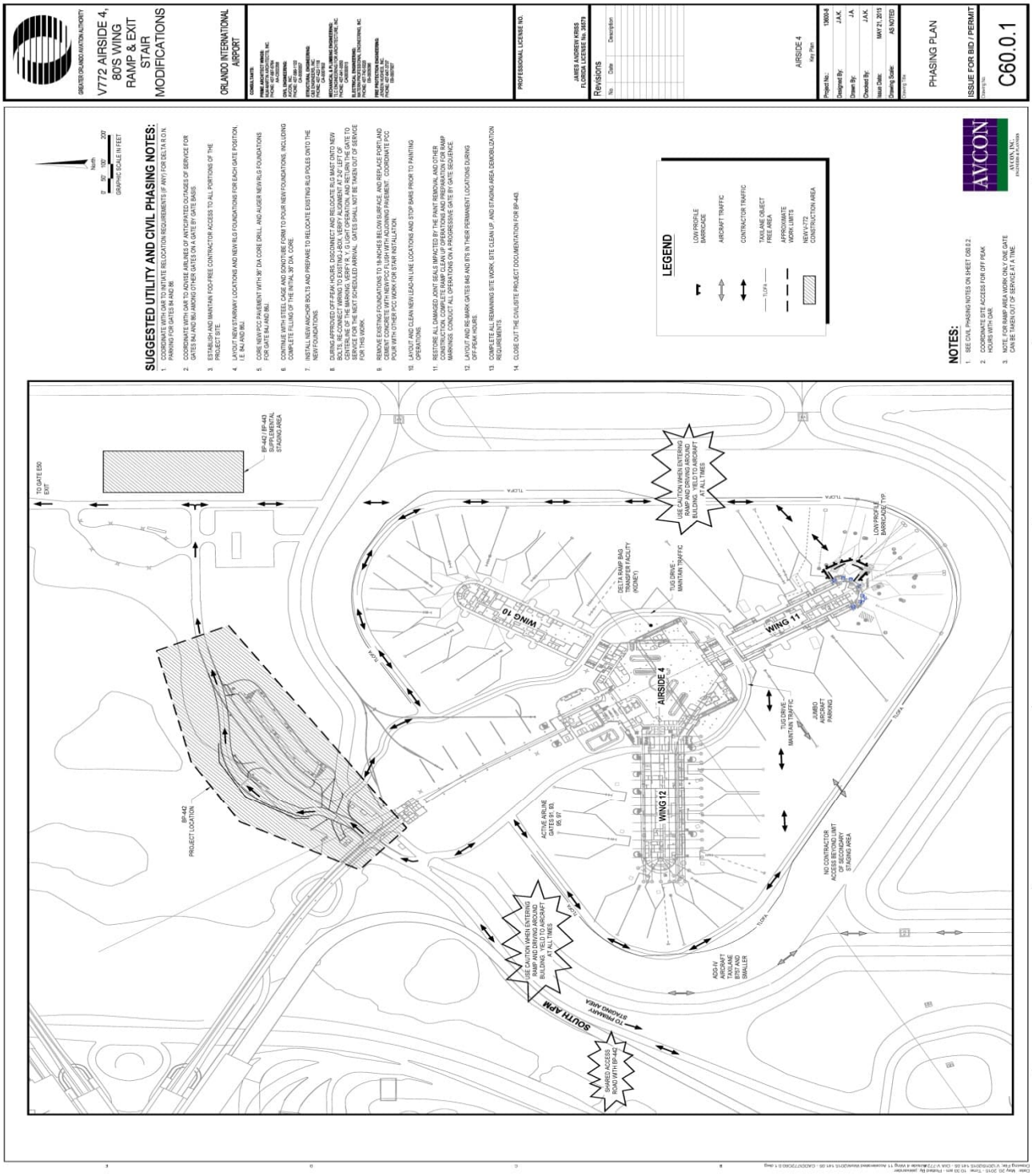
B. CBP Update Approved on 8.21.15

PART 2 - PRODUCTS (Not Applicable)

PART 3 - EXECUTION (Not Applicable)

PART 4 - EXHIBITS Airside 3 and 4


GREATER ORLANDO AVIATION AUTHORITY
BP-369
AIRSIDE 1
REHABILITATION
& HURRICANE
RESTORATION
PHASE II
ORLANDO
INTERNATIONAL
AIRPORT
CONSULTANTS
Revisions
No. Date Description
Project No.: 6415
Drawn By: EAC Consulting, Inc
Checked By: EAC Consulting, Inc
Issue Date: April 12, 2010
Drawing Scale: 1" = 100'
Drawing Title:
EXISTING
SITE PLAN
RECORD DOCUMENTS
Drawing No.
AS1
C-2.01
EXISTING SITE PLAN
SCALE: 1" = 100'
RECORD DRAWINGS
AIRSIDE 1
HUB & APM
WING 6
WING 5
WING 4
ACL
TAXIWAY R-52
TAXIWAY R-53
TAXIWAY R-54
TAXIWAY R-55
TAXIWAY R-56
TAXIWAY C
TAXIWAY B
TAXIWAY B-4
TAXIWAY B-5
18L-MIDFIELD VAULT
DRAINAGE BASIN
ELECTRIC DUC
LLWAS



END OF SECTION 00 73 93.02

SECTION 00 73 93.03 - SPECIAL PROJECT PROCEDURES FOR SENSITIVE SECURITY INFORMATION

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. 49 CFR parts 15 and 1520

B. Florida Statutes sections 331.22, 119.071, and/or 281.301

C. DHS Fm 11000_6 [Non-disclosure Agreement (NDA)]

1.2 DEFINITIONS

A. SSI: Sensitive Security Information – also noted as (SSI) – is information that, if publicly released, would be detrimental to transportation security, as defined by Federal regulation 49 C.F.R. part 1520. Although SSI is not classified information, there are specific procedures for recognizing, marking, protecting, safely sharing, and destroying SSI. Persons receiving SSI are considered “covered persons” under the SSI regulation in order to carry out responsibilities related to transportation security and are obligated to protect this information from unauthorized disclosure.

1.3 DESCRIPTION

A. General: The following information indicates requirements for access to, control of, and/or distribution of Project Documents Marked as Sensitive Security Information or SSI.

1. You Must – Lock All SSI: Store SSI in a secure container such as a locked file cabinet or drawer (as defined by Federal regulation 49 C.F.R. part 1520.9 (a)(1)).
2. You Must – When No Longer Needed, Destroy SSI: Destruction of SSI must be complete to preclude recognition or reconstruction of the information (as defined by Federal regulation 49 C.F.R. part 1520.19).
3. You Must – Mark SSI: The regulation requires that even when only a small portion of a paper document contains SSI, every page of the document must be marked with the SSI header and footer shown at left (as defined by Federal regulation 49 C.F.R. part 1520.13). Alteration of the footer is not authorized.

B. Reasonable steps must be taken to safeguard SSI. While the regulation does not define reasonable steps, the TSA SSI Branch offers the following best practices as examples of reasonable steps:

1. Use an SSI cover sheet on all SSI materials.
2. Electronic presentations (e.g., PowerPoint) should be marked with the SSI header on all pages and the SSI footer on the first and last pages of the presentation.

3. Spreadsheets should be marked with the SSI header on every page and the SSI footer on every page or at the end of the document.
4. Video and audio should be marked with the SSI header and footer on the protective cover when able and the header and footer should be shown and/or read at the beginning and end of the program.
5. CDs/DVDs should be encrypted or password-protected and the header and footer should be affixed to the CD/DVD.
6. Portable drives including “flash” or “thumb” drives should not themselves be marked, but the drive itself should be encrypted or all SSI documents stored on it should be password protected.
7. When leaving your computer or desk you must lock all SSI and you should lock or turn off your computer.
8. Taking SSI home is not recommended. If necessary, get permission from a supervisor and lock all SSI at home.
9. Do not handle SSI on computers that have peer-to-peer software installed on them or on your home computer.
10. Transmit SSI via email only in a password protected attachment, not in the body of the email. Send the password without identifying information in a separate email or by phone.
11. Passwords for SSI documents should contain at least eight characters, have at least one uppercase and one lowercase letter, contain at least one number, one special character and not be a word in the dictionary.
12. Faxing of SSI should be done by first verifying the fax number and that the intended recipient will be available promptly to retrieve the SSI.
13. SSI should be mailed by U.S. First Class mail or other traceable delivery service using an opaque envelope or wrapping. The outside wrapping (i.e. box or envelope) should not be marked as SSI.
14. Interoffice mail should be sent using an unmarked, opaque, sealed envelope so that the SSI cannot be read through the envelope.
15. SSI stored in network folders should either require a password to open or the network should limit access to the folder to only those with a need to know.
16. Properly destroy SSI using a cross-cut shredder or by cutting manually into less than ½ inch squares.
17. Properly destroy electronic records using any method that will preclude recognition or reconstruction.
18. Maintain an up-to-date record of all SSI Documents and list of persons with access to SSI Documents.

1.4 TRANSMISSION

A. When transmitting SSI, the SSI marking must be applied to the transmittal document (letter, memorandum, or fax). The transmittal document must contain, if applicable, a disclaimer noting that it is no longer SSI when it is detached from the SSI it is transmitting (transmittal e-mails do not need to contain this disclaimer), and a warning that if received by an unintended or different recipient, the sender must be notified immediately.

B. When discussing or transmitting SSI to another individual(s), DHS Covered Persons must ensure that the individual with whom the discussion is to be held or the information is to be transferred has a valid Need-to-know. In addition, DHS Covered Persons must ensure that precautions are taken to prevent unauthorized individuals from overhearing the conversation, observing the materials, or otherwise accessing the information.

C. SSI shall be mailed in a manner that offers reasonable protection of the sent materials and sealed in such a manner as to prevent inadvertent opening and show evidence of tampering.

D. SSI may be mailed by U.S. Postal Service First Class Mail or an authorized commercial delivery service such as DHL or Federal Express.

E. SSI may be entered into an inter-office mail system provided it is afforded sufficient protection to prevent unauthorized access, e.g., sealed envelope.

PART 2 - PRODUCTS (Not Applicable)

PART 3 - EXECUTION

3.1 ACKNOLEDGEMENT OF SENSITIVE SECUITY INFORMATION

A. The Owner has deemed components of this project to be of critical concern due to said component scope. As one of the bidders, you must execute this document to acknowledge the Security Sensitive Information (SSI) requirements and the proper Safeguarding of Sensitive but Unclassified Information.

B. Below is the SSI language from 49 CFR Part 15.13 that will be incorporated into the all construction drawing sheets and on the project manual components that are SSI:

WARNING: This record contains Sensitive Security Information that is controlled under 49 CFR parts 15 and 1520 or that may be otherwise exempt from public disclosure pursuant to Florida Statutes sections 331.22, 119.071, and/or 281.301. No part of this record may be disclosed to persons without a "need to know", as defined in 49 CFR parts 15 and 1520, except with the written permission of both the Greater Orlando Aviation Authority and either the Administrator of the Transportation Security Administration or the Secretary of Transportation. Unauthorized release may result in civil penalty or other action.

C. Attached for your use and records is 49 CFR parts 15 and 1520. By execution of this document you are agreeing to the following:

1. This agreement is completed for the release of both electronic and hard copy bid documents, and any SSI documents related to Orlando International and Orlando Executive airports.

2. I am the duly authorized representative for:

_____

Print Name and Title

_____

Print Authorized Entity

Print Address

3. I have the express authority to sign this agreement and hereby consent to all conditions stated herein, in consideration of my being granted conditional access to certain information, specified in paragraph (1) above, that, is owned by, produced by, or in the possession of the Greater Orlando Aviation Authority.
4. Sensitive Security Information. I attest that I am familiar with, and I will comply with the standards for access, dissemination, handling, and safeguarding of SSI information as cited in this Agreement and in accordance with 49 CFR Part 1520, “Protection of Sensitive Security Information,” “Policies and Procedures for Safeguarding and Control of SSI,” as amended, and any supplementary guidance issued by an authorized official of the Department of Homeland Security.
5. By being granted conditional access to the information in paragraph (1), indicated above, I am obligated to protect this information from unauthorized disclosure. I will not disclose or release any information provided to me pursuant to this Agreement without proper authority or authorization. Only those persons who have a need to know may handle this information, and I will ensure that they will comply with all maintenance, safeguarding, dissemination, and handling requirements provided in 49 CFR Part 1520.
6. Neither the execution of this agreement nor the release of the records indicated in paragraph (1) above operates as a waiver of the confidential and exempt status of the records.
7. Violation of this nondisclosure agreement or of the attached federal regulations is grounds for a civil penalty and other enforcement or corrective action by DOT and DHS and, if awarded the contract, will be cause for termination.

Signature

Date

3.2 ATTACHMENTS

A. The following documents are attached:

1. 49 CFR Part 15
2. 49 CFR part 1520
3. Sensitive Security Information – Best Practices Guide for Non-DHS Employees and Contractors.
4. Sensitive Security Information – SSI Quick Reference Guide for DHS Employees and Contractors
5. DHS Form 11000-6 (08-04) – Department of Homeland Security Non- Disclosure Agreement.

END OF SECTION

49 CFR Part 15 – Protection of Sensitive Security Information

§11.120 Evaluation and disposition of applications and proposals for research to be conducted or supported by a Federal department or agency.

(a) The department or agency head will evaluate all applications and proposals involving human subjects submitted to the Federal department or agency through such officers and employees of the Federal department or agency and such experts and consultants as the department or agency head determines to be appropriate. This evaluation will take into consideration the risks to the subjects, the adequacy of protection against these risks, the potential benefits of the research to the subjects and others, and the importance of the knowledge gained or to be gained.

(b) On the basis of this evaluation, the department or agency head may approve or disapprove the application or proposal, or enter into negotiations to develop an approvable one.

§11.121 [Reserved]

§11.122 Use of Federal funds.

Federal funds administered by a Federal department or agency may not be expended for research involving human subjects unless the requirements of this policy have been satisfied.

§11.123 Early termination of research support: Evaluation of applications and proposals.

(a) The department or agency head may require that Federal department or agency support for any project be terminated or suspended in the manner prescribed in applicable program requirements, when the department or agency head finds an institution has materially failed to comply with the terms of this policy.

(b) In making decisions about supporting or approving applications or proposals covered by this policy the department or agency head may take into account, in addition to all other eligibility requirements and program criteria, factors such as whether the applicant has been subject to a termination or suspension under paragraph (a) of this section and whether the applicant or the person or persons who would direct or has/have directed the scientific and technical aspects of an activity has/have, in the judgment of the department or agency head, materially failed to discharge responsibility for the protection of the rights and welfare of human subjects (whether or not the research was subject to federal regulation).

§11.124 Conditions.

With respect to any research project or any class of research projects the department or agency head of either the conducting or the supporting Federal department or agency may impose additional conditions prior to or at the time of approval when in the judgment of the department or agency head additional conditions are necessary for the protection of human subjects.

PART 15—PROTECTION OF SENSITIVE SECURITY INFORMATION

Sec.

15.1 Scope.
15.3 Terms used in this part.
15.5 Sensitive security information.
15.7 Covered persons.
15.9 Restrictions on the disclosure of SSI.
15.11 Persons with a need to know.
15.13 Marking SSI.
15.15 SSI disclosed by DOT.
15.17 Consequences of unauthorized disclosure of SSI.
15.19 Destruction of SSI.

AUTHORITY: 49 U.S.C. 40119.

SOURCE: 69 FR 28078, May 18, 2004, unless otherwise noted.

§15.1 Scope.

(a) *Applicability.* This part governs the maintenance, safeguarding, and disclosure of records and information that the Secretary of DOT has determined to be Sensitive Security Information, as defined in §15.5. This part does not apply to the maintenance, safeguarding, or disclosure of classified national security information, as defined by Executive Order 12968, or to other sensitive unclassified information that is not SSI, but that nonetheless may be exempt from public disclosure under the Freedom of Information Act. In addition, in the case of information that has been designated as critical infrastructure information

under section 214 of the Homeland Security Act, the receipt, maintenance, or disclosure of such information by a Federal agency or employee is governed by section 214 and any implementing regulations, not by this part.

(b) *Delegation.* The authority of the Secretary under this part may be further delegated within DOT.

§ 15.3 Terms used in this part.

In addition to the terms in § 15.3 of this chapter, the following terms apply in this part:

Administrator means the Under Secretary of Transportation for Security referred to in 49 U.S.C. 114(b), or his or her designee.

Coast Guard means the United States Coast Guard.

Covered person means any organization, entity, individual, or other person described in § 15.7. In the case of an individual, *covered person* includes any individual applying for employment in a position that would be a covered person, or in training for such a position, regardless of whether that individual is receiving a wage, salary, or other form of payment. *Covered person* includes a person applying for certification or other form of approval that, if granted, would make the person a covered person described in § 15.7.

DHS means the Department of Homeland Security and any directorate, bureau, or other component within the Department of Homeland Security, including the United States Coast Guard.

DOT means the Department of Transportation and any operating administration, entity, or office within the Department of Transportation, including the Saint Lawrence Seaway Development Corporation and the Bureau of Transportation Statistics.

Federal Flight Deck Officer means a pilot participating in the Federal Flight Deck Officer Program under 49 U.S.C. 44921 and implementing regulations.

Maritime facility means any facility as defined in 33 CFR part 101.

Record includes any means by which information is preserved, irrespective of format, including a book, paper, drawing, map, recording, tape, film, photograph, machine-readable material, and any information stored in an electronic format. The term *record* also includes any draft, proposed, or recommended change to any record.

Security contingency plan means a plan detailing response procedures to address a transportation security incident, threat assessment, or specific threat against transportation, including details of preparation, response, mitigation, recovery, and reconstitution procedures, continuity of government, continuity of transportation operations, and crisis management.

Security program means a program or plan and any amendments developed for the security of the following, including any comments, instructions, or implementing guidance:

(1) An airport, aircraft, or aviation cargo operation;

(2) A maritime facility, vessel, or port area; or

(3) A transportation-related automated system or network for information processing, control, and communications.

Security screening means evaluating a person or property to determine whether either poses a threat to security.

SSI means sensitive security information, as described in § 15.5.

Threat image projection system means an evaluation tool that involves periodic presentation of fictional threat images to operators and is used in connection with x-ray or explosives detection systems equipment.

TSA means the Transportation Security Administration.

Vulnerability assessment means any review, audit, or other examination of the security of a transportation infrastructure asset; airport; maritime facility, port area, vessel, aircraft, train, commercial motor vehicle, or pipeline, or a transportation-related automated system or network, to determine its vulnerability to unlawful interference, whether during the conception, planning, design, construction, operation, or decommissioning phase. A *vulnerability assessment* may include proposed, recommended, or directed actions or countermeasures to address security concerns.

§ 15.5 Sensitive security information.

(a) *In general.* In accordance with 49 U.S.C. 40119(b)(1), SSI is information

obtained or developed in the conduct of security activities, including research and development, the disclosure of which the Secretary of DOT has determined would—

(1) Constitute an unwarranted invasion of privacy (including, but not limited to, information contained in any personnel, medical, or similar file);

(2) Reveal trade secrets or privileged or confidential information obtained from any person; or

(3) Be detrimental to transportation safety.

(b) *Information constituting SSI.* Except as otherwise provided in writing by the Secretary of DOT in the interest of public safety or in furtherance of transportation security, the following information, and records containing such information, constitute SSI:

(1) *Security programs and contingency plans.* Any security program or security contingency plan issued, established, required, received, or approved by DOT or DHS, including—

(i) Any aircraft operator or airport operator security program or security contingency plan under this chapter;

(ii) Any vessel, maritime facility, or port area security plan required or directed under Federal law;

(iii) Any national or area security plan prepared under 46 U.S.C. 70103; and

(iv) Any security incident response plan established under 46 U.S.C. 70104.

(2) *Security Directives.* Any Security Directive or order—

(i) Issued by TSA under 49 CFR 1542.303, 1544.305, or other authority;

(ii) Issued by the Coast Guard under the Maritime Transportation Security Act, 33 CFR part 6, or 33 U.S.C. 1221 *et seq.* related to maritime security; or

(iii) Any comments, instructions, and implementing guidance pertaining thereto.

(3) *Information Circulars.* Any notice issued by DHS or DOT regarding a threat to aviation or maritime transportation, including any—

(i) Information Circular issued by TSA under 49 CFR 1542.303 or 1544.305, or other authority; and

(ii) Navigation or Vessel Inspection Circular issued by the Coast Guard related to maritime security.

(4) *Performance specifications.* Any performance specification and any description of a test object or test procedure, for—

(i) Any device used by the Federal government or any other person pursuant to any aviation or maritime transportation security requirements of Federal law for the detection of any weapon, explosive, incendiary, or destructive device or substance; and

(ii) Any communications equipment used by the Federal government or any other person in carrying out or complying with any aviation or maritime transportation security requirements of Federal law.

(5) *Vulnerability assessments.* Any vulnerability assessment directed, created, held, funded, or approved by the DOT, DHS, or that will be provided to DOT or DHS in support of a Federal security program.

(6) *Security inspection or investigative information.* (i) Details of any security inspection or investigation of an alleged violation of aviation or maritime transportation security requirements of Federal law that could reveal a security vulnerability, including the identity of the Federal special agent or other Federal employee who conducted the inspection or audit.

(ii) In the case of inspections or investigations performed by TSA, this includes the following information as to events that occurred within 12 months of the date of release of the information: the name of the airport where a violation occurred, the airport identifier in the case number, a description of the violation, the regulation allegedly violated, and the identity of any aircraft operator in connection with specific locations or specific security procedures. Such information will be released after the relevant 12-month period, except that TSA will not release the specific gate or other location on an airport where an event occurred, regardless of the amount of time that has passed since its occurrence. During the period within 12 months of the date of release of the information, TSA may release summaries of an aircraft operator's, but not an airport operator's, total security violations in a specified time range without identifying specific violations or locations. Summaries may include total enforcement actions, total proposed civil penalty amounts,

DOT or DHS as critical to aviation or maritime transportation safety or security, including automated information security procedures and systems, security inspections, and vulnerability information concerning those systems.

(14) *Confidential business information.* (i) Solicited or unsolicited proposals received by DHS or DOT, and negotiations arising therefrom, to perform work pursuant to a grant, contract, cooperative agreement, or other transaction, but only to the extent that the subject matter of the proposal relates to aviation or maritime transportation security measures;

(ii) Trade secret information, including information required or requested by regulation or Security Directive, obtained by DHS or DOT in carrying out aviation or maritime transportation security responsibilities; and

(iii) Commercial or financial information, including information required or requested by regulation or Security Directive, obtained by DHS or DOT in carrying out aviation or maritime transportation security responsibilities, but only if the source of the information does not customarily disclose it to the public.

(15) *Research and development.* Information obtained or developed in the conduct of research related to aviation or maritime transportation security activities, where such research is approved, accepted, funded, recommended, or directed by the DHS or DOT, including research results.

(16) *Other information.* Any information not otherwise described in this section that TSA determines is SSI under 49 U.S.C. 114(s) or that the Secretary of DOT determines is SSI under 49 U.S.C. 40119. Upon the request of another Federal agency, the Secretary of DOT may designate as SSI information not otherwise described in this section.

(c) *Loss of SSI designation.* The Secretary of DOT may determine in writing that information or records described in paragraph (b) of this section do not constitute SSI because they no longer meet the criteria set forth in paragraph (a) of this section.

§15.7 Covered persons.

Persons subject to the requirements of part 15 are:

(a) Each airport operator and aircraft operator subject to the requirements of Subchapter C of this title.

(b) Each indirect air carrier, as defined in 49 CFR 1540.5.

(c) Each owner, charterer, or operator of a vessel, including foreign vessel owners, charterers, and operators, required to have a security plan under Federal or International law.

(d) Each owner or operator of a maritime facility required to have a security plan under the Maritime Transportation Security Act, (Pub. L. 107–295), 46 U.S.C. 70101 *et seq.*, 33 CFR part 6, or 33 U.S.C. 1221 *et seq.*

(e) Each person performing the function of a computer reservation system or global distribution system for airline passenger information.

(f) Each person participating in a national or area security committee established under 46 U.S.C. 70112, or a port security committee.

(g) Each industry trade association that represents covered persons and has entered into a non-disclosure agreement with the DHS or DOT.

(h) DHS and DOT.

(i) Each person conducting research and development activities that relate to aviation or maritime transportation security and are approved, accepted, funded, recommended, or directed by DHS or DOT.

(j) Each person who has access to SSI, as specified in §15.11.

(k) Each person employed by, contracted to, or acting for a covered person, including a grantee of DHS or DOT, and including a person formerly in such position.

(l) Each person for which a vulnerability assessment has been directed, created, held, funded, or approved by the DOT, DHS, or that has prepared a vulnerability assessment that will be provided to DOT or DHS in support of a Federal security program.

(m) Each person receiving SSI under §1520.15(d) or (e).

§15.9 Restrictions on the disclosure of SSI.

(a) *Duty to protect information.* A covered person must—

(1) Take reasonable steps to safeguard SSI in that person's possession

or control from unauthorized disclosure. When a person is not in physical possession of SSI, the person must store it a secure container, such as a locked desk or file cabinet or in a locked room.

(2) Disclose, or otherwise provide access to, SSI only to covered persons who have a need to know, unless otherwise authorized in writing by TSA, the Coast Guard, or the Secretary of DOT.

(3) Refer requests by other persons for SSI to TSA or the applicable component or agency within DOT or DHS.

(4) Mark SSI as specified in § 15.13.

(5) Dispose of SSI as specified in § 15.19.

(b) *Unmarked SSI.* If a covered person receives a record containing SSI that is not marked as specified in § 1520.13, the covered person must—

(1) Mark the record as specified in § 15.13; and

(2) Inform the sender of the record that the record must be marked as specified in § 15.13.

(c) *Duty to report unauthorized disclosure.* When a covered person becomes aware that SSI has been released to unauthorized persons, the covered person must promptly inform TSA or the applicable DOT or DHS component or agency.

(d) *Additional requirements for critical infrastructure information.* In the case of information that is both SSI and has been designated as critical infrastructure information under section 214 of the Homeland Security Act, any covered person who is a Federal employee in possession of such information must comply with the disclosure restrictions and other requirements applicable to such information under section 214 and any implementing regulations.

§ 15.11 Persons with a need to know.

(a) *In general.* A person has a need to know SSI in each of the following circumstances:

(1) When the person requires access to specific SSI to carry out transportation security activities approved, accepted, funded, recommended, or directed by DHS or DOT.

(2) When the person is in training to carry out transportation security activities approved, accepted, funded, recommended, or directed by DHS or DOT.

(3) When the information is necessary for the person to supervise or otherwise manage individuals carrying out transportation security activities approved, accepted, funded, recommended, or directed by the DHS or DOT.

(4) When the person needs the information to provide technical or legal advice to a covered person regarding transportation security requirements of Federal law.

(5) When the person needs the information to represent a covered person in connection with any judicial or administrative proceeding regarding those requirements.

(b) *Federal employees, contractors, and grantees.* (1) A Federal employee has a need to know SSI if access to the information is necessary for performance of the employee's official duties.

(2) A person acting in the performance of a contract with or grant from DHS or DOT has a need to know SSI if access to the information is necessary to performance of the contract or grant.

(c) *Background check.* The Secretary of DOT may make an individual's access to the SSI contingent upon satisfactory completion of a security background check and the imposition of procedures and requirements for safeguarding SSI that are satisfactory to the Secretary.

(d) *Need to know further limited by the DHS or DOT.* For some specific SSI, DHS or DOT may make a finding that only specific persons or classes of persons have a need to know.

[69 FR 28078, May 18, 2004, as amended at 70 FR 1381, Jan. 7, 2005]

§ 15.13 Marking SSI.

(a) *Marking of paper records.* In the case of paper records containing SSI, a covered person must mark the record by placing the protective marking conspicuously on the top, and the distribution limitation statement on the bottom, of—

(1) The outside of any front and back cover, including a binder cover or folder, if the document has a front and back cover;

(2) Any title page; and

(3) Each page of the document.

(b) *Protective marking.* The protective marking is: SENSITIVE SECURITY INFORMATION.

(c) *Distribution limitation statement.* The distribution limitation statement is:

WARNING: This record contains Sensitive Security Information that is controlled under 49 CFR parts 15 and 1520. No part of this record may be disclosed to persons without a "need to know", as defined in 49 CFR parts 15 and 1520, except with the written permission of the Administrator of the Transportation Security Administration or the Secretary of Transportation. Unauthorized release may result in civil penalty or other action. For U.S. government agencies, public disclosure is governed by 5 U.S.C. 552 and 49 CFR parts 15 and 1520.

(d) *Other types of records.* In the case of non-paper records that contain SSI, including motion picture films, videotape recordings, audio recording, and electronic and magnetic records, a covered person must clearly and conspicuously mark the records with the protective marking and the distribution limitation statement such that the viewer or listener is reasonably likely to see or hear them when obtaining access to the contents of the record.

§15.15 SSI disclosed by DOT.

(a) *In general.* Except as otherwise provided in this section, and notwithstanding the Freedom of Information Act (5 U.S.C. 552), the Privacy Act (5 U.S.C. 552a), and other laws, records containing SSI are not available for public inspection or copying, nor does DOT release such records to persons without a need to know.

(b) *Disclosure under the Freedom of Information Act and the Privacy Act.* If a record contains both SSI and information that is not SSI, DOT, on a proper Freedom of Information Act or Privacy Act request, may disclose the record with the SSI redacted, provided the record is not otherwise exempt from disclosure under the Freedom of Information Act or Privacy Act.

(c) *Disclosures to committees of Congress and the General Accounting Office.* Nothing in this part precludes DOT from disclosing SSI to a committee of Congress authorized to have the information or to the Comptroller General, or to any authorized representative of the Comptroller General.

(d) *Disclosure in enforcement proceedings*—(1) *In general.* The Secretary of DOT may provide SSI to a person in the context of an administrative enforcement proceeding when, in the sole discretion of the Secretary, access to the SSI is necessary for the person to prepare a response to allegations contained in a legal enforcement action document issued by DOT.

(2) *Security background check.* Prior to providing SSI to a person under paragraph (d)(1) of this section, the Secretary of DOT may require the individual or, in the case of an entity, the individuals representing the entity, and their counsel, to undergo and satisfy, in the judgment of the Secretary of DOT, a security background check.

(e) *Other conditional disclosure.* The Secretary of DOT may authorize a conditional disclosure of specific records or information that constitute SSI upon the written determination by the Secretary that disclosure of such records or information, subject to such limitations and restrictions as the Secretary may prescribe, would not be detrimental to transportation safety.

(f) *Obligation to protect information.* When an individual receives SSI pursuant to paragraph (d) or (e) of this section that individual becomes a covered person under §15.7 and is subject to the obligations of a covered person under this part.

(g) *No release under FOIA.* When DOT discloses SSI pursuant to paragraphs (b) through (e) of this section, DOT makes the disclosure for the sole purpose described in that paragraph. Such disclosure is not a public release of information under the Freedom of Information Act.

(h) *Disclosure of Critical Infrastructure Information.* Disclosure of information that is both SSI and has been designated as critical infrastructure information under section 214 of the Homeland Security Act is governed solely by the requirements of section 214 and any implementing regulations.

§15.17 Consequences of unauthorized disclosure of SSI.

Violation of this part is grounds for a civil penalty and other enforcement or corrective action by DOT, and appropriate personnel actions for Federal

employees. Corrective action may include issuance of an order requiring retrieval of SSI to remedy unauthorized disclosure or an order to cease future unauthorized disclosure.

§ 15.19 Destruction of SSI.

(a) *DOT.* Subject to the requirements of the Federal Records Act (5 U.S.C. 105), including the duty to preserve records containing documentation of a Federal agency's policies, decisions, and essential transactions, DOT destroys SSI when no longer needed to carry out the agency's function.

(b) *Other covered persons*—(1) *In general.* A covered person must destroy SSI completely to preclude recognition or reconstruction of the information when the covered person no longer needs the SSI to carry out transportation security measures.

(2) *Exception.* Paragraph (b)(1) of this section does not require a State or local government agency to destroy information that the agency is required to preserve under State or local law.

PART 17—INTERGOVERNMENTAL REVIEW OF DEPARTMENT OF TRANSPORTATION PROGRAMS AND ACTIVITIES

Sec.

17.1 What is the purpose of these regulations?
17.2 What definitions apply to these regulations?
17.3 What programs and activities of the Department are subject to these regulations?
17.4 [Reserved]
17.5 What is the Secretary's obligation with respect to Federal interagency coordination?
17.6 What procedures apply to the selection of programs and activities under these regulations?
17.7 How does the Secretary communicate with state and local officials concerning the Department's programs and activities?
17.8 How does the secretary provide states an opportunity to comment on proposed Federal financial assistance and direct Federal development?
17.9 How does the Secretary receive and respond to comments?
17.10 How does the Secretary make efforts to accommodate intergovernmental concerns?
17.11 What are the Secretary's obligations in interstate situations?
17.12 How may a state simplify, consolidate, or substitute federally required state plans?
17.13 May the Secretary waive any provision of these regulations?

AUTHORITY: Executive Order 12372, July 14, 1982 (47 FR 30959), as amended April 8, 1983 (48 FR 15887); sec. 401 of the Intergovernmental Cooperation Act of 1968, as amended (31 U.S.C. 6506); sec. 204 of the Demonstration Cities and Metropolitan Development Act of 1966, as amended (42 U.S.C. 3334).

SOURCE: 48 FR 29272, June 24, 1983, unless otherwise noted.

§ 17.1 What is the purpose of these regulations?

(a) The regulations in this part implement Executive Order 12372, "Intergovernmental Review of Federal Programs," issued July 14, 1982, and amended on April 8, 1983. These regulations also implement applicable provisions of section 401 of the Intergovernmental Cooperation Act of 1968 and section 204 of the Demonstration Cities and Metropolitan Development Act of 1966.

(b) These regulations are intended to foster an intergovernmental partnership and a strengthened Federalism by relying on state processes and on state, areawide, regional and local coordination for review of proposed Federal financial assistance and direct Federal development.

(c) These regulations are intended to aid the internal management of the Department, and are not intended to create any right or benefit enforceable at law by a party against the Department or its officers.

§ 17.2 What definitions apply to these regulations?

Department means the U.S. Department of Transportation.

Order means Executive Order 12372, issued July 14, 1982, and amended April 8, 1983, and titled "Intergovernmental Review of Federal Programs."

Secretary means the Secretary of the U.S. Department of Transportation or an official or employee of the Department acting for the Secretary under a delegation of authority.

49 CFR Part 1520 – Protection of Sensitive Security Information

Displaying title 49, up to date as of 9/27/2021. Title 49 was last amended 9/27/2021.

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Title 49

PART 1520 - PROTECTION OF SENSITIVE SECURITY INFORMATION

Authority: 46 U.S.C. 70102-70106, 70117; 49 U.S.C. 114, 40113, 44901-44907, 44913-44914, 44916-44918, 44935-44936, 44942, 46105.

Source: 69 FR 28082, May 18, 2004, unless otherwise noted.

§ 1520.1 Scope.

(a) *Applicability.* This part governs the maintenance, safeguarding, and disclosure of records and information that TSA has determined to be Sensitive Security Information, as defined in § 1520.5. This part does not apply to the maintenance, safeguarding, or disclosure of classified national security information, as defined by Executive Order 12968, or to other sensitive unclassified information that is not SSI, but that nonetheless may be exempt from public disclosure under the Freedom of Information Act. In addition, in the case of information that has been designated as critical infrastructure information under section 214 of the Homeland Security Act, the receipt, maintenance, or disclosure of such information by a Federal agency or employee is governed by section 214 and any implementing regulations, not by this part.

(b) *Delegation.* The authority of TSA and the Coast Guard under this part may be further delegated within TSA and the Coast Guard, respectively.

§ 1520.3 Terms used in this part.

In addition to the terms in § 1500.3 of this chapter, the following terms apply in this part:

Administrator means the Under Secretary of Transportation for Security referred to in 49 U.S.C. 114(b), or his or her designee.

Coast Guard means the United States Coast Guard.

Covered person means any organization, entity, individual, or other person described in § 1520.7. In the case of an individual, *covered person* includes any individual applying for employment in a position that would be a covered person, or in training for such a position, regardless of whether that individual is receiving a wage, salary, or other form of payment. *Covered person* includes a person applying for certification or other form of approval that, if granted, would make the person a covered person described in § 1520.7.

Federal Flight Deck Officer means a pilot participating in the Federal Flight Deck Officer Program under 49 U.S.C. 44921 and implementing regulations.

Maritime facility means any facility as defined in 33 CFR part 101.

Rail secure area means "rail secure area" as defined in 49 CFR 1580.3.

Railroad carrier means "railroad carrier" as defined in 49 U.S.C. 20102(2).

Security contingency plan means a plan detailing response procedures to address a transportation security incident, threat assessment, or specific threat against transportation, including details of preparation, response, mitigation, recovery, and reconstitution procedures, continuity of government, continuity of transportation operations, and crisis management.

Security screening means evaluating a person or property to determine whether either poses a threat to security.

SSI means sensitive security information, as described in § 1520.5.

Threat image projection system means an evaluation tool that involves periodic presentation of fictional threat images to operators and is used in connection with x-ray or explosives detection systems equipment.

TSA means the Transportation Security Administration.

[69 FR 28082, May 18, 2004, as amended at 70 FR 41599, July 19, 2005; 73 FR 72172, Nov. 26, 2008; 74 FR 47695, Sept. 16, 2009; 85 FR 16499, Mar. 23, 2020]

§ 1520.5 Sensitive security information.

(a) ***In general.*** In accordance with 49 U.S.C. 114(s), SSI is information obtained or developed in the conduct of security activities, including research and development, the disclosure of which TSA has determined would -

(1) Constitute an unwarranted invasion of privacy (including, but not limited to, information contained in any personnel, medical, or similar file);

(2) Reveal trade secrets or privileged or confidential information obtained from any person; or

(3) Be detrimental to the security of transportation.

(b) ***Information constituting SSI.*** Except as otherwise provided in writing by TSA in the interest of public safety or in furtherance of transportation security, the following information, and records containing such information, constitute SSI:

(1) ***Security programs, security plans, and contingency plans.*** Any security program, security plan, or security contingency plan issued, established, required, received, or approved by DHS or DOT, including any comments, instructions, or implementing guidance, including -

(i) Any aircraft operator, airport operator, fixed base operator, or air cargo security program, or security contingency plan under this chapter;

(ii) Any vessel, maritime facility, or port area security plan required or directed under Federal law;

(iii) Any national or area security plan prepared under 46 U.S.C. 70103;

(iv) Any security incident response plan established under 46 U.S.C. 70104, and

(v) Any security program or plan required under subchapter D of this title.

(2) ***Security Directives.*** Any Security Directive or order -

(i) Issued by TSA under 49 CFR 1542.303, 1544.305, 1548.19, or other authority;

(ii) Issued by the Coast Guard under the Maritime Transportation Security Act, 33 CFR part 6, or 33 U.S.C. 1221 *et seq.* related to maritime security; or

(iii) Any comments, instructions, and implementing guidance pertaining thereto.

(3) ***Information Circulars.*** Any notice issued by DHS or DOT regarding a threat to aviation or maritime transportation, including any -

(i) Information circular issued by TSA under 49 CFR 1542.303, 1544.305, 1548.19, or other authority; and

(ii) Navigation or Vessel Inspection Circular issued by the Coast Guard related to maritime security.

(4) ***Performance specifications.*** Any performance specification and any description of a test object or test procedure, for -

(i) Any device used by the Federal Government or any other person pursuant to any aviation or maritime transportation security requirements of Federal law for the detection of any person, and any weapon, explosive, incendiary, or destructive device, item, or substance; and

(ii) Any communications equipment used by the Federal government or any other person in carrying out or complying with any aviation or maritime transportation security requirements of Federal law.

(5) ***Vulnerability assessments.*** Any vulnerability assessment directed, created, held, funded, or approved by the DOT, DHS, or that will be provided to DOT or DHS in support of a Federal security program.

(6) ***Security inspection or investigative information.***

(i) Details of any aviation, maritime, or surface transportation inspection, or any investigation or an alleged violation of aviation, maritime, or surface transportation security requirements of Federal law, that could reveal a security vulnerability, including

the identity of the Federal special agent or other Federal employee who conducted the inspection or investigation, and including any recommendations concerning the inspection or investigation.

(ii) In the case of inspections or investigations performed by TSA, this includes the following information as to events that occurred within 12 months of the date of release of the information: the name of the airport where a violation occurred, the airport identifier in the case number, a description of the violation, the regulation allegedly violated, and the identity of any aircraft operator in connection with specific locations or specific security procedures. Such information will be released after the relevant 12-month period, except that TSA will not release the specific gate or other location on an airport where an event occurred, regardless of the amount of time that has passed since its occurrence. During the period within 12 months of the date of release of the information, TSA may release summaries of an aircraft operator's, but not an airport operator's, total security violations in a specified time range without identifying specific violations or locations. Summaries may include total enforcement actions, total proposed civil penalty amounts, number of cases opened, number of cases referred to TSA or FAA counsel for legal enforcement action, and number of cases closed.

(7) ***Threat information.*** Any information held by the Federal government concerning threats against transportation or transportation systems and sources and methods used to gather or develop threat information, including threats against cyber infrastructure.

(8) ***Security measures.*** Specific details of aviation, maritime, or surface transportation security measures, both operational and technical, whether applied directly by the Federal government or another person, including the following:

(i) Security measures or protocols recommended by the Federal government;

(ii) Information concerning the deployments, numbers, and operations of Coast Guard personnel engaged in maritime security duties and Federal Air Marshals, to the extent it is not classified national security information; and

(iii) Information concerning the deployments and operations of Federal Flight Deck Officers, and numbers of Federal Flight Deck Officers aggregated by aircraft operator.

(iv) Any armed security officer procedures issued by TSA under 49 CFR part 1562.

(9) ***Security screening information.*** The following information regarding security screening under aviation or maritime transportation security requirements of Federal law:

(i) Any procedures, including selection criteria and any comments, instructions, and implementing guidance pertaining thereto, for screening of persons, accessible property, checked baggage, U.S. mail, stores, and cargo, that is conducted by the Federal government or any other authorized person.

(ii) Information and sources of information used by a passenger or property screening program or system, including an automated screening system.

(iii) Detailed information about the locations at which particular screening methods or equipment are used, only if determined by TSA to be SSI.

(iv) Any security screener test and scores of such tests.

(v) Performance or testing data from security equipment or screening systems.

(vi) Any electronic image shown on any screening equipment monitor, including threat images and descriptions of threat images for threat image projection systems.

(10) ***Security training materials.*** Records created or obtained for the purpose of training persons employed by, contracted with, or acting for the Federal government or another person to carry out aviation, maritime, or surface transportation security measures required or recommended by DHS or DOT.

(11) ***Identifying information of certain transportation security personnel.***

(i) Lists of the names or other identifying information that identify persons as -

(A) Having unescorted access to a secure area of an airport, a rail secure area, or a secure or restricted area of a maritime facility, port area, or vessel;

(B) Holding a position as a security screener employed by or under contract with the Federal government pursuant to aviation or maritime transportation security requirements of Federal law, where such lists are aggregated by airport;

(C) Holding a position with the Coast Guard responsible for conducting vulnerability assessments, security boardings, or engaged in operations to enforce maritime security requirements or conduct force protection;

(D) Holding a position as a Federal Air Marshal; or

(ii) The name or other identifying information that identifies a person as a current, former, or applicant for Federal Flight Deck Officer.

(12) ***Critical transportation infrastructure asset information.*** Any list identifying systems or assets, whether physical or virtual, so vital to the aviation, maritime, or surface transportation that the incapacity or destruction of such assets would have a debilitating impact on transportation security, if the list is -

(i) Prepared by DHS or DOT; or

(ii) Prepared by a State or local government agency and submitted by the agency to DHS or DOT.

(13) ***Systems security information.*** Any information involving the security of operational or administrative data systems operated by the Federal government that have been identified by the DOT or DHS as critical to aviation or maritime transportation safety or security, including automated information security procedures and systems, security inspections, and vulnerability information concerning those systems.

(14) ***Confidential business information.***

(i) Solicited or unsolicited proposals received by DHS or DOT, and negotiations arising therefrom, to perform work pursuant to a grant, contract, cooperative agreement, or other transaction, but only to the extent that the subject matter of the proposal relates to aviation or maritime transportation security measures;

(ii) Trade secret information, including information required or requested by regulation or Security Directive, obtained by DHS or DOT in carrying out aviation or maritime transportation security responsibilities; and

(iii) Commercial or financial information, including information required or requested by regulation or Security Directive, obtained by DHS or DOT in carrying out aviation or maritime transportation security responsibilities, but only if the source of the information does not customarily disclose it to the public.

(15) ***Research and development.*** Information obtained or developed in the conduct of research related to aviation, maritime, or surface transportation, where such research is approved, accepted, funded, recommended, or directed by DHS or DOT, including research results.

(16) ***Other information.*** Any information not otherwise described in this section that TSA determines is SSI under 49 U.S.C. 114(s) or that the Secretary of DOT determines is SSI under 49 U.S.C. 40119. Upon the request of another Federal agency, TSA or the Secretary of DOT may designate as SSI information not otherwise described in this section.

(c) ***Loss of SSI designation.*** TSA or the Coast Guard may determine in writing that information or records described in paragraph (b) of this section do not constitute SSI because they no longer meet the criteria set forth in paragraph (a) of this section.

[69 FR 28082, May 18, 2004, as amended at 70 FR 41599, July 19, 2005; 71 FR 30507, May 26, 2006; 73 FR 72172, Nov. 26, 2008; 74 FR 47695, Sept. 16, 2009; 85 FR 16499, Mar. 23, 2020]

§ 1520.7 Covered persons.

Persons subject to the requirements of part 1520 are:

(a) Each airport operator, aircraft operator, and fixed base operator subject to the requirements of subchapter C of this chapter, and each armed security officer under subpart B of part 1562.

(b) Each indirect air carrier (IAC), as described in 49 CFR part 1548; and each certified cargo screening facility and its personnel, as described in 49 CFR part 1549.

(c) Each owner, charterer, or operator of a vessel, including foreign vessel owners, charterers, and operators, required to have a security plan under Federal or International law.

(d) Each owner or operator of a maritime facility required to have a security plan under the Maritime Transportation Security Act, (Pub.L. 107-295), 46 U.S.C. 70101 *et seq.*, 33 CFR part 6, or 33 U.S.C. 1221 *et seq.*

(e) Each person performing the function of a computer reservation system or global distribution system for airline passenger information.

(f) Each person participating in a national or area security committee established under 46 U.S.C. 70112, or a port security committee.

(g) Each industry trade association that represents covered persons and has entered into a non-disclosure agreement with the DHS or DOT.

(h) DHS and DOT.

(i) Each person conducting research and development activities that relate to aviation or maritime transportation security and are approved, accepted, funded, recommended, or directed by DHS or DOT.

(j) Each person who has access to SSI, as specified in § 1520.11.

(k) Each person employed by, contracted to, or acting for a covered person, including a grantee of DHS or DOT, and including a person formerly in such position.

(l) Each person for which a vulnerability assessment has been directed, created, held, funded, or approved by the DOT, DHS, or that has prepared a vulnerability assessment that will be provided to DOT or DHS in support of a Federal security program.

(m) Each person receiving SSI under § 1520.15(d) or (e).

(n) Each owner/operator of maritime or surface transportation subject to the requirements of subchapter D of this chapter.

[69 FR 28082, May 18, 2004, as amended at 70 FR 41600, July 19, 2005; 73 FR 72173, Nov. 26, 2008; 74 FR 47695, Sept. 16, 2009; 76 FR 51867, Aug. 18, 2011; 85 FR 16499, Mar. 23, 2020]

§ 1520.9 Restrictions on the disclosure of SSI.

(a) ***Duty to protect information.*** A covered person must -

(1) Take reasonable steps to safeguard SSI in that person's possession or control from unauthorized disclosure. When a person is not in physical possession of SSI, the person must store it a secure container, such as a locked desk or file cabinet or in a locked room.

(2) Disclose, or otherwise provide access to, SSI only to covered persons who have a need to know, unless otherwise authorized in writing by TSA, the Coast Guard, or the Secretary of DOT.

(3) Refer requests by other persons for SSI to TSA or the applicable component or agency within DOT or DHS.

(4) Mark SSI as specified in § 1520.13.

(5) Dispose of SSI as specified in § 1520.19.

(b) ***Unmarked SSI.*** If a covered person receives a record containing SSI that is not marked as specified in § 1520.13, the covered person must -

(1) Mark the record as specified in § 1520.13; and

(2) Inform the sender of the record that the record must be marked as specified in § 1520.13.

(c) ***Duty to report unauthorized disclosure.*** When a covered person becomes aware that SSI has been released to unauthorized persons, the covered person must promptly inform TSA or the applicable DOT or DHS component or agency.

(d) ***Additional Requirements for Critical Infrastructure Information.*** In the case of information that is both SSI and has been designated as critical infrastructure information under section 214 of the Homeland Security Act, any covered person who is a Federal employee in possession of such information must comply with the disclosure restrictions and other requirements applicable to such information under section 214 and any implementing regulations.

§ 1520.11 Persons with a need to know.

(a) ***In general.*** A person has a need to know SSI in each of the following circumstances:

(1) When the person requires access to specific SSI to carry out transportation security activities approved, accepted, funded, recommended, or directed by DHS or DOT.

(2) When the person is in training to carry out transportation security activities approved, accepted, funded, recommended, or directed by DHS or DOT.

(3) When the information is necessary for the person to supervise or otherwise manage individuals carrying out transportation security activities approved, accepted, funded, recommended, or directed by the DHS or DOT.

(4) When the person needs the information to provide technical or legal advice to a covered person regarding transportation security requirements of Federal law.

(5) When the person needs the information to represent a covered person in connection with any judicial or administrative proceeding regarding those requirements.

(b) ***Federal, State, local, or tribal government employees, contractors, and grantees.***

(1) A Federal, State, local, or tribal government employee has a need to know SSI if access to the information is necessary for performance of the employee's official duties, on behalf or in defense of the interests of the Federal, State, local, or tribal government.

(2) A person acting in the performance of a contract with or grant from a Federal, State, local, or tribal government agency has a need to know SSI if access to the information is necessary to performance of the contract or grant.

(c) ***Background check.*** TSA or Coast Guard may make an individual's access to the SSI contingent upon satisfactory completion of a security background check or other procedures and requirements for safeguarding SSI that are satisfactory to TSA or the Coast Guard.

(d) ***Need to know further limited by the DHS or DOT.*** For some specific SSI, DHS or DOT may make a finding that only specific persons or classes of persons have a need to know.

[69 FR 28082, May 18, 2004, as amended at 70 FR 1382, Jan. 7, 2005; 73 FR 72173, Nov. 26, 2008]

§ 1520.13 Marking SSI.

(a) ***Marking of paper records.*** In the case of paper records containing SSI, a covered person must mark the record by placing the protective marking conspicuously on the top, and the distribution limitation statement on the bottom, of -

(1) The outside of any front and back cover, including a binder cover or folder, if the document has a front and back cover;

(2) Any title page; and

(3) Each page of the document.

(b) ***Protective marking.*** The protective marking is: SENSITIVE SECURITY INFORMATION.

(c) ***Distribution limitation statement.*** The distribution limitation statement is:

> *WARNING:* This record contains Sensitive Security Information that is controlled under 49 CFR parts 15 and 1520. No part of this record may be disclosed to persons without a "need to know", as defined in 49 CFR parts 15 and 1520, except with the written permission of the Administrator of the Transportation Security Administration or the Secretary of Transportation. Unauthorized release may result in civil penalty or other action. For U.S. government agencies, public disclosure is governed by 5 U.S.C. 552 and 49 CFR parts 15 and 1520.

(d) ***Other types of records.*** In the case of non-paper records that contain SSI, including motion picture films, videotape recordings, audio recording, and electronic and magnetic records, a covered person must clearly and conspicuously mark the records with the protective marking and the distribution limitation statement such that the viewer or listener is reasonably likely to see or hear them when obtaining access to the contents of the record.

§ 1520.15 SSI disclosed by TSA or the Coast Guard.

(a) ***In general.*** Except as otherwise provided in this section, and notwithstanding the Freedom of Information Act (5 U.S.C. 552), the Privacy Act (5 U.S.C. 552a), and other laws, records containing SSI are not available for public inspection or copying, nor does TSA or the Coast Guard release such records to persons without a need to know.

(b) ***Disclosure under the Freedom of Information Act and the Privacy Act.*** If a record contains both SSI and information that is not SSI, TSA or the Coast Guard, on a proper Freedom of Information Act or Privacy Act request, may disclose the record with the SSI redacted, provided the record is not otherwise exempt from disclosure under the Freedom of Information Act or Privacy Act.

(c) ***Disclosures to committees of Congress and the General Accounting Office.*** Nothing in this part precludes TSA or the Coast Guard from disclosing SSI to a committee of Congress authorized to have the information or to the Comptroller General, or to any authorized representative of the Comptroller General.

(d) ***Disclosure in enforcement proceedings*** -

(1) ***In general.*** TSA or the Coast Guard may provide SSI to a person in the context of an administrative enforcement proceeding when, in the sole discretion of TSA or the Coast Guard, as appropriate, access to the SSI is necessary for the person to prepare a response to allegations contained in a legal enforcement action document issued by TSA or the Coast Guard.

(2) ***Security background check.*** Prior to providing SSI to a person under paragraph (d)(1) of this section, TSA or the Coast Guard may require the individual or, in the case of an entity, the individuals representing the entity, and their counsel, to undergo and satisfy, in the judgment of TSA or the Coast Guard, a security background check.

(e) ***Other conditional disclosure.*** TSA may authorize a conditional disclosure of specific records or information that constitute SSI upon the written determination by TSA that disclosure of such records or information, subject to such limitations and restrictions as TSA may prescribe, would not be detrimental to transportation security.

(f) ***Obligation to protect information.*** When an individual receives SSI pursuant to paragraph (d) or (e) of this section that individual becomes a covered person under § 1520.7 and is subject to the obligations of a covered person under this part.

(g) ***No release under FOIA.*** When TSA discloses SSI pursuant to paragraphs (b) through (e) of this section, TSA makes the disclosure for the sole purpose described in that paragraph. Such disclosure is not a public release of information under the Freedom of Information Act.

(h) ***Disclosure of Critical Infrastructure Information.*** Disclosure of information that is both SSI and has been designated as critical infrastructure information under section 214 of the Homeland Security Act is governed solely by the requirements of section 214 and any implementing regulations.

§ 1520.17 Consequences of unauthorized disclosure of SSI.

Violation of this part is grounds for a civil penalty and other enforcement or corrective action by DHS, and appropriate personnel actions for Federal employees. Corrective action may include issuance of an order requiring retrieval of SSI to remedy unauthorized disclosure or an order to cease future unauthorized disclosure.

§ 1520.19 Destruction of SSI.

(a) ***DHS***. Subject to the requirements of the Federal Records Act (5 U.S.C. 105), including the duty to preserve records containing documentation of a Federal agency's policies, decisions, and essential transactions, DHS destroys SSI when no longer needed to carry out the agency's function.

(b) ***Other covered persons*** -

(1) ***In general.*** A covered person must destroy SSI completely to preclude recognition or reconstruction of the information when the covered person no longer needs the SSI to carry out transportation security measures.

(2) ***Exception.*** Paragraph (b)(1) of this section does not require a State or local government agency to destroy information that the agency is required to preserve under State or local law.

Sensitive Security Information – Best Practices Guide for Non-DHS Employees and Contractors

www.tsa.gov

Sensitive Security Information

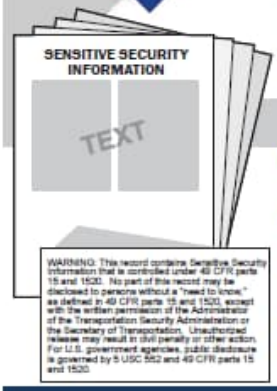
Best Practices Guide for Non-DHS Employees and Contractors

The purpose of this hand-out is to provide *transportation security stakeholders and non-DHS government employees and contractors* with best practices for handling SSI. Best practices are not to be construed as legally binding requirements of, or official implementing guidance for, the SSI regulation.

What is SSI?

Sensitive Security Information (SSI) is information that, if publicly released, would be *detrimental to transportation security*, as defined by Federal regulation 49 C.F.R. part 1520.

Although SSI is not classified information, there are specific procedures for recognizing, marking, protecting, safely sharing, and destroying SSI. As persons receiving SSI in order to carry out responsibilities related to transportation security, you are considered "covered persons" under the SSI regulation and have special obligations to protect this information from unauthorized disclosure.



SSI Requirements

The SSI regulation mandates specific and general requirements for handling and protecting SSI.

You Must – Lock Up All SSI: Store SSI in a secure container such as a locked file cabinet or drawer (as defined by Federal regulation 49 C.F.R. part 1520.9 (a)(1)).

You Must – When No Longer Needed, Destroy SSI: Destruction of SSI must be complete to preclude recognition or reconstruction of the information (as defined by Federal regulation 49 C.F.R. part 1520.19).

You Must – Mark SSI: The regulation requires that even when only a small portion of a paper document contains SSI, every page of the document must be marked with the SSI header and footer shown at left (as defined by Federal regulation 49 C.F.R. part 1520.13). Alteration of the footer is not authorized.

Best Practices Guide

Reasonable steps must be taken to safeguard SSI. While the regulation does not define reasonable steps, the TSA SSI Branch offers these best practices as examples of reasonable steps:

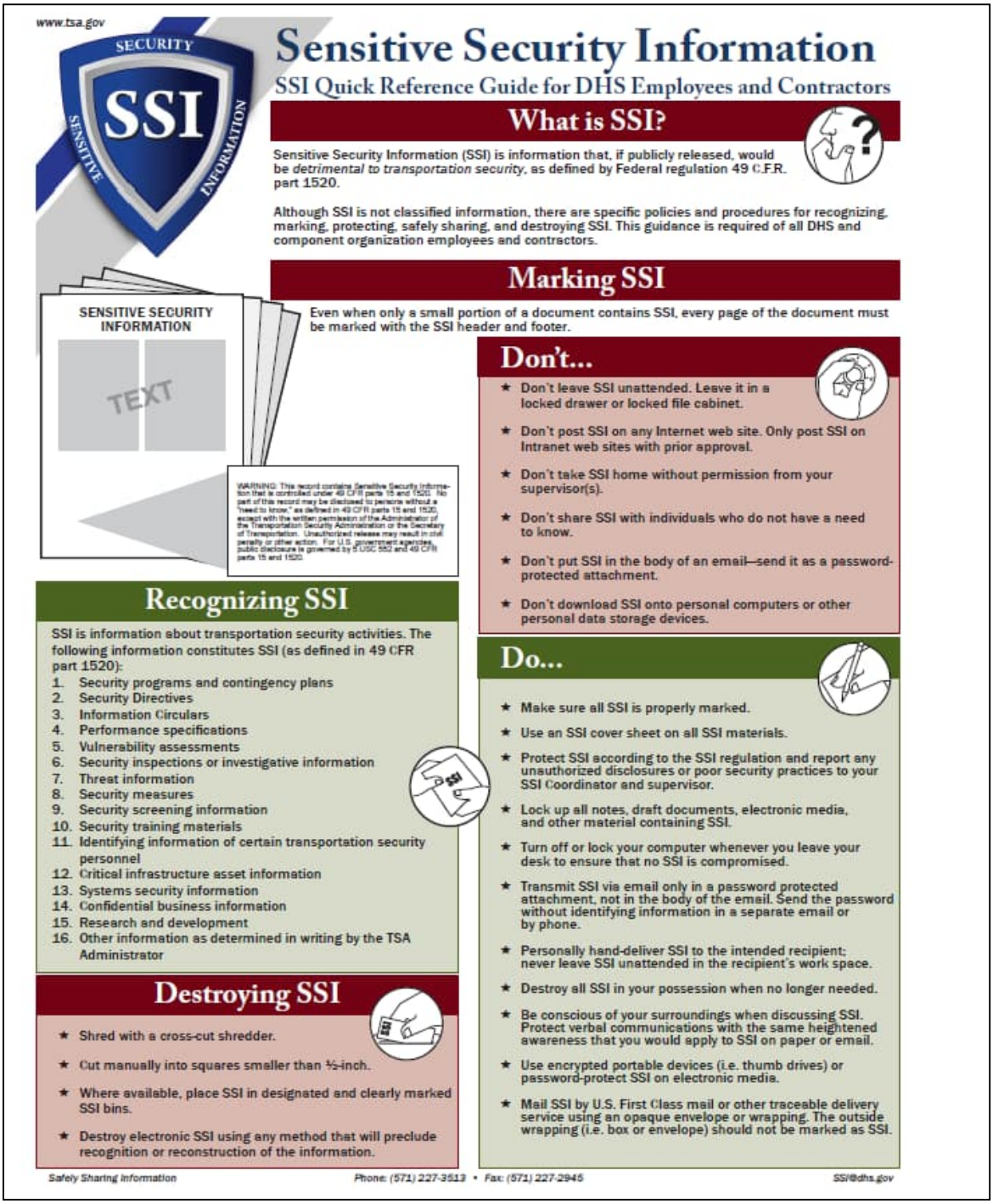
- ★ Use an SSI cover sheet on all SSI materials.
- ★ Electronic presentations (e.g., PowerPoint) should be marked with the SSI header on all pages and the SSI footer on the first and last pages of the presentation.
- ★ Spreadsheets should be marked with the SSI header on every page and the SSI footer on every page or at the end of the document.
- ★ Video and audio should be marked with the SSI header and footer on the protective cover when able and the header and footer should be shown and/or read at the beginning and end of the program.
- ★ CDs/DVDs should be encrypted or password-protected and the header and footer should be affixed to the CD/DVD.
- ★ Portable drives including "flash" or "thumb" drives should not themselves be marked, but the drive itself should be encrypted or all SSI documents stored on it should be password protected.
- ★ When leaving your computer or desk you must lock up all SSI and you should lock or turn off your computer.
- ★ Taking SSI home is not recommended. If necessary, get permission from a supervisor and lock up all SSI at home.
- ★ Don't handle SSI on computers that have peer-to-peer software installed on them or on your home computer.
- ★ Transmit SSI via email only in a password protected attachment, not in the body of the email. Send the password without identifying information in a separate email or by phone.
- ★ Passwords for SSI documents should contain at least eight characters, have at least one uppercase and one lowercase letter, contain at least one number, one special character and not be a word in the dictionary.
- ★ Faxing of SSI should be done by first verifying the fax number and that the intended recipient will be available promptly to retrieve the SSI.
- ★ SSI should be mailed by U.S. First Class mail or other traceable delivery service using an opaque envelope or wrapping. The outside wrapping (i.e. box or envelope) should not be marked as SSI.
- ★ Interoffice mail should be sent using an unmarked, opaque, sealed envelope so that the SSI cannot be read through the envelope.
- ★ SSI stored in network folders should either require a password to open or the network should limit access to the folder to only those with a need to know.
- ★ Properly destroy SSI using a cross-cut shredder or by cutting manually into less than ½ inch squares.
- ★ Properly destroy electronic records using any method that will preclude recognition or reconstruction.

Transportation Security Administration

Phone: (571) 227-3513 • Fax: (571) 227-2945

Safely Sharing Information
SSI@dhs.gov

Sensitive Security Information – SSI Quick Reference Guide for DHS Employees and Contractors



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Sensitive Security Information

SSI Quick Reference Guide for DHS Employees and Contractors

What is SSI?

Sensitive Security Information (SSI) is information that, if publicly released, would be *detrimental to transportation security*, as defined by Federal regulation 49 C.F.R. part 1520.

Although SSI is not classified information, there are specific policies and procedures for recognizing, marking, protecting, safely sharing, and destroying SSI. This guidance is required of all DHS and component organization employees and contractors.

Marking SSI

SENSITIVE SECURITY INFORMATION

TEXT

WARNING: This record contains Sensitive Security Information that is controlled under 49 CFR parts 15 and 1520. No part of this record may be disclosed to persons without a "need to know," as defined in 49 CFR parts 15 and 1520, except with the written permission of the Administrator of the Transportation Security Administration or the Secretary of Transportation. Unauthorized release may result in civil penalty or other action. For U.S. government agencies, public disclosure is governed by 5 USC 552 and 49 CFR parts 15 and 1520.

Even when only a small portion of a document contains SSI, every page of the document must be marked with the SSI header and footer.

Don't...

- Don't leave SSI unattended. Leave it in a locked drawer or locked file cabinet.
- Don't post SSI on any Internet web site. Only post SSI on Intranet web sites with prior approval.
- Don't take SSI home without permission from your supervisor(s).
- Don't share SSI with individuals who do not have a need to know.
- Don't put SSI in the body of an email—send it as a password-protected attachment.
- Don't download SSI onto personal computers or other personal data storage devices.

Recognizing SSI

SSI is information about transportation security activities. The following information constitutes SSI (as defined in 49 CFR part 1520):

1. Security programs and contingency plans
2. Security Directives
3. Information Circulars
4. Performance specifications
5. Vulnerability assessments
6. Security inspections or investigative information
7. Threat information
8. Security measures
9. Security screening information
10. Security training materials
11. Identifying information of certain transportation security personnel
12. Critical infrastructure asset information
13. Systems security information
14. Confidential business information
15. Research and development
16. Other information as determined in writing by the TSA Administrator

Do...

- Make sure all SSI is properly marked.
- Use an SSI cover sheet on all SSI materials.
- Protect SSI according to the SSI regulation and report any unauthorized disclosures or poor security practices to your SSI Coordinator and supervisor.
- Lock up all notes, draft documents, electronic media, and other material containing SSI.
- Turn off or lock your computer whenever you leave your desk to ensure that no SSI is compromised.
- Transmit SSI via email only in a password protected attachment, not in the body of the email. Send the password without identifying information in a separate email or by phone.
- Personally hand-deliver SSI to the intended recipient; never leave SSI unattended in the recipient's work space.
- Destroy all SSI in your possession when no longer needed.
- Be conscious of your surroundings when discussing SSI. Protect verbal communications with the same heightened awareness that you would apply to SSI on paper or email.
- Use encrypted portable devices (i.e. thumb drives) or password-protect SSI on electronic media.
- Mail SSI by U.S. First Class mail or other traceable delivery service using an opaque envelope or wrapping. The outside wrapping (i.e. box or envelope) should not be marked as SSI.

Destroying SSI

- Shred with a cross-cut shredder.
- Cut manually into squares smaller than ½-inch.
- Where available, place SSI in designated and clearly marked SSI bins.
- Destroy electronic SSI using any method that will preclude recognition or reconstruction of the information.

Safely Sharing Information

Phone: (571) 227-3513 • Fax: (571) 227-2945

SSI@dhs.gov

DHS Form 11000-6 (08-04) – Department of Homeland Security Non- Disclosure Agreement

DEPARTMENT OF HOMELAND SECURITY

NON-DISCLOSURE AGREEMENT

I, _____, an individual official, employee, consultant, or subcontractor of or to _____ (the Authorized Entity), intending to be legally bound, hereby consent to the terms in this Agreement in consideration of my being granted conditional access to certain information, specified below, that is owned by, produced by, or in the possession of the United States Government.

(Signer will acknowledge the category or categories of information that he or she may have access to, and the signer's willingness to comply with the standards for protection by placing his or her initials in front of the applicable category or categories.)

Initials:	**Protected Critical Infrastructure Information (PCII)**

I attest that I am familiar with, and I will comply with all requirements of the PCII program set out in the Critical Infrastructure Information Act of 2002 (CII Act) (Title II, Subtitle B, of the Homeland Security Act of 2002, Public Law 107-296, 196 Stat. 2135, 6 USC 101 et seq.), as amended, the implementing regulations thereto (6 CFR Part 29), as amended, and the applicable PCII Procedures Manual, as amended, and with any such requirements that may be officially communicated to me by the PCII Program Manager or the PCII Program Manager's designee.

Initials:	**Sensitive Security Information (SSI)**

I attest that I am familiar with, and I will comply with the standards for access, dissemination, handling, and safeguarding of SSI information as cited in this Agreement and in accordance with 49 CFR Part 1520, "Protection of Sensitive Security Information," "Policies and Procedures for Safeguarding and Control of SSI," as amended, and any supplementary guidance issued by an authorized official of the Department of Homeland Security.

Initials:	**Other Sensitive but Unclassified (SBU)**

As used in this Agreement, sensitive but unclassified information is an over-arching term that covers any information, not otherwise indicated above, which the loss of, misuse of, or unauthorized access to or modification of could adversely affect the national interest or the conduct of Federal programs, or the privacy to which individuals are entitled under Section 552a of Title 5, as amended, but which has not been specifically authorized under criteria established by an Executive Order or an Act of Congress to be kept secret in the interest of national defense or foreign policy. This includes information categorized by DHS or other government agencies as: For Official Use Only (FOUO); Official Use Only (OUO); Sensitive Homeland Security Information (SHSI); Limited Official Use (LOU); Law Enforcement Sensitive (LES); Safeguarding Information (SGI); Unclassified Controlled Nuclear Information (UCNI); and any other identifier used by other government agencies to categorize information as sensitive but unclassified.

I attest that I am familiar with, and I will comply with the standards for access, dissemination, handling, and safeguarding of the information to which I am granted access as cited in this Agreement and in accordance with the guidance provided to me relative to the specific category of information.

I understand and agree to the following terms and conditions of my access to the information indicated above:

1. I hereby acknowledge that I have received a security indoctrination concerning the nature and protection of information to which I have been provided conditional access, including the procedures to be followed in ascertaining whether other persons to whom I contemplate disclosing this information have been approved for access to it, and that I understand these procedures.

2. By being granted conditional access to the information indicated above, the United States Government has placed special confidence and trust in me and I am obligated to protect this information from unauthorized disclosure, in accordance with the terms of this Agreement and the laws, regulations, and directives applicable to the specifi c categories of information to which I am granted access.

3. I attest that I understand my responsibilities and that I am familiar with and will comply with the standards for protecting such information that I may have access to in accordance with the terms of this Agreement and the laws, regulations, and/or directives applicable to the specifi c categories of information to which I am granted access. I understand that the United States Government may conduct inspections, at any time or place, for the purpose of ensuring compliance with the conditions for access, dissemination, handling and safeguarding information under this Agreement.

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4. I will not disclose or release any information provided to me pursuant to this Agreement without proper authority or authorization. Should situations arise that warrant the disclosure or release of such information I will do so only under approved circumstances and in accordance with the laws, regulations, or directives applicable to the specific categories of information. I will honor and comply with any and all dissemination restrictions cited or verbally relayed to me by the proper authority.

5. (a) For PCII - (1) Upon the completion of my engagement as an employee, consultant, or subcontractor under the contract, or the completion of my work on the PCII Program, whichever occurs first, I will surrender promptly to the PCII Program Manager or his designee, or to the appropriate PCII officer, PCII of any type whatsoever that is in my possession.
(2) If the Authorized Entity is a United States Government contractor performing services in support of the PCII Program, I will not request, obtain, maintain, or use PCII unless the PCII Program Manager or Program Manager's designee has first made in writing, with respect to the contractor, the certification as provided for in Section 29.8(c) of the implementing regulations to the CII Act, as amended.
(b) For SSI and SBU - I hereby agree that material which I have in my possession and containing information covered by this Agreement, will be handled and safeguarded in a manner that affords sufficient protection to prevent the unauthorized disclosure of or inadvertent access to such information, consistent with the laws, regulations, or directives applicable to the specific categories of information. I agree that I shall return all information to which I have had access or which is in my possession 1) upon demand by an authorized individual; and/or 2) upon the conclusion of my duties, association, or support to DHS; and/or 3) upon the determination that my official duties do not require further access to such information.

6. I hereby agree that I will not alter or remove markings, which indicate a category of information or require specific handling instructions, from any material I may come in contact with, in the case of SSI or SBU, unless such alteration or removal is consistent with the requirements set forth in the laws, regulations, or directives applicable to the specific category of information or, in the case of PCII, unless such alteration or removal is authorized by the PCII Program Manager or the PCII Program Manager's designee. I agree that if I use information from a sensitive document or other medium, I will carry forward any markings or other required restrictions to derivative products, and will protect them in the same matter as the original.

7. I hereby agree that I shall promptly report to the appropriate official, in accordance with the guidance issued for the applicable category of information, any loss, theft, misuse, misplacement, unauthorized disclosure, or other security violation, I have knowledge of and whether or not I am personally involved. I also understand that my anonymity will be kept to the extent possible when reporting security violations.

8. If I violate the terms and conditions of this Agreement, such violation may result in the cancellation of my conditional access to the information covered by this Agreement. This may serve as a basis for denying me conditional access to other types of information, to include classified national security information.

9. (a) With respect to SSI and SBU, I hereby assign to the United States Government all royalties, remunerations, and emoluments that have resulted, will result, or may result from any disclosure, publication, or revelation of the information not consistent with the terms of this Agreement.
(b) With respect to PCII I hereby assign to the entity owning the PCII and the United States Government, all royalties, remunerations, and emoluments that have resulted, will result, or may result from any disclosure, publication, or revelation of PCII not consistent with the terms of this Agreement.

10. This Agreement is made and intended for the benefit of the United States Government and may be enforced by the United States Government or the Authorized Entity. By granting me conditional access to information in this context, the United States Government and, with respect to PCII, the Authorized Entity, may seek any remedy available to it to enforce this Agreement including, but not limited to, application for a court order prohibiting disclosure of information in breach of this Agreement. I understand that if I violate the terms and conditions of this Agreement, I could be subjected to administrative, disciplinary, civil, or criminal action, as appropriate, under the laws, regulations, or directives applicable to the category of information involved and neither the United States Government nor the Authorized Entity have waived any statutory or common law evidentiary privileges or protections that they may assert in any administrative or court proceeding to protect any sensitive information to which I have been given conditional access under the terms of this Agreement.

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11. Unless and until I am released in writing by an authorized representative of the Department of Homeland Security (if permissible for the particular category of information), I understand that all conditions and obligations imposed upon me by this Agreement apply during the time that I am granted conditional access, and at all times thereafter.

12. Each provision of this Agreement is severable. If a court should find any provision of this Agreement to be unenforceable, all other provisions shall remain in full force and effect.

13. My execution of this Agreement shall not nullify or affect in any manner any other secrecy or non-disclosure Agreement which I have executed or may execute with the United States Government or any of its departments or agencies.

14. These restrictions are consistent with and do not supersede, conflict with, or otherwise alter the employee obligations, rights, or liabilities created by Executive Order No. 12958, as amended; Section 7211 of Title 5, United States Code (governing disclosures to Congress); Section 1034 of Title 10, United States Code, as amended by the Military Whistleblower Protection Act (governing disclosure to Congress by members of the military); Section 2302(b)(8) of Title 5, United States Code, as amended by the Whistleblower Protection Act (governing disclosures of illegality, waste, fraud, abuse or public health or safety threats); the Intelligence Identities Protection Act of 1982 (50 USC 421 et seq.) (governing disclosures that could expose confidential Government agents); and the statutes which protect against disclosure that may compromise the national security, including Sections 641, 793, 794, 798, and 952 of Title 18, United States Code, and Section 4(b) of the Subversive Activities Act of 1950 (50 USC 783(b)). The definitions, requirements, obligations, rights, sanctions, and liabilities created by said Executive Order and listed statutes are incorporated into this agreement and are controlling.

15. Signing this Agreement does not bar disclosures to Congress or to an authorized official of an executive agency or the Department of Justice that are essential to reporting a substantial violation of law.

16. I represent and warrant that I have the authority to enter into this Agreement.

17. I have read this Agreement carefully and my questions, if any, have been answered. I acknowledge that the briefing officer has made available to me any laws, regulations, or directives referenced in this document so that I may read them at this time, if I so choose.

DEPARTMENT OF HOMELAND SECURITY

NON-DISCLOSURE AGREEMENT

Acknowledgement

Typed/Printed Name:	Government/Department/Agency/Business Address	Telephone Number:

I make this Agreement in good faith, without mental reservation or purpose of evasion.

Signature:

WITNESS:

Typed/Printed Name:	Government/Department/Agency/Business Address	Telephone Number:

Signature:

This form is not subject to the requirements of P.L. 104-13, "Paperwork Reduction Act of 1995" 44 USC, Chapter 35.

END OF ATTACHMENT SECTION

DIVISION 1

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SECTION 01 11 00 - SUMMARY OF WORK

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and General Conditions of Contract, including other Division 1 Specification Sections, apply to this Section.

1.2 PROJECT DESCRIPTION

A. Project/Work Identification:

1. The General overall description of the Work of the Contract for the:

   H-00370, Airside 3 Apron PCC Slab Rehabilitation
   Orlando International Airport
   Orlando, Florida

   can be summarized for purposes of administration and payment in the manner of project segments as follows:

2. The Project consists of the removal and replacement of cracked and damaged PCC slabs and includes spalled pavement repair and joint sealant replacement on the PCC apron of Airside 3.

1.3 CONTRACTOR USE OF PREMISES

A. Limit use of the premises to construction activities within areas indicated; allow for any Owner and tenant occupancy, and use by the public.

1. Minimize any disruption to all operating areas, including parking areas.

   a. Existing public services and utility systems shall remain in operation during the construction period, excluding times required for installation of new work unless specifically allowed by the Contract.
   b. Schedule and coordinate outages and interruptions of public service with the OAR. See the specific forms for processes and time constraints. Utilize the following forms:

      1) Form #018 System Interruption/Utility Outage Notification.
      2) Form #018a System Interruption/Utility Outage Notification Procedured.
      3) Form #018b Roofing Impact Notification
      4) Form #018c Security System Interruption/Outage Request

2. Provide all temporary directional signage, safety, and barricading required for passenger services.

a. Submit a plan indicating signage, safety, and barricading for access routes, storage areas and work sites, at the pre-construction meeting.
b. Directional signing at the access gate and or along the delivery route to the storage area or work site shall be as directed by the OAR.

3. Confine operations to areas within Contract limits indicated. Portions of the site beyond areas in which construction operations are indicated are not to be disturbed.
4. Access to site shall be shown on the plans or as directed by the OAR. Do not permit any unauthorized construction personnel or traffic on the site. Provide for traffic control to and from the various construction areas. Immediately clean-up any debris deposited along the access road as a result of construction traffic.

a. Keep driveways and entrances serving the premises clear and available to the Owner, Tenant, their employees at all times, and the public. Do not use these areas for parking or storage of materials. Schedule deliveries to minimize space and time requirements for storage of materials and equipment on site.

5. All material orders for delivery to the site will use as a delivery address the access point at the Contractor's storage site.

a. Coordinate with the OAR and allow for the least possible disruption of the facilities normal operations for delivery of materials and removal of demolished and discarded materials.
b. Delivery of materials and removal of demolished and discarded materials shall be scheduled as follows:

1) Schedule and coordinate all deliveries and removal of debris ***during daylight hours*** each day of the work week.

6. The limits of construction material storage areas, equipment storage areas, and parking areas shall be as indicated in the documents or as directed by the OAR. Erect and maintain suitable fencing, marking and warning devices suitable for both day/night use to delineate the perimeter of all such areas. Refer to specification Section 01 55 30 Requirements for Use of Canal Road.

a. Parking management cards may be used to provide contractor parking in the terminal garages and terminal top parking. These cards will cost $60 per card per month, taxes not included.

B. Use of the Existing Building: Maintain the existing building in a weathertight condition throughout the construction period. Repair damage caused by construction operations. Take all precautions necessary to protect the building and its occupants during the construction period.

1.4 OWNER OCCUPANCY

A. Full Owner Occupancy: The Owner, its tenants, and the public will occupy the site and existing building and adjacent facilities (outside the limits of the construction area unless specified) during the entire construction period. Cooperate with the Owner during construction operations to minimize conflicts, facilitate occupancy usage, and protect persons and property in the project area during the entire construction period. Perform the Work so as not to interfere with the Owner's operations.

1. Unless otherwise directed by the Owner, work shall be scheduled between the hours of 7:00 AM until 6:00 PM each day.

1.5 LAWS, PERMITS, AND REGULATIONS

A. Comply with all applicable laws, ordinances, regulations, codes, ADA requirements.

B. Obtain and pay for all license and permits, all fees and charges for connection to outside services and parking for Contractor's vehicles.

C. Abide by FAA and Owner’s safety and security regulations and procedures relative to access to, and work in, Airport Operations Areas and secured facilities.

D. Comply with Owner’s insurance requirements.

PART 2 - PRODUCTS (Not Applicable)

PART 3 - EXECUTION (Not Applicable)

END OF SECTION 01 11 00

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SECTION 01 25 00 – SUBSTITUTION PROCEDURES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and General Conditions of Contract, including other Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section specifies administrative and procedural requirements for handling requests for substitutions made after the Project is advertised.

B. Procedural requirements governing the Contractor's selection of products and product options are included under Section "Materials and Equipment."

1.3 DEFINITIONS

A. Definitions used in this Section are not intended to change or modify the meaning of other terms used in the Contract Documents.

B. Substitutions: Requests for Substitution are changes proposed by the Contractor in products, materials, equipment, and methods of construction required by Contract Documents.

1. The following are not considered Substitutions:

   a. Revisions to Contract Documents requested by the Owner or Designer.
   b. Specified options of products and construction methods included in Contract Documents.
   c. Revisions required for the Contractor to comply with governing regulations and orders issued by governing authorities.

C. Substitutions requested by Bidders during the bidding period are subject to the requirements specified in this Section for substitutions. The Owner’s decision on the Request for Substitution during bidding will only be made by means of a Bid Addendum.

1.4 SUBMITTALS

A. Substitution Request Submittal: Requests for substitution during bidding may be considered if submitted as directed in the Instructions to Bidders at least fourteen (14) days before Bid date. Requests received after this time may be rejected at the discretion of the Owner. Request for substitution received after Contract award must be made to the OAR. The OAR will render a decision on such a Request for Substitution within thirty (30) days after the complete Request for Substitution has been received by the OAR.

B. Each Request for Substitution (whether during bidding or after Contract award) must be submitted as follows: Submit four (4) copies of each request for substitution for consideration. Submit requests in the form and in accordance with procedures required for Change Order proposals in the General Conditions. Substitution Request Form: Use "Contractor's Request For Substitution" form (3 pages) provided at end of this Section.

1. Identify the product, or the fabrication or installation method to be replaced in each request. Include related Specification Section and Drawing numbers. Provide complete documentation showing compliance with the requirements for substitutions, and the following information, as appropriate:

   a. Product Data, including Drawings and descriptions of products, fabrication and installation procedures.
   b. Samples, where applicable or requested.
   c. A detailed comparison of significant qualities of the proposed substitution with those of the Work specified. Significant qualities may include elements such as size, weight, durability, code compliance, maintenance requirements, energy usage, and sustainable design requirements, performance, key components and visual effect.
   d. Coordination information, including a list of changes or modifications needed to other parts of the Work and to construction performed by the Owner and separate Contractors that will become necessary to accommodate the proposed substitution.
   e. A statement indicating the substitution's effect on the Contractor's Construction Schedule compared to the schedule without approval of the substitution. Indicate the effect of the proposed substitution on overall Contract Time.
   f. Cost information, including a proposal of the net change, if any in the Contract Sum. When specifically required by the OAR, the cost information shall include a 10-year return on investment study indicating both First Costs, Operation and Maintenance costs as well as energy usage variations (as applicable) at a minimum.
   g. Certification by the Contractor that the substitution proposed is equal-to or better in every significant respect to that required by the Contract Documents, and that it will perform adequately in the application indicated. Include the Contractor's waiver of rights to additional payment or time that may subsequently become necessary as a result of downstream constructability issues that may arise or failure of the substitution to perform adequately.
   h. A paragraph by paragraph comparison and analysis of the related specification section indicating compliance or variation from specification standard. If specified with a “Basis of Design”, provide a comparison and analysis of each component of the manufacturers’ detailed specification for the “Basis of Design”. Each variation shall be substantiated with necessary submission to validate products compliance with specifications.
   i. Failure to include the above requirements in the Request for Substitution may be cause for rejection in its entirety.

C. The Contractor must, prior to submitting to the OAR, thoroughly review all requests for substitution proposed by its subcontractors to ensure that the request is not only complete as outlined above but also that the Contractor endorses the request. Requests for Substitution from subcontractors received by the OAR which have not been thoroughly reviewed and endorsed by the Contractor will be rejected,

D. OAR’s Action: Additional information or documentation necessary for evaluation of the request may be requested. Notification of approved substitutions will be made by Addendum prior to bid and by a Change Notice after bid.

PART 2 - PRODUCTS

2.1 SUBSTITUTIONS

A. Conditions: The substitution request will be received and considered by the OAR when one or more of the following conditions are satisfied, as determined by the OAR; otherwise requests will be returned without action except to record noncompliance with these requirements.

1. Extensive revisions to Contract Documents are not required.
2. Proposed changes are in keeping with the general intent of Contract Documents.
3. The request is timely, fully documented and properly submitted.
4. The request is directly related to an "or approved substitution" clause or similar language in the Contract Documents.
5. The specified product or method of construction cannot be provided within the Contract Time. The request will not be considered if the product or method cannot be provided as a result of failure to pursue the Work promptly or coordinate activities properly.
6. The specified product or method of construction cannot receive necessary approval by a governing authority, and the requested substitution can be approved.
7. A substantial advantage is offered the Owner, in terms of cost, time, energy conservation or other considerations of merit, after deducting offsetting responsibilities the Owner may be required to bear. such as additional compensation required for the OAR and Designer for redesign and evaluation services, increased cost of other construction by the Owner or separate contractors, and similar considerations.
8. The specified product or method of construction cannot be provided in a manner that is compatible with other materials, and where certification is provided that the substitution will overcome the incompatibility.
9. The specified product or method of construction cannot be coordinated with other materials, and where certification is provided that the proposed substitution can be coordinated.
10. The specified product or method of construction cannot provide a warranty required by the Contract Documents and where certification is provided that the proposed substitution provides the required warranty.
11. Where a proposed substitution involves more than the Contractor, each subcontractor shall cooperate with the Contractor to coordinate the Work, provide uniformity and consistency, and to assure compatibility of products.

B. The submittal and the OAR’s acceptance of Shop Drawings, Product Data or Samples that relate to construction activities not complying with the Contract Documents does not constitute an acceptable or valid request for substitution, nor does it constitute approval.

C. If the use of a substitute product requires additional work or modifications to new or existing facilities, all such additional work, including utility modifications shall be borne by the Contractor.

2.2 PROCEDURES

A. Selection Procedures: Options in product selection is governed by the Contract Documents and governing regulations, not by previous industry tradition or project experience. Procedures governing product selection include, but are not limited to the following:

1. Proprietary Specification Requirements: Where a single product or manufacturer is named, provide the product indicated. Other products will not be considered by the OAR.

a. Advise the OAR before proceeding when it is discovered that the named product is not a feasible solution.

2. Semi-proprietary Specification Requirements: Where two or more products and manufacturers are named, provide one of the products indicated. No substitutions will be permitted unless the specification indicates consideration of other products.

   a. When products are specified by one manufacturer's model numbers or performance criteria with reference to other acceptable manufacturers, products manufactured by the acceptable manufacturers listed must meet minimum performance criteria specified or meet quality of models specified.
   b. Advice the OAR before proceeding when it is discovered that the named product is not a feasible solution.

3. Performance Specification Requirements: Where Specifications require compliance with performance requirements, provide products that comply with the requirements and are recommended by the manufacturer for the application indicated. General overall performance of a product is implied where the product is specified for a specific application.

4. Sustainable Design Requirements: Where Specifications require compliance with specific LEED Credits or Sustainable Design components, provide products that comply with those same requirements or components.

5. Compliance with Standards, Codes, and Regulations: Where the Specifications only require compliance with an imposed code, standard, or regulation, select a product that complies with the standards, codes or regulations specified.

PART 3 - EXECUTION (Not Applicable)

END OF SECTION 01 25 00

CRFS NO.: _____

CONTRACTOR'S REQUEST FOR SUBSTITUTION

The undersigned hereby submits for consideration the following request for substitution in lieu of the specified item.

Specification Section and Paragraph: _____

Drawings and Details affected: _____

Specified Item/Mfr/Model No.: _____

Proposed Substitution: (Define)

_____

_____

_____

It is the Contractor's responsibility to provide all information necessary to determine the proposed substitution is equal or better than the specified item. Submit complete product description, drawings, photographs, performance and test data, samples and other information necessary for side-by-side evaluation. Fill in ALL BLANKS below:

1. Provide specific reason why this request for substitution is being made: _____

   _____

   _____

2. Identify the recycled materials or components, or the features of this proposed substitution which support its status as "environmentally friendly". _____

   _____

   _____

3. Does the substitution meet the specified sustainability and/or LEED requirements? Yes_____ No_____. If "yes",explain:

   _____

   _____

   _____

4. Will approval of the proposed substitution affect dimensions, locations, or configurations shown on drawings? Yes_____ No_____. If "yes", explain: _____

   _____

   _____

5. What are the differences between the specified item and the proposed substitution? _____

   _____

   _____

6. Will changes be required to the building or other construction in order to properly install or accommodate the requested substitution? Yes _____ No _____: If "Yes", explain: _____

   _____

   _____

7. Will the Contractor pay for any changes to the building design including re-design, engineering and detailing costs caused by this approval? Yes _____ No _____ If "No", explain: _____

_____

_____

8. Will the requested substitution meet all applicable Codes, Ordinances, and regulations for this specific application? Yes _____ No _____ If "No", explain:_____

_____

_____

9. Will approval of the requested substitution affect the Work of other trades? Yes ____ No ____ If "Yes", explain:

_____

_____

10. Will approval of the requested substitution affect the specified warranty? Yes ____ No ____ If "Yes", explain:

_____

_____

11. Has the requested substitution been used locally in similar applications? Yes _____ No _____ If "Yes", identify nearest location: _____

_____

12. Will maintenance and service parts be locally available for the requested substitution? Yes _____ No_____
If ""no", identify nearest location: _____

_____

13. Will the requested substitution require waiving of any qualifications or other requirements? Yes _____ No ____
If "Yes", explain: _____

_____

14. Are there any license fees or royalties associated with the requested substitution? Yes _____ No _____
If "Yes", explain:_____

_____

15. Will the requested substitution affect the construction progress schedule? Yes ____ No ____ If "Yes", explain:_

_____

_____

16. Will Owner receive a credit ($$$$) for this proposed substitution? Yes _____ No _____ If "Yes" –
state the amount : $_____; if "No", explain: _____

_____

17. Will the date of Substantial Completion be decreased in time if he requested substitution is approved? Yes ___
No _____ If "Yes", date number of calendar days (_____); if "No", explain: _____

_____

The Architect and Owner will not be required to prove any product is not equal or suitable for the Project.

CONTRACTOR'S CERTIFICATION OF EQUAL PERFORMANCE AND ASSUMPTION OF LIABILITY FOR EQUAL PERFORMANCE

The undersigned Contractor states that the performance, function, quality and durability are equivalent or superior to the specified item. If Contractor is a corporation, the legal name of the corporation shall be set forth below, together with signature(s) of he officer of officers authorized to sign contracts, on behalf of the corporation and corporate seal.

If Contractor is a partnership, the true name of the firm and the name(s) of the general partner(s) shall be set forth below with the signature(s) of the partner or partners authorized to sign contracts on behalf of the partnership, and if the Contractor is an individual, his signature shall be placed below. Failure to provide legally binding signature(s) will result in non-consideration of this Request For Substitution..

Submitted By

Corporate Seal)

Attest (If Corporation)

_____
Signature Date

_____
Name (Print)

_____
Title

_____
Firm (Print)

_____
Street Address

_____
City, State, Zip

Witness: _____
(If partnership or individual)

ARCHITECT'S ACTION

_____ Approved By_____ Date: _____
(Signature Required)
_____ Date: _____
(Print Firm Name)

_____ Not Approved By_____ Date: _____
(Signature Required)
_____ Date: _____
(Print Firm Name)

OAR ACTION

_____ Approved By_____ Date: _____
(Signature Required)
_____ Date: _____
(Print Firm Name)

_____ Not Approved By_____ Date: _____
(Signature Required)
_____ Date: _____
(Print Firm Name)

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SECTION 01 29 73 - SCHEDULE OF VALUES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and General Conditions of Contract, including other Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section includes: Schedule of Values.

1. When requested by the OAR, support values given with substantiating data.
2. Use Schedule of Values as a basis for the Applications for Payment.

B. Time Coordination: In coordination of initial submittals and other administrative start-up activities, submit Schedule of Values to the OAR at the earliest feasible date, but in no case later than seven (7) days before initial payment request is to be submitted. The Contractor's Application for Payment cannot be processed for payment until the Contractor has submitted a Schedule of Values acceptable to the OAR.

1.3 FORM OF SUBMITTAL

A. Use AIA Document G-703 Continuation Sheet for the submittal format and provide to the OAR in a MS Excel electronic file.

B. Unless otherwise directed by the OAR, use Table of Contents of the Project Manual as a basis for format or, if a unit price contract, use unit price schedule.

C. Identify each line with number and title as listed in Table of Contents of the Project Manual or unit price schedule.

1.4 PREPARING AND SUBMITTING SCHEDULE OF VALUES

A. The Schedule of Values will be used as a basis for determining progress payments on the Contract. The Schedule of Values shall be a schedule of cost loaded construction activities equal, in total, to the awarded Contract Price and shall be in a form and of sufficient detail to correctly represent a reasonable apportionment of the Contract Price. Prepare Schedule of Values, in coordination with Progress Schedule. Correlate line items with other administrative schedules and forms required for the Work, including progress schedule, Application for Payment form, listing of subcontractors, schedule of Alternates, schedule of Allowances, listing of products and principal suppliers and fabricators, and schedule of submittals.

B. Provide breakdown of Contract Price in sufficient detail to facilitate continued evaluation of payment requests and progress reports. Breakdown amounts of major cost items into several line items. Round off to nearest whole dollar, but with total equal to Contract Sum.

C. Submit one (1) copy of the Schedule of Values to the OAR.

D. Arrange schedule of values with columns to indicate generic name of item, related Specification Sections; subcontractor, supplier, manufacturer, or fabricator; change orders which have affected value; dollar value of item, and percentage of Contract Sum to nearest one-hundredth percent and adjusted to total 100 percent.

E. Margins of Cost:

1. Show line items of indirect costs, and margins on actual costs, only to extent such items will be individually listed in payment requests.
2. Establish each item in Schedule of Values and in payment requests to be complete with total expenses and proportionate share of general overhead and profit margin.
3. Major cost items, which are not directly cost of actual work-in-place, such as distinct temporary facilities, may be either shown as line items in Schedule of Values or distributed as general overhead expense.

F. Break down installed cost into:

1. Cost of product, delivered and unloaded at Job Site with taxes paid. (List under Column F, G-703)
2. Total installed cost, with overhead and profit. (List under Column C, G-703).

1.5 SUBSCHEDULE OF UNIT MATERIAL VALUE

A. Submit a sub-schedule of unit costs and quantities for products for which payments will be requested for stored materials.

B. The form of submittal shall parallel that of the Schedule of Values, with each item identified the same as the line item in the Schedule of Values.

C. The unit quantity for bulk materials shall include Contractor’s overages for normal waste.

D. The unit values for the materials: the cost of the material including taxes, delivered and unloaded at the Site.

E. The installed unit value multiplied by the quantity listed shall equal the cost of that item in the Schedule of Values.

1.6 REVIEW AND RESUBMITTAL

A. After review by the OAR, revise and re-submit Schedule (and Schedule of Material Value) as required.

PART 2 - PRODUCTS (Not Applicable)
PART 3 - EXECUTION (Not Applicable)

END OF SECTION 01 29 73

SECTION 01 31 00 - PROJECT MANAGEMENT AND COORDINATION

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and General Conditions of the Contract, including other Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section includes administrative and supervisory requirements necessary for coordinating construction operations including, but not necessarily limited to, the following:

1. General project coordination procedures.
2. Conservation.
3. Coordination Drawings.
4. Administrative and supervisory personnel.
5. Cleaning and protection.

1.3 COORDINATION

A. Coordinate construction operations included in various Sections of these Specifications to assure efficient and orderly installation of each part of the Work. Coordinate construction operations included under different Sections that depend on each other for proper installation, connection, and operation.

1. Schedule construction operations in the 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 assure maximum accessibility for required maintenance, service, and repair.
3. Make provisions to accommodate items scheduled for later installation.

B. Where necessary, prepare memoranda for distribution to each party involved, outlining special procedures required for coordination. Include such items as required notices, reports, and attendance at meetings.

1. Prepare similar memoranda for the OAR and separate contractors where coordination of their work is required.

C. Administrative Procedures: Coordinate scheduling and timing of required administrative procedures with other construction activities to avoid conflicts and assure orderly progress of the Work. Such administrative activities include, but are not limited to, the following:

1. Preparation of schedules.
2. Installation and removal of temporary facilities.
3. Delivery and processing of submittals.

4. Progress meetings.
5. Project closeout activities.

D. Conservation: Coordinate construction operations to assure that operations are carried out with consideration given to conservation of energy, water, and materials.

1. Salvage materials and equipment involved in performance of, but not actually incorporated in, the Work.

1.4 SUBMITTALS

A. Coordination Drawings: Prepare coordination drawings where careful coordination is needed for installation of products and materials fabricated by separate entities. Prepare coordination drawings where limited space availability necessitates maximum utilization of space for efficient installation of different components.

1. Show the relationship of components shown on separate Shop Drawings.
2. Indicate required installation sequences.
3. Comply with the Article “Submittals” contained in each section.

B. Staff Names: At the Pre-Construction meeting, submit a list of the Contractor's principal staff assignments, including the superintendent and other personnel in attendance at the Project Site. Identify individuals and their duties and responsibilities. List their addresses and telephone numbers.

1. Post copies of the list in the Project meeting room, the temporary field office, and each temporary telephone.

PART 2 - PART 2 - PRODUCTS (Not Applicable)

PART 3 - PART 3 - EXECUTION

3.1 GENERAL COORDINATION PROVISIONS

A. Inspection of Conditions: Require the Installer of each major component to inspect both the substrate and conditions under which Work is to be performed. Do not proceed until unsatisfactory conditions have been corrected in an acceptable manner.

B. Coordinate temporary enclosures with required inspections and tests to minimize the necessity of uncovering completed construction for that purpose.

3.2 CLEANING AND PROTECTION

A. General: Refer to Division 01 74 23 for cleaning and environmental requirements, as well as all other requirements outlined within the General Conditions of the Contract for Construction.

B. Cleaning: Cleaning shall be performed by the Contractor on a daily basis. The entire Work area shall be left in a broom clean, or equivalent condition.

1. Clean and protect construction in progress and adjoining materials in place, during handling and installation. Apply protective covering where required to assure protection from damage or deterioration until Substantial Completion is accepted.
2. Clean and provide maintenance on completed construction necessary through the remainder of the construction period. Adjust and lubricate operable components to assure operability without damaging effects.

C. Protection - Limiting Exposures: Supervise construction operations to assure that no part of the construction, completed or in progress, is subject to harmful, dangerous, damaging, or otherwise deleterious exposure during the construction period.

END OF SECTION 01 31 00

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SECTION 01 31 14.13 – SYSTEM INTERRUPTIONS / UTILITY OUTAGE NOTIFICATION PROCEDURES

PART 1 - GENERAL

1.1. RELATED DOCUMENTS

A. Drawings and General Conditions of the Contract, including other Division 1 Specification Sections, apply to this Section.

B. The Contractor and their subcontractors shall comply with all system interruptions and utility outage notification requirements, procedures and/or forms specified herein.

C. Documents

1. Use the latest version of the UON Procedures for Contractors and the UON Checklist in Section 00 62 93 Construction Administration Forms

D. GOAA Construction Forms

1. Use the latest version of the UON Forms listed in Section 00 62 93 Construction Administration Forms

1.2. DEFINITIONS

Acronym	Refers to:
UON	Utility Outage Notification
GOAA	Greater Orlando Aviation Authority
OAR	Owner's Authorized Representative
AAR	Authority's Authorized Representative
MSDS	Material Safety Data Sheet
PPE	Personal Protection Equipment
LOTO	Lock-Out Tag-Out (electrical safety procedures)
APM	Automated People Mover
BHS	Baggage Handling Systems
IT	Information Technology
GPR	Ground Penetrating Radar
SAM	Security Area Monitor
MOT	Maintenance of Traffic
AOC	Airport Operations Center
AOA	Airport Operations Area
AHJ	Authority Having Jurisdiction

1.3. GENERAL INSTRUCTIONS

A. System interruptions and utility outage notifications (UONs) are required during maintenance tasks, renovation work, tenant moves, and new construction work (the Work) in any and all instances where existing systems, utilities, services or operations are understood to be impacted by the Work.

B. The Contractor is required to plan, research, communicate, conduct and close out all utility outage notifications issued as required for the Contractor to effectively and expeditiously conduct the Work.

C. The Contractor is required to ensure that all execution steps, those outlined herein and those implied, and those required to plan, research, communicate, conduct and close out all utility outage notifications, have been followed to minimize interruptions to existing operations while completing the Work.

D. The Contractor is required to submit the completed UONs at least 120 hours (144 hours for a Security UON) in advance of execution of the Work. The advance submittal duration for UONs submitted after 5:00 pm on a normal business day or Noon on a normal business Friday does not begin until the next normal business day. Note that advance notification time starts after Owner Authorization of the UON.

E. UONs shall be sent to the Clearinghouse by the OAR or AAR for Action; the Clearinghouse has a 48 hour clock to Accept, Reject, or Accept the UON with Modifications. The Owner (GOAA Sponsor or OAR) will authorize the UON.

F. UONs associated with Security systems must be published at least 96-hours in advance of the work, whereas all other UONs must be published at least 72-hours in advance of the work. Note that these advance notification times start after Owner's Authorization of the UON.

G. In cases where there is both a Security UON and another type of UON (2nd UON) needed for the work, both UONs shall be sent together for Clearinghouse Action.

H. The Contractor is required to follow/make use of the latest revision of the UON Construction Forms and associated UON Procedures for Contractors and the UON Checklist.

PART 2 - PRODUCTS (not applicable)

PART 3 - EXECUTION

3.1. UON PLANNING

A. Research

1. The Contractor is required to research all available information, including review of conformed documents, as-built drawings, previous and associated UONs, and, as required, field installations and conditions, for preparation of a complete UON.
2. The Contractor is required to provide all required permits prior to execution of the Work.

B. Site Installation Crew Conference

1. The Contractor is required to conduct and evidence a site installation UON conference with the trade crew personnel that will be executing the Work outlined in the UON, on location.

C. MOT (where required)

1. The Contractor is required to include MOT information should the UON or any activity to enable the Work as outlined in the UON, impact existing vehicular or pedestrian traffic flow or patterns.

D. UON Which Includes Slab Drilling

1. The Contractor is required to include Ground Penetrating Radar or X-Ray services for all UONs that involve drilling into or through ground or concrete slabs or decks.

E. Site Safety Plan Review and Briefing

1. The Contractor is required to review the site-specific safety plan with the trade crew personnel, and evidence that the review/briefing covered proper requirements and procedures associated with Arc Flash Studies, Personal Protection Equipment (PPE), and Lock-Out/Tag-Out, as required for the Work outlined in the UON.

F. UON Affecting APM

1. The Contractor is required to coordinate with, and where required, be trained by Bombardier or Crystal Mover, on any and all Work anticipated to affect the Automated People Movers systems.

G. UON Affecting BHS

1. The Contractor is required to coordinate with GOAA Operations on all work anticipated to affect the Baggage Handling Systems.

H. UON Affecting IT

1. The Contractor is required to formally request access into Communications Rooms to the OAR who will then coordinate with the Owner. Access into any Communications Room is limited to experienced and certified personnel having GOAA photo identification badges, performing the Work and for a limited amount of time. The Owner will most likely limit access to only the firm actually performing the work in the Communications Rooms. The Contractor shall allow sufficient time (a minimum of 72 hours) for the processing of an access request for Communications Rooms.

2. The Contractor is required to coordinate with GOAA IT, through the OAR, all work anticipated to affect the infrastructure, telecommunication systems, and/or emergency telephones at the elevators.

I. UON Affecting Life Safety

1. The Contractor is required to research sprinkler valve locations and Fire Alarm Point Numbers affected; this information MUST be included in any UON submitted and must be coordinated with GOAA Life Safety, through the OAR.
2. The Contractor MUST be in communication with the COMM Center at every step outlined in the UON Checklist
3. The Contractor CANNOT leave a closed valve unattended for ANY reason (or leave property) in the closed position without either restoring the valve to its normal operating condition or establishing an OAR-approved, ongoing fire watch.

J. External Resources to Support UON

1. It is not unusual for UONs to require external resources that enable and support the actual work to be performed as outlined in the UON. The Contractor is required to provide all external resources necessary to successfully execute the UON.
2. The Contractor is required to identify the external resources required to complete the UON.
3. External resources may include, but are not limited to; personnel to direct the public around affected areas (Greeters), Security Area Monitors (SAMs), Off-Duty law enforcement officers, flagmen, elevator technicians, certified systems technicians (Life Safety – CSG), and/or temporary signage.

3.2. SITE PERMITS

A. Electrically Safe Work Condition Permit

1. All UON work associated with an energized electrical power source will require an Electrically Safe Work Condition Permit. The Contractor is required to have a qualified and licensed electrician complete all information required on the Electrically Safe Work Condition Permit.
2. The Contractor is required to coordinate, through the OAR, with GOAA Safety for its review and authorization of the Work once the appropriate safe work items and tasks have been verified.
3. The Contractor is required to display the completed and signed-off Electrically Safe Work Condition Permit in the area of Work during the entire time covered by the UON.

B. Hot Work (Burn) Permit

1. All UON work that involves grinding, welding, or dust-generating tasks will require a Hot Work (Burn) Permit. The Contractor is required to complete all information required on the Hot Work (Burn) Permit.
2. The Contractor is required to coordinate with the Airport's Safety Consultant for its review and authorization of the Work once the Hot Work (Burn) Permit information is deemed accurate.
3. The Contractor is required to display the completed and signed-off Hot Work (Burn) Permit in the area of Work.

C. Sunshine 1 Notification for non-GOAA Owned Utility Work

1. The Contractor is required to obtain required Sunshine 1 notifications for all non-GOAA owned utility work and submit to the OAR prior to start of the UON. The Contractor is required to display notifications at the area of Work.

3.3. PRIOR TO EXECUTION OF UON WORK

A. Prior to the execution of the Work as outlined in the UON, the Contractor is required to;

1. Ensure that all equipment, tools and materials required for the Work is on site
2. Ensure adequate number of qualified personnel required for the Work is on site
3. Reassess and confirm that the timeframe to conduct the Work is adequate
4. Revisit the UON work plan and trade crew logic to complete the Work

5. Ensure the UON has been approved, and that a signed copy is in hand and displayed at the Work areas
6. When applicable, verify transfer switches go to an alternate power source before the start of the outage

B. Should temporary electrical power be required to execute the Work as outlined in the UON, the Contractor is required to:

1. Ensure the temporary electrical power source or generation unit(s) has been adequately sized to handle the load
2. Ensure the temporary electrical power source or generation unit(s) is on site and ready
3. Ensure its location has been approved by the OAR
4. Ensure proper conductors to connect the temporary electrical power generation unit(s) and transfer switch(es) are on site
5. Ensure the temporary electrical power source or generation unit(s) has been started, and voltage and rotation verified
6. Ensure sufficient fuel for the temporary electrical power generation unit(s)
7. Ensure a refueling source and spill kit have been set up
8. Ensure a dedicated fire extinguisher is available for the temporary electrical power generation unit(s)
9. Ensure a successful test run of the temporary electrical power generation unit(s) and transfer switch(es) through a complete cycle
10. Ensure that emergency contact information is displayed on the temporary electrical power generation unit(s)
11. Ensure that the temporary electrical power generation unit(s) and transfer switch(es) have been left in their proper configuration

3.4. VERBAL NOTIFICATION PRIOR TO EXECUTION OF UON WORK

A. Prior to the execution of the Work outlined in the UON, the Contractor is required to complete all tasks associated with verbally notifying interested or affected parties. The Contractor is required to complete the UON Checklist with the entities listed below:

1. Revisit recipients on Call List
2. Briefly describe the UON work to those on the Call List
3. Contact Maintenance Dispatch / Central Plant on ALL UONs: (407) 825-4000
4. Contact Airport Operations Center on ALL UONs: (407) 825-3840 for an updated assessment of late flight departures and arrivals and/or other potential operational impacts to airlines or airlines use of BHS
5. Contact Airport BHS Operations on ALL UONs: (407) 825-BAGS
6. Contact Airfield Operations on UONs where high-mast lighting is involved or if traffic movement on AOA will be affected: (407) 825-2036
7. Contact Communications Center on UONs where Fire Alarm and/or Life Safety systems (including fire doors or suppressions systems) are affected: (407) 825-2065
8. Coordinate with Life Safety Department to ensure that proposed UON does not interfere with other previously scheduled work
9. Contact Bombardier or Crystal Mover on UONs where the APM is affected: (407) 825-2406 or (407) 825-5080. The Contractor is hereby notified that if flights are delayed the proposed UON work may be delayed as a result.
10. Contact Schindler on UONs where elevators or escalators are affected: (407) 825-7327 or call Central Plant via radio. The Contractor is hereby notified that only Schindler technicians are qualified to remove units from service, should their services be required.

3.5. EXECUTION OF UON WORK

A. The Contractor is required to ensure that only qualified, and where required, licensed Installation personnel will be performing the Work as described in the UON.

B. For Life Safety- Sprinkler Valves

1. Once a valve is closed, verification from the COMM Center MUST confirm that the management system has flagged that particular valve in a trouble state and it notes that the valve has been closed.
2. A tag must be affixed to the valve, by the Contractor to include the following information:

a. Company Name
b. Technician Closing the Valve
c. Time and Date of Closure
d. Contact Information of person closing the valve
e. Project number
f. Expected duration (or attach a copy of the UON)
g. Area affected (or attach copy of the UON)

3.6. POST EXECUTION OF UON WORK

A. After completion of the Work as outlined in the UON, the Contractor is required to have its qualified supervisor;

1. For Life Safety – Sprinkler Valves

a. Once the valve is put back to its normal position, the COMM Center must be called to reset the valve—give location
b. Once the valve is confirmed reset and back to normal, only then can the TAG be removed by the Contractor
c. If for some reason the Contractor finds an issue with the valve and it cannot be opened, tamper switch malfunctions, leaks, or won't reset, a work order must be submitted immediately for GOAA to address.
d. Contractor CANNOT leave the valve unattended for ANY reason (or leave property) in the closed position without either restoring the valve to its normal operating condition or establishing an OAR-approved, ongoing fire watch.
e. The Contractor's Project Manager (PM)/Superintendent is responsible to confirm that the system is back to normal before shift's end
f. In the event of a malfunction in the Tamper Switch which causes the valve to remain in trouble (which would "indicate" still closed) but the valve is actually open, the Contractor's PM/Superintendent MUST call the COMM Center to make sure the trouble is annotated and written confirmation that the valve IS open
g. In NO CASE shall a sprinkler valve ever be disabled electronically on the fire alarm system.

2. Ensure that the Work has been in fact completed as planned
3. Ensure that no tools have been left inside electrical gear/equipment
4. Authorize removal of LOTO items, only after confirming completion of the UON Work, and as described in items 1 and 2 above
5. Ensure posted UON is removed as soon as the Work has been completed

6. Verbally notify all recipients on the Call List, as described in section 3.4, that the UON Work has been completed
7. Ensure that a weekly inspection/test plan is in place and communicate inspection dates to the OAR
8. Notify, in writing, to the OAR, of any and all Code compliant items or other anomalies encountered during the UON Work for resolution
9. Update panel schedules with any new information immediately after the completion of the UON work. The Contractor is hereby notified that a typed panel schedule update, per NEC 408.4, must be in place within seven (7) days of the UON work completion

3.7. FAILURE TO COMPLY

A. The Contractor's adherence to the UON process and procedures herein outlined is critical in ensuring minimal impacts to ongoing airport operations during and after the completion of the Work requiring UONs.

B. Adverse impacts to the Contractor's schedule caused by the Contractor's failure to comply with the process and procedures herein outlined, will require the Contractor to recover the time and any and all associated costs will be borne by the Contractor.

C. Should the Contractor's noncompliance become chronic, the Owner will contract the required resources to complete the UON process and procedures from others, but the associated costs, if any, will be borne by the Contractor.

END OF SECTION 01 31 14.13

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SECTION 01 31 19 - PROJECT MEETINGS

PART 1 - GENERAL

1. 1 RELATED DOCUMENTS

A. Drawings and General Conditions of the Contract, including other Division 1 Specification Sections, apply to this Section.

1. 2 SUMMARY

A. This Section specifies administrative and procedural requirements for project meetings, including, but not limited to, the following:

1. Job coordination meetings (JCMs).
2. Preconstruction/preinstallation conferences.

1. 3 PROGRESS MEETINGS

A. General: Conduct Job Coordination Meetings (JCMs) at the Project Site, or at an alternate location designated by the OAR on a bi-weekly basis.

1. The Owner may request additional Job Coordination Meetings or may require the Contractor to increase the frequency of JCMs, to once-a-week, depending upon project progress. Additional meetings or changes in meeting frequency, as directed by the OAR, shall not affect the cost of the original Contract.

B. Attendees: In addition to the Contractor, Designer and OAR, each subcontractor, supplier, or other entity concerned with current progress or involved in planning, coordination, or performance of future activities shall be represented. All participants at the conference shall be familiar with the Project and authorized to conclude matters relating to the Work.

C. Agenda: The OAR will record meeting minutes and update the agenda.

1. Contractor's Construction Schedule: Review progress since the last meeting. Determine where each activity is in relation to the Contractor's Construction Schedule, whether on time or ahead or behind schedule. Discuss whether schedule revisions are required to insure that current and subsequent activities will be completed within the Contract Time.

2. Contractors Look Ahead: Contractor shall present and distribute a three (3) week look ahead schedule during the “Schedule” portion of the meeting.
3. Review the present and future needs of each entity present, including such items as:

a. Interface requirements.
b. Time.
c. Sequences.
d. Deliveries.
e. Off-site fabrication problems.

f. Access.
g. Site utilization.
h. Submittals.
i. Requests for information.
j. Non-compliance notices.
k. Temporary facilities and services.
l. Hours of work.
m. Resource allocation.
n. Hazards and risks.
o. Housekeeping.
p. Quality and work standards.
q. Safety issues.
r. Change orders.
s. Documentation of information for payment requests.
t. Sustainable Design Requirements

D. Reporting: Transcript copies of each meeting will be distributed to each attendee and to those parties who were scheduled but unable to attend.

E. Schedule Updating: Refer to Section 01 32 13, Scheduling of Work.

F. As-Built Documents: Review progress of as-built documents for all disciplines of work. The Contractor and OAR shall coordinate a time to review the as-built documents the same day as the JCM.

1. 4 PRECONSTRUCTION/ PREINSTALLATION CONFERENCES

A. General: Where required by the OAR or by individual specification sections, conduct preconstruction conferences at the Project Site before each construction activity that requires coordination with other construction.

B. Attendees: The 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 the OAR of scheduled meeting dates.

1. Review the progress of other construction activities and preparations for the particular activity under consideration at each preconstruction conference, including, but not limited to, the following:

a. Contract Documents.
b. Options.
c. Shop Drawings, Product Data, and quality-control samples.
d. Coordination requirements.
e. Time schedules.
f. Weather limitations.
g. Manufacturer's recommendations.
h. Warranty requirements.
i. Governing regulations.
j. Inspecting and testing requirements.
k. Recording requirements.

l. Protection.
m. Related change notices.
n. Purchases.
o. Deliveries.
p. Possible conflicts.
q. Compatibility problems.
r. Acceptability of substrates.
s. Temporary facilities.
t. Space and access limitations.
u. Safety.
v. Required performance results.

2. Record significant discussions of each conference, and the approved schedule. Promptly distribute a typewritten copy of the record of the meeting to all attendees.

PART 2 – PRODUCTS (Not Applicable)

PART 3 – EXECUTION (Not Applicable)

END OF SECTION 01 31 19

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SECTION 013213 – SCHEDULING OF WORK

PART 1 – GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and General Conditions of Contract, including other Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section provides for the comprehensive depiction, measurement, assessment and reporting of project progress and status pursuant to the sub-articles entitled "Contractor's Construction Schedules" of the General Conditions. The Contractor's responsibility shall include scheduling of all work within its Contract scope of work, creation of a Preliminary Schedule, a Baseline Schedule, production of reports, narratives, execution of the plan described by the current accepted schedule, participation in meetings with the OAR, and submission of Progress Schedules and revision data, as set forth herein. Conventional Critical Path Method (CPM) techniques must be utilized to satisfy the requirements of this section.

1.3 DEFINTIONS

A. Activity: A discrete entity of a project schedule that when combined relationally with others develop a network that can be used for planning, scheduling and monitoring of a construction project. Activities contain durations derived from applied resources such as cost, manpower, equipment and material.

1. Critical Activity: An activity that must start and finish as planned.
2. Predecessor Activity: An activity preceding another activity in a network.
3. Successor Activity: An activity succeeding another activity in a network.

B. Critical Path Method (CPM): An analytical process of scheduling activities using formalized procedures such as “forward pass” and “backward pass” establishing the optimum sequence and duration of operation inclusive of the interrelation of the effort required for the timely completion of the project. Forward pass calculations provide the earliest time in which a project can complete providing “early” dates. Backward pass calculations provide the latest time in which a project can complete providing “late” dates.

C. Total Float: The difference between the early and late dates and is the amount of time an activity can be delayed without delaying the overall project completion.

1. Float is not intended for the exclusive use or benefit of either the Owner or Contractor. It is considered jointly owned by both parties and is a resource available as needed to meet the Contract Times.

2. Float suppression techniques such as use of discretionary logic, inflated activity duration and/or lag/lead is prohibited.

D. Critical Path: The longest continuous path of interrelated activities with the least amount of total float establishing the minimum overall duration of the project from the data date to completion.

E. Data Date: The date (and time) by which all progress is captured for a given time period.

F. Work Breakdown Structure (WBS): A hierarchical arrangement that defines the project by phases, deliverables and work packages.

1. WBS shall be the Contractor's primary means to organize the schedule. The OAR may need to dictate the Contractor's WBS levels to adhere to the overall program organization.
2. Activity Coding at the PROJECT LEVEL can be used by the Contractor as a secondary means of organizing the schedule but GLOBAL Activity Coding is prohibited.

G. Cost Loading: The allocation of the schedule of values necessary for the completion of an activity as planned. The sum of the costs for all activities must equal the total Contract Price unless otherwise approved by the OAR.

1. Cost Loading, at a minimum, must inherently depict the monthly cash flow derived from the CPM Schedule.

H. Resource Loading: The allocation of manpower, material and equipment necessary for the completion of an activity as planned.

1. Manpower loading must be defined utilizing manhours per activity.

I. Relationship Types: Activity dependency or CPM Schedule logic

1. Finish-to-Start (FS) - A relationship between activities in which the start of a successor activity depends on the finish of its predecessor activity.
2. Start-to-start (SS) - A relationship between activities in which the start of a successor activity depends on the start of its predecessor activity.
3. Finish-to-Finish (FF) - A relationship between activities in which the finish of a successor activity depends on the finish of its predecessor activity.
4. Start-to-Finish (SF) - A relationship between activities in which the finish of a successor activity depends on the start of its predecessor activity. (Rarely used)

J. Open-Ends: Activities without predecessor or successor activities.

K. Dangling Activities: Activities with FF or SF predecessor relationship types (open start) or SS or SF successor relationship types (open finish).

1.4 QUALITY ASSURANCE

A. Scheduling Qualifications: The Contractor must employ a designated Project Scheduler or Scheduling Consultant. This specialist must be experienced in CPM Schedule development, management and reporting and have a minimum of 5 years' experience with Primavera Scheduling Software, preferably P6, on Projects of similar size and complexity.

1. At any time the OAR may order the Contractor to replace the designated scheduler with another if the current scheduler is deemed unacceptable based on qualifications or performance.

B. Required Computerized CPM Scheduling System: For Projects exceeding $2 million in Contract Price, Oracle Primavera P6 Professional Project Management (P6 PPM) or Oracle Primavera P6 Enterprise Project Portfolio Management (P6 EPPM) must be the computer scheduling software system utilized. For Projects less than $2 million, any other planning software may be employed (e.g. Primavera Contractor, Microsoft Project, etc.) providing the Critical Path can be derived. Schedules for projects less than $2 million do not require resource or cost loading.

C. Schedule Alignment Meeting: Conduct a Prescheduling conference at Project Site to ensure compliance with all requirements within this Section as well as related documents as it relates to CPM Schedule development, management and reporting including but not limited to:

1. Review Planning Software.
2. Verify Scheduling Qualifications.
3. CPM Schedule Organization (WBS) and Detail.
4. Owner / Interface Milestones between concurrent or other Projects.
5. Review time required for Owner / OAR activity such as submittal review, testing and inspecting, commissioning, training and closeout.
6. Updating Procedures.
7. Activity ID Coding and File Nomenclature and submission.
8. Coordination and time commitments for subcontractors and all other entities involved.

1.5 SUBMITTALS

A. Submit the following in accordance with the General Conditions of the Contract for Construction (00 72 13).

B. Format: Submit required submittals via email unless directed otherwise by the OAR in the following format:

1. Working P6 electronic (XER) file with the following File Naming Structure indicative of Bid Package Number, Data Date and file extension:

a. BP-###_DD=dd-mmm-yy.xer(mpp)

2. PDF files for Detailed (All Activities) CPM Schedule and Longest Path with the following Title Block information (use Header and/or Footer):

    a. Contractor's Name
    b. Owner's Bid Package Number & Project Name
    c. Schedule Type (e.g. "Detailed Schedule", "Longest Path", etc.)
    d. Data Date
    e. Run Date
    f. File Name
    g. Symbol Legend
    h. P6 Project ID
    i. Layout & Filter Name

PART 2 - PRODUCTS

2.1 CONTRACTOR'S PROJECT SCHEDULES

A. Produce the following Construction Schedules in accordance with the General Conditions of the Contract for Construction (00 72 13).

1. Preliminary Schedule
2. Baseline Schedule
3. Progress Schedules

B. Produce the following Schedules as required and in accordance with the General Conditions of the Contract for Construction (00 72 13) as applicable.

1. Recovery Schedules

    a. If at any time the Contractor's Progress Schedule indicates the project is two or more weeks (14 calendar days) behind any current Contract completion date(s), the Contractor must first submit both a graphic (Longest Path) and written (narrative) report measuring the extent of the delay regardless of assumed causation and then a separate Recovery Schedule indicating means by which the Contractor intends to regain schedule compliance.

2. Job Coordination Meeting (JCM) Look-Ahead Schedules

    a. With each monthly Progress Schedule, the Contractor must develop a Four Week Look-Ahead Schedule derived from the update indicating one week of As-Built progress prior to the Data Date and four weeks of As-Planned progress beyond the Data Date. It is intended that this document shall serve as the working schedule document at the JCM to ascertain incremental weekly progress until the following monthly Progress Schedule is updated. If at the discretion of the OAR this document becomes unusable due to out of sequence progress or for other reasons such that the

incremental weekly progress cannot be ascertained, the Contractor must implement weekly updates until the OAR is satisfied that the progress is being accurately depicted.

b. Look-Ahead Schedules must be submitted in colored .pdf format via email to the OAR at least 48 hours prior to the JCM.

3. Delay Claim Entitlement Schedules

a. If at the Contractor's discretion a delay beyond the Contractors control is encountered and after the Contractor has made every effort and reasonable attempt to mitigate the impacts of the delay without additional costs to the Owner or disruption to the project, a request for additional time may be requested. All requests for extensions of time must be submitted within the confines of the Contract and accompanied by a reputable delay analysis technique and narrative in accordance with the General Conditions. Time extensions shall only be granted if the delay is excusable and impacts the critical path of the project at the time of the delay.

4. As-Built Schedules

a. After all Contract work items are complete, and prior to final payment, the Contractor shall submit the final Progress Schedule that will be called the "As-Built" Schedule, showing actual start and actual finish dates for all schedule activities and milestones.

5. Early Completion Schedules

a. The contract completion date shall not be changed by submission of a schedule that shows an early completion unless specifically authorized by OAR Change Order.

2.2 CONTRACTOR'S SCHEDULE NARRATIVES

A. Any and all Project Schedules (e.g. Preliminary, Baseline, Progress, Recovery and/or Request for Time Extension) shall be submitted with an accompanying narrative explaining the schedule consistent with its purpose.

2.3 MONTHLY REPORTS

A. Summary Level Schedules, Cash Flow Curves and physical percent complete based on manpower analysis derived from the monthly Progress Schedule must accompany the Contractor's Monthly Reports.

PART 3 - EXECUTION

3.1 SCHEDULE REQUIREMENTS

A. Activity Types: In addition to construction activities, the CPM Schedules shall include other individual activities and milestones as applicable:

1. Contractual milestones, such as Notice to Proceed, Substantial Completion, Certificate of Occupancy, Final Completion or any other Contract milestones.
2. Design deliverables and milestones as applicable.
3. Permitting Activities as applicable.
4. Procurement Activities such as: subcontractor scope review and buyout, submittal and shop drawing preparation, submittal approval, release and order of material and equipment, material and equipment fabrication and delivery.
5. Interim Contractor's milestones as applicable.
6. All Utility Outage Notifications (UON's) as required.
7. Owner Activities such as Owner Furnished Contractor Installed (OFCI), Owner Furnished and Owner installed (OFOI), Tenant move-out and occupancy, swing space and Owner required utility payments or any other Owner activity that may affect schedule.
8. Completion Activities such as Commissioning, testing, turnover, training, Contractor and OAR punch and final inspections by system.

B. The OAR may identify additional interfaces during the course of the Work and the Contractor will incorporate these in the Progress Schedule as required. No composite activities allowed. The CPM Schedules must break out all activities into their respective trades. At a minimum, at least one construction activity and one procurement string must be identified in the CPM Schedules for each subcontractor on the project as applicable.

C. Activity ID's: The Contractor's CPM Schedule shall contain an intelligent activity identification coding system that must include the Bid Package Number (H-00337) as a prefix to all Activity ID's in the schedule. If activities are deleted from the schedule after the Baseline has been accepted, the Contractor must log these occurrences and submit this information to the OAR consistent with the schedule submission inclusive of the activity deletions. It is recommended that the Contractor include this information with the accompanying schedule narrative. Duplication of Activity ID's with differing activity descriptions is prohibited.

D. Activity Duration: With exception to the Preliminary Schedule, the duration for each activity shall be based on manpower assignment and production rates estimated in work days and may not exceed 20 days except for:

1. Procurement Activities such as fabrication or lead time. Procurement activity strings must include separate activities for submittal preparation, approval, release and order, fabricate and delivery. Any procurement activity requiring duration greater than 60 days must be explained by the Contractor before accepted into the CPM Schedules by the OAR.

E. Activity Relationships: Precedence diagramming method with the four conventional relationship types shall be utilized to show activity dependence. At a minimum, each activity shall have one FS or SS predecessor and one FS or FF successor with the exception of the first and last activities in the network such that no other activities shall be open-ended or dangling.

F. Lags and Leads: The use of lags or leads between activities is not encouraged. Instead, it is preferable to use an activity to represent the time lapse between two activities. The use of negative lags is prohibited.

G. Date Constraints: The use of constraints is not encouraged but at times necessary especially considering internal Owner operation and external Owner projects that may be occurring simultaneously with inter-project dependency. Any use of constraints must be explained by the Contractor consistent with the schedule submission inclusive of the constraint(s). Depending on the type of constraint(s) used and where the constraint(s) are applied may lead to suspect schedule calculations specifically related to total float. It is the responsibility of the Contractor to verify the accuracy of the schedule calculations derived from the use of constraints.

H. Calendars: With the sole exception of the required Global Resource Calendar, all calendars must be represented on the Project Level and shall not inherit holidays or exceptions derived from their originating Global Calendar. Any other use of Global Calendars is prohibited. Any schedule submitted with Global Calendars will be rejected and not accepted until remedied. It is recommended that the Contractor develop the following Project Calendars with the following labels:

1. H-00370: 5 Day-8hrs/day (with 7 standard holidays) depicting the standard work week (M-F) with Saturday, Sundays and the Standard Holidays represented as non-work days. Standard holidays include: New Year's Day, Memorial Day, Fourth of July, Labor Day, Thanksgiving Day and Friday after and Christmas Day.

    a. Assign this calendar to all Contractors' general work activities.
    b. Assign this calendar to all Owner activity.

2. H-00370: 7 Day-8hrs/day (All Days) depicting all days containing no holidays or non-work days.

    a. Assign this calendar to all Summary or Level of Effort Activities.
    b. Assign this calendar to Contractual Milestones.

I. Other Project Calendars may be used as needed by the Contractor on a case by case basis but in each case, supporting documentation explaining its use must be submitted to the OAR for acceptance. All Project Calendars detailed work hours by work day must be set to 8:00am-12:00pm and from 1:00pm-5pm with 12:00pm-1:00pm represented as a non-work hour such that each work day is representative of 8 hours unless approved otherwise by the OAR.

J. Activity Coding: The Contractor must utilize WBS to organize the CPM Schedules. Prior to and part of the OAR's Baseline Schedule acceptance, the Contractor must provide the OAR their proposed WBS for OAR approval.

K. Data Dates: The Data Date shall be controlled by the OAR so that all Contractors are using the exact same dates each month consistent with the Owner's overall program. The Owner shall provide the Contractor reporting calendar information where monthly update Data Dates will be specified.

3.2 CONTRACT MODIFICATIONS

A. For each proposed contract modification and concurrent with its submission, the Contractor shall prepare a delay analysis demonstrating the impact of the proposed change on the overall project schedule or interim contract milestone(s) if applicable. If said change is approved by the OAR, the Contractor shall incorporate the contract modification into the Progress Schedules for the period in which the change was issued.

3.3 SCHEDULE CALCULATIONS AND DIAGNOSTICS

A. Multiple Project Schedules will be maintained within the OAR's scheduling system. As such, all schedule data submitted by the Contractor must be submitted on the Project Level. No Global data shall be accepted unless specified otherwise herein.

B. Schedule Calculations and Settings:

1. Maintain open-ended activities as non-critical.
2. All project schedule files shall be updated with actual progress using retained logic prior to submission. Progress override is prohibited.
3. Start-to-Start lag shall be calculated from Early Start.
4. Define critical activities as Longest Path providing it is a continuous path emanating from the Data Date to project completion. Otherwise, use total float less than or equal to zero days.
5. Compute total float as finish float.
6. Relationship Lag shall be calculated based on the Predecessor Activity Calendar.
7. Use Remaining Duration to ascertain activity progress and not percent complete.

C. Schedule Diagnostics: All Project Schedules shall be calculated and analyzed then corrected for all open ended and dangling activities, out of sequence progress and associated schedule corrections as applicable. No activities shall be progressed beyond the Data Date.

3.4 SPECIAL SCHEDULE REPORTS

A. At times and within reason, the OAR may direct the Contractor to develop special reports as needed.

END OF SECTION 01 32 13

SECTION 01 32 33 - PHOTOGRAPHIC DOCUMENTATION

PART 1 - GENERAL

1. 1 RELATED DOCUMENTS

A. Drawings and General Conditions/Provisions of the Contract, including Contractual Conditions and other Division 1 Specification Sections, apply to this Section.

1. 2 SUMMARY

A. Section includes administrative and procedural requirements for the following:

1. Preconstruction videos.
2. Periodic construction photographs.
3. Final completion construction photographs.

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 days of taking photographs.

1. Submit photos by uploading to Owner’s 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 web-based project software site:

a. Name of Project.
b. Name and contact information for photographer.
c. Name of OAR
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. Video Recordings: Submit video recordings within seven days of recording.

1. Submit video recordings by uploading to the Owner’s 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 on web-based project software site:

a. Name of Project.
b. Name and address of photographer.
c. Name of OAR

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.

1. 4 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 digital video in MPEG format. If specified in Contract Documents, 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.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION

3.1 PRE-CONSTRUCTION VIDEOS

A. Before starting construction, record video of the site and surrounding properties from different points of view. Record pre-existing conditions of the site and abutting properties obtained from several perspectives. Provide narrative describing the vantage point and area being recorded.

1. Take videos in sufficient number to show existing conditions adjacent to the property before starting work.
2. Take videos of existing improvement adjoining the property in sufficient detail to record accurately the physical conditions at the start of construction.

3.2 CONSTRUCTION PHOTOGRAPHS

A. 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.

B. Periodic Construction Photographs: Take 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.

C. LEED Photographs:

1. All LEED photographs shall include date and description.
2. Take weekly photographs of each of the following categories (unless noted otherwise). Photographs are needed as applicable to each stage of the Work. Examples are listed for each category below:

a. Storm Water Pollution Prevention Plan – weekly photographs and photographs after rainfall of 0.5-inches or more.

1) Silt Fence
2) Temporary Seed/Mulch Area
3) Stabilized retention ponds
4) Temporary Swales/berms/detention
5) Dust Control (watering)
6) Gravel construction entries (all locations)
7) Protection of Storm Inlets
8) Temporary Rip-Rap
9) Dewatering

b. Site Conditions

1) Concrete Washout container
2) Masonry ground protection for mobilization area
3) Oil Containment area
4) Tree protection
5) Hoses and construction water
6) Soil condition (concrete fines etc.)

c. Indoor Air Quality

1) Duct protection (plastic wrap on ducts)
2) Gravel entrances to building including dust mitigation measures
3) No smoking, no eating, no drinking inside building signs
4) Designated smoking areas
5) Cleanly swept floors
6) Equipment with sanding bags
7) VOC Compliant Materials (photos of containers, paint, glue, etc.)
8) Construction Filters
9) Source Separation
10) Stored material on dunnage and protected from damage
11) Water intrusion prevention procedures
12) Dehumidifiers
13) Fans
14) Waterproofing
15) Cleaning products
16) Cleaning equipment and other IAQ measures

3. CONSTRUCTION WASTE

a. Food dumpster
b. Co-mingled recycled dumpster
c. Concrete-only dumpster
d. Concrete wash out
e. Piles of materials such as asphalt, concrete to be removed off site and recycled by subcontractors
f. Steel Dumpster

END OF SECTION 01 32 33

SECTION 01 33 23 - SHOP DRAWINGS, PRODUCT DATA, AND SAMPLES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS:

A. Drawings and General Conditions of Contract, including other Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY:

A. This Section specifies administrative and procedural requirements for submittal of Shop Drawings, Product Data and Samples to verify that products, materials and systems proposed for use comply with provisions of the Contract Documents.

B. Shop Drawings include, but are not limited to, the following:

1. Fabrication Drawings.
2. Installation Drawings.
3. Setting diagrams.
4. Shop-work manufacturing instructions.
5. Templates and patterns.
6. Schedules.
7. Design mix formulas.
8. Coordination Drawings.

C. Product Data include, but are not limited to, the following:

1. Manufacturer's product Specifications.
2. Manufacturer's installation instructions.
3. Standard color charts.
4. Catalog cuts.
5. Roughing-in diagrams and templates.
6. Standard wiring diagrams.
7. Printed performance curves.
8. Operational range diagrams.
9. Mill reports.
10. Standard product operating and maintenance manuals.
11. Material Safety Data Sheets (MSDS).

D. Samples include, but are not limited to, the following:

1. Partial Sections of manufactured or fabricated components.
2. Small cuts or containers of materials.
3. Complete units of repetitively-used materials.
4. Swatches showing color, texture and pattern.
5. Color range sets.
6. Components used for independent inspection and testing.

E. Administrative Submittals: Refer to other Division 1 Sections and other Contract Documents for requirements for administrative submittals. Such submittals include, but are not limited to:

1. Schedule of Submittals
2. Permits.
3. Applications for payment.
4. Performance and payment bonds.
5. Insurance certificates.
6. Listing of subcontractors.
7. Contractor's construction schedule.
8. Progress Schedules
9. Progress reports.

~~F.~~ Sustainable Design Submittals: ~~Refer to Section 01 81 13.14 "Sustainable Design Requirements - LEED v4 BD+C" for submittal requirements.~~

1.3 SUBMITTAL PROCEDURES:

A. Coordination: Coordinate preparation and processing of submittals with performance of the Work.

1. The Contractor shall review submittals before submitting to the OAR. Transmit each submittal to the OAR sufficiently in advance of scheduled performance of related construction activities to avoid delay, but in no case later than ***Twenty One (21) days after the Notice to Proceed.*** Contractor shall coordinate submittals so as to not affect other trade submissions. If one submittal effects the installation or fabrication of another submittal, then those submittals shall be submitted simultaneously. If any submittals will be delayed, inform the OAR in writing giving reasons for the delay and a revised submittal schedule. Delays will be subject to OAR's approval. No extension of time will be authorized because of a Contractor's failure to transmit submittals to the OAR sufficiently in advance of the Work to permit processing.
2. The OAR will review all Administrative Submittals. The OAR will review all other submittals for conformance with the Contract Documents prior forwarding the submittals to the Designer.
3. Request for payment of stored materials will not be considered until submittals have been received and approved by the OAR.
4. Transmit submittals to the OAR to prevent delays. The Contractor is responsible for delays accruing directly or indirectly from submission or resubmission of submittal date.
5. Coordinate each submittal with other submittals and related activities that require sequential activity including:

    a. Testing.
    b. Purchasing.
    c. Fabrication.
    d. Delivery.

6. Coordinate transmittal of different types of submittals for the same element of the Work and different elements of related parts of the Work so that processing will not be delayed by the OAR's and Designer's need to review submittals concurrently for coordination.

a. The OAR and Designer reserve the right to withhold action on a submittal requiring coordination with other submittals until related submittals are delivered to the OAR and Designer.

7. Processing: Allow sufficient review time so that installation will not be delayed as a result of the time required to process submittals, including time for re-submittals.

a. Allow fourteen (14) days for the OAR and Designers' initial review of each submittal. Where processing must be delayed to permit coordination with subsequent submittals, allow additional time. The OAR will advise the Contractor promptly when a submittal being processed must be delayed for coordination.
b. Where necessary to provide an intermediate submittal between the initial and final submittals, process the intermediate submittal in the same manner as the initial submittal.
c. Allow fourteen (14) days for reprocessing each submittal.
d. No extension of time will be authorized because of a Contractor's failure to transmit submittals to the OAR sufficiently in advance of the Work to permit processing.

B. Submittal Preparation - Division 2 through 49: Place a permanent label or title block on each submittal for identification, and submit the information in PDF format. The Contractor shall provide Submittals in electronic (PDF) format. PDF files will be required for all O&M and Close-out documents. The PDF file shall be enabled for Adobe Reader's Comment and Markup functionality. All stamps and markings described herein shall be electronically duplicated or added before scanning. The PDF files shall be transmitted by way of email or an FTP site to the OAR.

1. Place a permanent title block on each submittal for information.
2. Indicate the name of the firm or entity that prepared each submittal on the ~~label or~~ title block.
3. Provide a space approximately 4 inches by 5 inches on the ~~label or~~ adjacent to the title block to record the Contractor's review and approval markings and the action taken by the OAR and Designer.
4. Include the following information ~~on the label~~ for processing and recording action taken.

a. Project name.
b. Date.
c. Name and address of OAR.
d. Name and address of Designer.
e. Name and address of Contractor.
f. Name and address of subcontractor.
g. Name and address of supplier.
h. Name of manufacturer.
i. Number and title of appropriate Specification Section.
j. Drawing number and detail references, as appropriate.
k. Similar definitive information as necessary.

5. Provide and electronic stamp on each page (sheet) of the submittal with the Contractor's certification statement, or other approval statement, as follows:

"I hereby certify that the (equipment) (material) (article) shown and marked in this submittal is that proposed to be incorporated in the work, is in compliance with the Contract Documents, can be installed in the allocated spaces, and is submitted for review by the OAR and Designer.

Certified by Submittal Reviewer_____. Date:_____"

a. Sign the certifying statement or approval statement. The signatures shall be in electronic format.

C. Submittal Transmittal: Package each submittal appropriately for transmittal ~~and handling~~. Transmit each submittal from Contractor to OAR, as indicated, by use of a transmittal form. Submittals received from sources other than the Contractor will be returned to the sender without action. Electronic transmittals must have descriptive subject lines for ease of retrieval. The transmittal form should be the first page in the attached PDF.

1. Record relevant information and requests for data on the transmittal form. On the form, or an attached separate sheet, call attention to deviations from requirements of the Contract Documents, including minor variations and limitations.
2. Include the Contractor's signed certification stating that information submitted complies with requirements of the Contract Documents.
3. Provide places on the form for the following information:

a. Project name.
b. Date.
c. Destination (To:).
d. Source (From:).
e. Names of subcontractor, manufacturer and supplier.
f. Category and type of submittal.
g. Submittal purpose and description.
h. Submittal and transmittal distribution record.
i. Remarks.
j. Signature of transmitter.

1.4 SPECIFIC SUBMITTAL REQUIREMENTS:

A. Shop Drawings: Submit newly prepared information, drawn to accurate scale. DO NOT REPRODUCE CONTRACT DOCUMENTS OR COPY STANDARD PRINTED INFORMATION AS THE BASIS OF SHOP DRAWINGS.

1. Include the following information on Shop Drawings:

a. Dimensions.
b. Identification of products and materials included.
c. Compliance with specified standards.
d. Notation of coordination requirements.
e. Notation of dimensions established by field measurement.

2. Submit Coordination Drawings where required for integration of different construction elements. Show construction sequences and relationships of separate components where necessary to avoid conflicts in utilization of the space available.
3. Encircle, identify with arrow, or otherwise indicate deviations from the Contract Documents on the Shop Drawings.

a. DO NOT USE COLORED HIGHLIGHTERS TO INDICATE SELECTIONS.

4. Do not allow Shop Drawing copies which do not have an appropriate final stamp or other marking indicating action taken by the OAR and Designer to be used for construction.
5. Except for templates, patterns and similar full-size Drawings, submit Shop Drawings on sheets at least 8-1/2" x 11" but no larger than 30" x 42". Shop drawings submitted as PDF files shall be generated full size of the original and not scale to fit.

B. Product Data: Collect Product Data into a single submittal for each element of construction or system. Sustainable Design Action Submittals shall be submitted as part of the product data submittal package.

1. Encircle, identify with arrow, each copy to show which choices and options are applicable to the Project.

    a. Do not use colored highlights to indicate selection.

2. Where Product Data has been printed to include information on several similar products, some of which are not required for use on the Project, or are not included in this submittal, mark copies to clearly indicate which information is applicable.
3. Where Product Data must be specially prepared for required products, materials or systems, because standard printed data are not suitable for use, submit as "Shop Drawings" not “Product Data."
4. Include the following information in Product Data:

    a. Manufacturer's printed recommendations.
    b. Compliance with recognized trade association standards.
    c. Compliance with recognized testing agency standards.
    d. Application of testing agency labels and seals.
    e. Notation of dimensions verified by field measurement.
    f. Notation of coordination requirements.

5. Do not submit Product Data until compliance with requirements of the Contract Documents has been confirmed.
6. In submitting paper, submit a sufficient number of copies to enable the Owner and the OAR to retain 4 copies of each required Product Data submittal; submit two (2) additional copies where copies are required for operating and maintenance manuals. The OAR will return the other marked copies with the action taken and corrections or modifications required.

    a. Unless the OAR and or Designer observes noncompliance with provisions of the Contract Documents or requires re-submittal for other reasons, the initial submittal may serve as the final submittal.

7. Furnish copies of final Product Data submittal to manufacturers, subcontractors, suppliers, fabricators, installers, governing authorities and others as required for performance of the construction activities. Show distribution on transmittal forms.

    a. Do not proceed with installation of materials, products and systems until a copy of Product Data applicable to the installation is in the installer's possession.
    b. Do not permit use of unmarked copies of Product Data in connection with construction.

C. Samples: Submit Samples physically identical with the material or product proposed for use; submit full-size, fully fabricated Samples, cured and finished in the manner specified.

1. Mount, display, or package Samples in the manner specified to facilitate review of qualities indicated. Prepare Samples to match Designers' Sample where so indicated. Include the following information:

    a. Generic description of the Sample.
    b. Size limitations.
    c. Sample source.
    d. Product name or name of manufacturer.
    e. Compliance with recognized standards.
    f. Compliance with governing regulations.
    g. Availability.
    h. Delivery time.

2. Submit three samples (sets); one set will be returned marked with the action taken. The OAR and Designer will each retain copies.

D. Operating and Maintenance Manuals: Operating and maintenance manuals shall be initially submitted for review at the appropriate 30 percent completion stage of Work under these Sections. The manuals will be reviewed and returned to the Contractor. Corrections shall be made before submittal of the manuals at Project Close-out.

E. In order to facilitate review of product data and shop drawings, they shall be noted, indicating by cross reference the contract drawing sheet number, note, and specification paragraph numbers, where and what item(s) are used for and where item(s) occur in the contract documents.

1.5 OAR AND OR DESIGNER(S) ACTION:

A. Except for submittals for the record, for information and similar purposes, where action and return on submittals is required or requested, the OAR and Designer will review each submittal, mark with appropriate "action," and where possible return within fourteen (14) days of receipt. Where the submittal must be held for coordination the OAR will so advise the Contractor without delay.

1. Compliance with specified characteristics is the Contractor's responsibility, and not considered part of the OAR or Designer review and indication of action taken.

B. The OAR and or Designer will stamp each submittal sheet or page to be returned with a uniform, self-explanatory action stamp appropriately marked and executed to indicate whether the submittal returned is for unrestricted use (no exceptions taken), final-but-restricted use (as marked), must be revised and resubmitted (use not permitted), or without action (as explained on the transmittal form), or other similar type wording.

C. The OAR’s and or Designer’s review of submittals is for design conformity and general conformance of the contract documents only and does not relieve the Contractor from responsibility for any deviations from the requirements of the Contract Documents. The OAR and or Designer’s review shall not be construed as a complete check nor shall it relieve the Contractor from responsibility for errors of any sort in shop drawings or schedules, of from the necessity of furnishing any work required by the Contract Documents which may have been omitted on the shop drawings. The OAR and or Designers' review of a separate item shall not indicate review of the complete assembly in which it functions.

1.6 SUBMITTAL BROCHURE BINDERS: Applicable only to hard copy submittals.

A. Brochure Binders: 3-ring, vinyl covered, with clear view insert type cover and spine.

1. Binder Size: 8.5 x 11.0 inches x size (spine) adequate to easily contain the required submittals. Minimum spine size shall be 1-inch, maximum shall be 3-inches. Provide additional binders if the 3-inch size is not sufficient to properly contain submittals.
2. Binder Cover: Binders shall have a clear view, vinyl pocket on the front cover, adequate to hold an 8.5 inch by 11 inch description sheet. The binder shall have a clear view, vinyl spine pocket adequate to hold an 11 inch long description sheet.

B. Binder Contents: Include the following.

1. Cover sheet; cover sheet shall be white with black letters, minimum 11-inches high and full width of spine pocket. See “EXAMPLES” included at end of this Section.
2. First page shall be a copy of the Specification table of contents.
3. Second page shall be a list of project addresses (see “EXAMPLE”).
4. Third page shall be Project information (see “EXAMPLE”).
5. Provide reinforced separation sheets tabbed with appropriate specification reference number.
6. Product data sheets.
7. Shop drawings.

PART 2 - PRODUCTS (Not Applicable)

PART 3 - EXECUTION

3.1 SCHEDULE OF SUBMITTALS DESCRIPTION (SD) AND SUBMITTAL REGISTER

A. General: The following is a description of each submittal type, specified in other Sections, required for the Project. Include each submittal description (SD) in the Submittal Register included as part of this Section.

1. SD-01: Product Data; submittals that provide calculations, descriptions or other documentation regarding the work.
2. SD-02: Manufacturer’s Catalog Data (Product Data); data composed of information sheets, brochures, circulars, specifications and product data, and printed information in sufficient detail and scope to verify compliance with requirements of the Contract Documents.
3. SD-03: Manufacturer’s Standard Color Charts (Product Data); preprinted illustrations displaying choices of color and finish for a material or product.
4. SD-04: Shop Drawings; graphic representations which illustrate relationship of various components of the work, schematic diagrams of systems, details of fabrications, layout of particular elements, connections, and other relational aspects of the work.
5. SD-05: Design Data (Shop Drawings); design calculations, mix designs, analyses, or other data written and pertaining to a part of the work.
6. SD-06: Instructions (Product Data); preprinted material describing installation of a product, system, or material, including special notices and Material Safety Data Sheets, if any, concerning impedance, hazards, and safety precautions.

7. SD-07: Schedules (Shop Drawings); a tabular list of data or a tabular listing of locations, features, or other pertinent information regarding products, materials, equipment, or components to be used in the work.
8. SD-08: Statements (Shop Drawings); a document, required of the Contractor, or through the Contractor by way of a supplier, installer, manufacturer, or other lower tier contractor, the purpose of which is to further the quality or orderly progression of a portion of the work by documenting procedures, acceptability of methods or personnel, qualifications, or other verification of quality.
9. SD-09: Reports (Product Data); reports of inspection and laboratory tests, including analysis, an interpretation of test results. Each report shall be properly identified. Test methods used and compliance with recognized test standards shall be described.
10. SD-10: Test Reports (Product Data); a report signed by an authorized official of a testing laboratory that a material, product, or system identical to the material, product or system to be provided has been tested in accordance with requirements specified by naming the test method and material. The test report must state the test was performed in accordance with the test requirements; state the test results; and indicate whether the material, product, or system has passed or failed the test. Testing must have been within three years of the date of award of this Contract.
11. SD-11: Factory Test Reports (Shop Drawings); a written report which includes the findings of a test required to be performed by the Contractor or an actual portion of the work or prototype prepared for this project before it is shipped to the job site. The report must be signed by an authorized official of a testing laboratory and must state the test was performed in accordance with the test requirements; state the test results; and indicate whether the material, product, or system has passed or failed the test.
12. SD-12: Field Test Reports (Shop Drawings); a written report which includes the findings of a test made at the job site, in the vicinity of the job site, or on a sample taken from the job site, on a portion of the work, during or after installation. The report must be signed by an authorized official of a testing laboratory or agency and must state the test was performed in accordance with the test requirements; state the test results; and indicate whether the material, product, or system has passed or failed the test.
13. SD-13: Certificates (Shop Drawings); statements signed by responsible officials of a manufacturer of a product, system, or material attesting that the product, system, or material meet specified requirements. The statements must be dated after the award of this contract, name the project, and list the specific requirements which it is intended to address.
14. SD-14: Warranties (Product Data); statements signed by responsible officials of a manufacturer of a product, system, or material attesting that the product, system, or material will perform its specific function over a specified duration of time. The statement must be dated, and include the name of the project, the Owner’s name, and other pertinent data relating to the warranty.
15. SD-15: Samples; samples, including both fabricated and non-fabricated physical examples of materials, products, and units of work as complete units or as portions of units of work.
16. SD-16: Color Selection Samples (Samples); samples of the available choice of colors, textures, and finishes of a product or material, presented over substrates identical in texture to that proposed for the work.
17. SD-17: Sample Panels (Samples); an assembly constructed at the project site in a location acceptable to the OAR and using materials and methods to be employed in the work; completely finished; maintained during construction; and removed at the conclusion of the work or when authorized by the OAR. A type of sample.
18. SD-18: Sample Installations (Samples); a portion of an assembly or material constructed where directed and, if approved, retained as a part of the work.
19. SD-19: Records; documentation to ensure compliance with an administrative requirement or to establish an administrative mechanism.

20. SD-20: Operating and Maintenance Manuals (Records); data intended to be incorporated in an Operating and Maintenance Manual
21. SD-21: Test Reports of Existing Conditions; a document describing existing conditions and operations of systems and components prior to the start of any work. Testing shall be held in the presence of the OAR and Designer. Provide copies of the test reports to the OAR and Designer.
22. SD-22: Demonstrations; physical operation of equipment and systems by factory authorized representatives to demonstrate to the Owner's facility personnel proper operation of systems. Provide all required documentation that certified completed demonstration.
23. SD-23: As-Built Drawings; delineated documentation accurately depicting final installation location of components and systems of the building.
24. SD-24: Shop Drawings in Electronic format; when drawings are required all materials shall be provided in AUTOCAD latest release and PDF on a CD.
25. SD-25: Coordination Drawings; special type of Shop Drawing that show the relationship and integration of different construction elements that require close and careful coordination during fabrication or during installation to fit in the restricted space provided or to function as intended.
26. SD-26: Certification of Approved Disposal of Hazardous Materials; certification signed by the Contractor indicating legal disposal of hazardous materials.
27. SD-27: CD/DVD Training Tape; taped training instructions to be used by the Owner's personnel.
28. SD-28: Spare Parts Memo; a listing of spare parts required; refer to
29. Section 01 70 00 Execution and Closeout Requirements.
30. SD-29: UL Letter of Finding; a document from Underwriters Laboratories Inc., attesting compliance with UL's standard for connection to an existing lightning protection system; a document from Underwriters Laboratories Inc., attesting compliance with UL's standard for UL Master Label.
31. SD-30: Equipment Check-Out Memos; document signed by the manufacturer's authorized representative stating that equipment has been installed and is operating in accordance with the manufacturer's specifications; refer to Section 01 70 00 Execution and Closeout Requirements.

B. Submittal Register: The Contractor is to maintain an accurate updated submittal register and will bring this register to each scheduled JCM with the OAR and the Designer. This register should include the following items:

1. Submittal-Description and Number assigned.
2. Date to OAR
3. Date to Designer.
4. Date returned to OAR from Designer.
5. Date returned to Contractor from OAR.
6. Submittal Status.
7. Date of Re-submittal and Return (as applicable).
8. Date material released (for fabrication).
9. Projected date of fabrication.
10. Projected date of delivery to site.
11. Status of submittal.

SUBMITTAL REGISTER (PART A) - Headings

Contract Number:

Project Title:

Spec. Section Number	Submittal Description (SD) Number	Spec. Paragraph Number	OAR Reviewer	Designer Reviewer	Trans Control Number	Planned Submittal Date
(A)	(B)	(C)	(D)	(E)	(F)	(G)

SUBMITTAL REGISTER (PART B) - Headings

Location: Contractor:

Action Code	Date of Action	Date Rec'd from Contr.	Date FWD to other Reviewer	Date Rec'd from other Reviewer	Action Code	Date of Action	Mailed to Cont.	Remarks
(H)	(I)	(J)	(K)	(L)	(M)	(N)	(O)	(P)

EXAMPLE - List of Project Addresses

PROJECT ADDRESSES

OWNER:

OAR:

DESIGNER:

MECHANICAL ENGINEER:

ELECTRICAL ENGINEER:

CIVIL ENGINEER:

GENERAL CONTRACTOR:

SUBCONTRACTORS:

EXAMPLE - Project Information

PROJECT INFORMATION

NOTE TO CONTRACTOR: Fill in the blanks below and insert one copy as page number 3 in each Submittal Brochure.

Project Number and Name:_____
Contractor's Job Superintendent: _____ Job Phone No.: _____

Subcontractor's Job Superintendent: _____ Job Phone No.: _____

Date Project Bids: _____

Official Project Starting Date: _____

Date Technical Information Brochures Submitted: _____

Days Allowed for Construction: _____

Target Completion: _____

The following items shall be completed before date of Contractor's Request for Substantial Completion:

Date of Performance Verification Information Submitted: _____

Date Check-Out Memos Submitted: _____

Date Written Operating Instructions Submitted: _____

Date Maintenance Information Submitted: _____

Date Marked-Up Progress Prints Submitted: _____

Date As-Built Corrections Submitted: _____

Date Contractor's Instruction Conference with Owner: _____

Date Contractor's Request for Acceptance: _____

Date Project Accepted: _____

EXAMPLE - Description Sheet Cover

**GREATER ORLANDO
AVIATION AUTHORITY**

**ORLANDO
INTERNATIONAL
AIRPORT**

BID PACKAGE NO. H-00370

H-00370, AIRSIDE 3 APRON PCC SLAB REHABILITATION

ELECTRICAL SUBMITTAL BROCHURES

EXAMPLE - Description Sheet – Cover

**GREATER ORLANDO
AVIATION AUTHORITY**

**ORLANDO
INTERNATIONAL
AIRPORT**

BID PACKAGE NO. H-00370

H-00370, AIRSIDE 3 APRON PCC SLAB REHABILITATION

SYSTEMS SUBMITTAL BROCHURES

EXAMPLE - Description Sheet - Spine

G.O.A.A.

O.I.A.

H-00370

H-00370, AIRSIDE 3 APRON PCC SLAB REHABILITATION

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SUBMITTAL

BROCHURES

G.O.A.A.

O.I.A.

H-00370

H-00370, AIRSIDE 3 APRON PCC SLAB REHABILITATION

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BROCHURES

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SECTION 01 42 00 – REFERENCES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and General Conditions of the Contract, including other Division 1 Specification Sections, apply to this Section.

1.2 DEFINITIONS

A. General: Basic Contract definitions are included in the General Conditions of the Contract.

B. "Approved": The term "approved," when used in conjunction with the OAR's or Designer(s) action on the Contractor's submittals, applications, and requests, is limited to the OAR's or Designer duties and responsibilities as stated in the Conditions of the Contract.

C. "Directed": Terms such as "directed," "requested," "authorized," "selected," "approved," "required," and "permitted" mean directed by the OAR, requested by the OAR, and similar phrases.

D. "Furnish": The term "furnish" means to supply and deliver to the Project site, ready for unloading, unpacking, assembly, installation, and similar operations.

E. "Indicated": The term "indicated" refers to graphic representations, notes, or schedules on the Drawings; or to other paragraphs or schedules in the Specifications and similar requirements in the Contract Documents. Terms such as "shown," "noted", "scheduled," and "specified" are used to help the user locate the reference. Location is not limited.

F. "Install": The term "install" describes operations at the Project site including the actual unloading, unpacking, assembling, erecting, placing, anchoring, applying, working to dimension, finishing, curing, protecting, cleaning, and similar operations.

G. "Installer": An installer is the Contractor or another entity engaged by the Contractor, either as an employee, subcontractor, or contractor of lower tier, who performs a particular activity including installation, erection, application, or similar operations. Installers are required to be experienced in the operations they are engaged to perform.

H. "Manufacturer": The manufacturer is the individual entity with responsibility for and control of the assembly of the major components.

I. "Project site" is the space available to the Contractor for performing installation activities, either exclusively or in conjunction with others performing work as part of the Project. The extent of the Project site is shown on the Drawings.

J. "Provide": The term "provide" means to furnish and install, complete and ready for the intended use.

K. "Regulations": The term "regulations" includes laws, ordinances, statutes, and lawful orders issued by authorities having jurisdiction, as well as rules, conventions, and agreements within the industry that control performance of the Work.

1. The term "experienced," when used with the term "installer," means having successfully completed a minimum of 5 previous projects similar in size and scope to this Project; being familiar with the special requirements indicated; and having complied with requirements of authorities having jurisdiction.

L. "Testing Agencies": A testing agency is an independent entity engaged by the Owner, to perform specific inspections or tests, either at the Project site or elsewhere, and to report on and, if required, to interpret results of those inspections or tests.

1.3 SPECIFICATION FORMAT AND CONTENT EXPLANATION

A. Specification Format: These Specifications are organized into Divisions and Sections based on the Construction Specifications Institute's 6-digit and 50-division "MasterFormat" system.

B. Specification Content: These Specifications use certain conventions for the style of language and the intended meaning of certain terms, words, and phrases when used in particular situations. These conventions are as follows:

1. Abbreviated Language: Language used in the Specifications and other Contract Documents is abbreviated. Words and meanings shall be interpreted as appropriate. Words implied, but not stated, shall be interpolated as the sense requires. Singular words will be interpreted as plural and plural words interpreted as singular where applicable as the context of the Contract Documents indicates.
2. Imperative mood and streamlined language are generally used in the Specifications. Requirements expressed in the imperative mood are to be performed by the Contractor. At certain locations in the Text, subjective language is used for clarity to describe responsibilities that must be fulfilled indirectly by the Contractor or by others when so noted.

a. The words "shall," "shall be," or "shall comply with," depending on the context, are implied where a colon (:) is used within a sentence or phrase.

1.4 INDUSTRY STANDARDS

A. Applicability of Standards: Unless the Contract Documents include more stringent requirements, applicable industry standards have the same force and effect as if bound or copied directly into the Contract Documents to the extent referenced. Such standards are made a part of the Contract Documents by reference.

B. Publication Dates: Comply with the standards in effect as of the date of the Contract Documents, unless otherwise indicated.

C. Conflicting Requirements: Where compliance with 2 or more standards is specified and the standards establish different or conflicting requirements for minimum quantities or quality levels, comply with the most stringent requirement. Refer uncertainties and requirements that are different but apparently equal to the OAR for a decision before proceeding.

D. 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 the requirements. Refer uncertainties to the OAR for a decision before proceeding.

E. Copies of Standards: Each entity engaged in installation on the Project must be familiar with industry standards applicable to its installation activity. Copies of applicable standards are not bound with the Contract Documents.

1. Where copies of standards are needed to perform a required installation activity, the Contractor shall obtain copies directly from the publication source and make them available on request.

F. Abbreviations and Names: Trade association names and titles of general standards are frequently abbreviated. Where abbreviations and acronyms are used in the Specifications or other Contract Documents, they mean the recognized name of the trade association, standards-generating organization, authorities having jurisdiction, or other entity applicable to the context of the text provision. Refer to Gale Research Inc.'s "Encyclopedia of Associations," which is available in most libraries.

1.5 GOVERNING REGULATIONS AND AUTHORITIES

A. Copies of Regulations: Obtain copies of the current codes and regulations being utilized by the Authority Having Jurisdiction and retain at the Project site to be available for reference by parties who have a reasonable need.

1.6 SUBMITTALS

A. Permits, Licenses, and Certificates: For the Owner's records, 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.

PART 2 - PRODUCTS (Not Applicable)

PART 3 - EXECUTION (Not Applicable)

END CTION 01 42 00

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SECTION 01 45 00 - QUALITY CONTROL

PART 1 - GENERAL

1. 1 RELATED DOCUMENTS

A. Drawings and General Conditions of Contract, including other Division 1 Specification sections, apply to this section.

1. 2 SUMMARY

A. Section includes: quality control and quality assurance services.

1. Quality control services: inspections, tests, and related actions including reports, performed by independent agencies, governing authorities, and the Contractor. They do not include Contract enforcement activities performed by the OAR and Designer. Unless otherwise specified in the Contract Documents, all quality control services, inspections, tests and related actions shall be coordinated and provided by Contractor.
2. Quality assurance services: Inspection and testing services to assist the OAR and Designer in the determination of compliance of the Work with the Contract Documents. These services will be provided by the Owner but do not relieve the Contractor of responsibility for compliance with Contract Document requirements or for quality control services.

B. Requirements of this Section relate to customized fabrication, on site construction and installation procedures, not production of standard products.

1. Inspections, test and related actions specified are not intended to limit the Contractor's quality control procedures that facilitate compliance with Contract Document requirements.
2. Requirements to provide quality control services required by the Owner, OAR, Designer, or Authorities Having Jurisdiction are not limited by provisions of this Section.

1. 3 TESTING BY THE OWNER

A. The Owner may engage the services of an independent agency to perform inspections and tests specified as the Owner's responsibilities. The OAR will inform the Contractor of such services.

1. Where the Owner has engaged a testing agency or other entity for testing and inspection of a part of the Work, and the Contract Documents require the Contractor to engage an entity for the same or related element, the Contractor shall not employ the same entity engaged by the Owner, unless otherwise agreed in writing with the Owner.

B. Owner Responsibilities: The Owner may provide inspections, tests and similar quality assurance services to determine whether the Work is in conformance with the requirements of the Contract Documents. Costs for these services are not included in the Contract Price.

1. The Owner may employ and pay for the services of an independent agency, testing laboratory or other qualified firm to perform acceptance and quality assurance testing.
2. The Owner may employ threshold inspection services.

1. 4 CONTRACTOR RESPONSIBILITIES

A. Contractor Responsibilities: Provide inspections, tests and similar quality control services, specified in individual specification sections and required by governing authorities, except where they are specifically indicated to be the Owner's responsibility, or are provided by another identified entity. Costs for these services shall be included in the Contract Price.

1. Testing Agency: Employ and pay an independent agency, to perform specified quality control services.
2. Re-testing: Provide the cost of re-testing where results of required inspections, tests or similar services prove non-compliance with Contract Document requirements.

a. Provide the cost of re-testing construction revised or replaced.

3. Associated Services: Cooperate with the OAR and with agencies performing required inspections, tests and similar services and provide reasonable auxiliary services as requested. Notify the OAR and the agency sufficiently in advance of operations to permit assignment of personnel. Auxiliary services required include but are not limited to the following:

a. Providing access to the Work and furnishing incidental labor and facilities necessary to facilitate inspections and tests.
b. Taking adequate quantities of representative samples of materials that require testing or assisting the agency in taking samples.
c. Providing facilities for storage and curing of test samples, and delivery of samples to testing laboratories.
d. Providing the agency with a preliminary design mix proposed for use for materials mixes that require control by the testing agency.
e. Security and protection of samples and test equipment at the Project site.

B. Duties of the Testing Agency: The independent testing agency engaged by the Contractor to perform inspections, sampling and testing of materials and construction specified in individual Specification Sections shall cooperate with the OAR, Designer and Contractor in performance of its duties, and shall provide qualified personnel to perform required inspections and tests.

1. The agency shall notify the OAR, Designer and Contractor promptly of irregularities or deficiencies observed in the Work during performance of its services.
2. The agency is not authorized to release, revoke, alter or enlarge requirements of the Contract Documents, or approve or accept any portion of the Work.
3. The agency shall not perform any duties of the Contractor.

C. Coordination: The Contractor and each agency engaged by the Contractor to perform inspections, tests and similar services shall coordinate the sequence of activities to accommodate required services with a minimum of delay. In addition, coordinate activities to avoid the necessity of removing and replacing construction to accommodate inspections and tests.

1. Schedule times for inspections, tests, taking samples, and similar activities. Provide a minimum of one (1) day (excluding weekends and holidays) notification to the OAR and Designer for each inspection, test, sampling, and similar activities.

1. 5 SUBMITTALS

A. The independent testing agency shall submit two (2) certified copies and PDF on a CD of the written report of each inspection, test or similar service, to the OAR unless the Contractor is responsible for the service. If the Contractor is responsible for the service, submit four (4) certified copies and PDF on a CD of the written report of each inspection, test or similar service through the Contractor to the OAR. The PDF file shall be enabled for Adobe Reader's Comment and Markup functionality. All stamps and markings described herein shall be electronically duplicated.

1. Submit additional copies of each written report directly to the governing authority, when the authority so directs.
2. Report Data: Written reports of each inspection, test or similar service shall include, but not be limited to:

a. Date of issue.
b. Project title and number.
c. Name, address and telephone number of testing agency.
d. Dates and locations of samples, tests, and inspections.
e. Names of individuals making the inspection or test.
f. Designation of the Work and test method.
g. Identification of product and Specification Section.
h. Complete inspection or test data.
i. Test results and interpretations of test results.
j. Ambient conditions at the time of sample-taking and testing.
k. Comments or professional opinion as to whether inspected or tested Work complies with Contract Document requirements.
l. Name and signature of laboratory inspector.
m. Recommendations on re-testing.

PART 2 - PRODUCTS (Not Applicable)

PART 3 - EXECUTION

3.1 REPAIR AND PROTECTION

A. General: Upon completion of inspection, testing, sample-taking and similar services, repair damaged construction and restore substrates and finishes to eliminate deficiencies, including deficiencies in visual qualities of exposed finishes. Comply with Contract Document requirements for "Cutting and Patching."

1. Remove all deficient Work and replace it with Work of specified quality, or take such other corrective action as the OAR and Designer may direct. No increase will be made in the Contract Sum or in Contract Time as a result of authorizing a change in methods or equipment under this Article.

B. Protect construction exposed for quality control services.

END OF SECTION 01 45 00

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SECTION 01 50 00 - TEMPORARY FACILITIES AND CONTROLS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and General Conditions of the Contract, including other Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section specifies requirements for temporary services and facilities, including utilities, construction and support facilities, maintenance of traffic, security and protection.

B. Temporary utilities which may be required include but are not limited to:

1. Temporary electric power and light.
2. Telephone service.
3. Temporary project identification sign - all other signs are prohibited.
4. Drinking water.
5. Sanitary facilities.

C. Temporary construction and support facilities which may be required include but are not limited to:

1. Storage sheds.
2. Dewatering facilities and drains.
3. Temporary enclosures including demising walls.
4. Waste disposal services.
5. Construction aids and miscellaneous services and facilities.
6. Storm and sanitary sewer.
7. Fuel tanks larger than 15 gallons.
8. Temporary Wayfinding Signage.
9. Designated smoking areas and applicable signage.

D. Temporary construction and support facilities, Contractor's option:

1. Field office.

a. Temporary field offices will not be allowed on the construction site.

E. Security and protection facilities which may be required include but are not limited to:

1. Temporary fire protection.
2. Barricades, warning signs, lights.
3. Sidewalk bridge or enclosure fence for the site.
4. Environmental protection.

1.3 SUBMITTALS

A. Temporary Utilities: Maintain reports of tests, inspections, meter readings and similar procedures performed on temporary utilities for review by the OAR.

B. Implementation and Termination Schedule: Show implementation and termination of temporary utilities in the baseline schedule required by Section 01 32 13 Scheduling of Work.

C. Maintenance of Traffic Plan: Submit a "Maintenance of Traffic Plan" within fourteen (14) days of the date established for commencement of work requiring the maintenance of traffic.

D. Temporary Project Identification Sign: Submit complete shop drawings identifying locations, material, layout, sign content, font type and size, and sample colors. Make sign and lettering to scale, clearly indicating condensed lettering if used. The sign details will be submitted to GOAA Planning – Signage Team for approval prior to fabrication. Submit method of erection to include materials, fasteners, and other items to assure compliance with the requirements for wind pressures / speed as required by the authorities having jurisdiction. Submit signs in accordance with any details provided in the drawings as shown on standard detail drawing at the end of this section (Construction Sign Detail).

1.4 QUALITY ASSURANCE

A. Regulations: Comply with industry standards and applicable laws and regulations of Authorities Having Jurisdiction, including but not limited to:

1. Building Code requirements.
2. Health and safety regulations.
3. Utility company regulations.
4. Environmental protection regulations.

B. Standards: Comply with NFPA Code 241, "Building Construction and Demolition Operations," ANSI-A10 Series standards for "Safety Requirements for Construction and Demolition," and NECA Electrical Design Library "Temporary Electrical Facilities."

1. Refer to "Guidelines for Bid Conditions for Temporary Job Utilities and Services", prepared jointly by AGC and ASC, for industry recommendations.
2. Electrical Service: Comply with NEMA, NECA and UL standards and regulations for temporary electric service. Install service in compliance with National Electric Code (NFPA 70).

C. Inspections: Arrange for authorities having jurisdiction to inspect and test each temporary utility before use. Obtain required certifications and permits.

1.5 PROJECT CONDITIONS

A. Temporary Utilities: Include in the project schedule dates for implementation and termination of each temporary utility. Coordinate with the OAR change over from use of temporary service to use of the permanent service.

B. Conditions of Use: Keep temporary services and facilities clean and neat in appearance. Operate in a safe and efficient manner. Take necessary fire prevention measures. Do not overload facilities, or permit them to interfere with progress. Do not allow hazardous dangerous or unsanitary conditions, or public nuisances to develop or persist on the site.

PART 2 - PRODUCTS

2.1 MATERIALS

A. General: Where visible to the public, provide new materials suitable for the use intended. Where not visible to the public, Contractor may provide undamaged previously used materials, suitable for the use intended. Demising walls may be moved and re-used only at the discretion of the OAR; the condition of the materials must be like new.

~~B. Lumber and Plywood: Comply with requirements in Division-6 Section "Rough Carpentry."~~

C. Tarpaulins: Provide waterproof, fire-resistant, UL labeled tarpaulins with flame-spread rating of 15 or less. For temporary enclosures provide translucent nylon reinforced laminated polyethylene or polyvinyl chloride fire retardant tarpaulins.

D. Water: Provide potable water meeting the requirement of the local health authorities.

2.2 EQUIPMENT

A. General: Provide new equipment or previously used equipment in serviceable condition suitable for use intended.

B. Electrical Outlets: Provide properly configured NEMA polarized outlets to prevent insertion of 110-120 volt plugs into higher voltage outlets. Provide receptacle outlets equipped with ground-fault circuit interrupters, reset button and pilot light, for connection of power tools and equipment.

C. Electrical Power Cords: Provide grounded extension cords; use "hard-service" cords where exposed to abrasion and traffic. Provide waterproof connectors to connect separate lengths of electric cords, if single lengths will not reach areas where construction activities are in progress. Eliminate trip hazards.

D. Lamps and Light Fixtures: Provide general service incandescent lamps of wattage required for adequate illumination. Provide guard cages or tempered glass enclosures, where exposed to breakage. Provide exterior fixtures where exposed to moisture.

E. Heating Units: Provide temporary heating units that have been tested and labeled by UL, FM or another recognized trade association related to the type of fuel being consumed.

F. Temporary Toilet Units: Provide self-contained single-occupant toilet units of the chemical type, properly vented and fully enclosed with a glass fiber reinforced polyester 2`shell.

G. First Aid Supplies: Comply with governing regulations.

1. Fire Extinguishers: Provide hand-carried, portable UL-rated, class "A" fire extinguishers for temporary offices and similar spaces. In other locations provide hand-carried, portable, UL-rated, class "ABC" dry chemical extinguishers, or a combination of extinguishers of NFPA recommended classes for the exposures.
2. Comply with NFPA 10 and 241 for classification, extinguishing agent and size required by location and class of fire exposure.

PART 3 - EXECUTION

3.1 INSTALLATION

A. Use qualified personnel for installation of temporary facilities. Comply with all applicable codes. Relocate and modify facilities as required.

3.2 TEMPORARY UTILITY INSTALLATION

A. General: Engage the appropriate local utility company to install temporary service or connect to existing service. Where the company provides only part of the service, provide the remainder with matching, compatible materials and equipment; comply with the company's recommendations.

1. Arrange with the utility company and the OAR for a time when service can be interrupted, where necessary, to make connections for temporary services.
2. Provide adequate capacity at each stage of construction. Prior to temporary utility availability, provide trucked-in services.
3. Cost or use charges for temporary facilities are not chargeable to the Owner, OAR or the Designer, and will not be accepted as a basis of claims for a Change Order.

A. Water Service: Install water service and distribution piping of sizes and pressures adequate for construction.

1. Provide a backflow prevention device.

A. Temporary Electric Power Service: Provide weatherproof, grounded electric power service and distribution system of sufficient size, capacity, and power characteristics during construction period.

B. Temporary Lighting: Whenever overhead floor or roof deck has been installed, provide temporary lighting with local switching.

1. Install and operate temporary lighting that will fulfill security and protection requirements, without operating the entire system, and will provide adequate illumination for construction operations and traffic conditions.

C. Temporary Telephones: Provide temporary telephone service for personnel engaged in construction activities, throughout the construction period.

3.3 TEMPORARY CONSTRUCTION AND SUPPORT FACILITIES INSTALLATION

A. General: Locate field offices, storage sheds, sanitary facilities and other temporary construction and support facilities as indicated.

1. Maintain temporary construction and support facilities until near Final Acceptance. Remove prior to Final Acceptance. Personnel remaining after removal will be permitted to use permanent facilities, under conditions acceptable to the OAR.
2. Provide non-combustible construction for offices, shops and sheds located within the construction area, or within 30 feet of building lines. Comply with requirements of NFPA 241.

B. Temporary Heat: Provide temporary heat required by construction activities, for curing or drying of completed installations or protection of installed construction from adverse effects of low temperatures or high humidity. Select safe equipment that will not have a harmful effect on completed installations or elements being installed. Coordinate ventilation requirements to produce the ambient condition required and minimize consumption of energy.

C. Heating Facilities: Except where use of the permanent system is authorized, provide vented self-contained LP gas or fuel oil heaters with individual space thermostatic control.

D. Use of gasoline-burning space heaters, open flame, or salamander type heating units is prohibited.

E. Storage and Fabrication Sheds: Install storage and fabrication sheds, sized, furnished and equipped to accommodate materials and equipment involved, including temporary utility service. Sheds may be open shelters or fully enclosed spaces within the building or elsewhere on the site.

F. Sanitary Facilities: Sanitary facilities include temporary toilets, wash facilities and drinking water fixtures. Comply with local health authorities for the administration of these facilities.

1. Provide toilet tissue, paper towels, paper cups and similar disposable materials for each facility. Provide covered waste containers for used material.
2. Temporary Toilets shall be self-contained toilet units. Shield toilets to ensure privacy. Use of pit-type privies will not be permitted.
3. Wash Facilities: Install wash facilities supplied with potable water at convenient locations for personnel involved in handling materials that require wash-up for a healthy and sanitary condition. Dispose of drainage properly. Supply cleaning compounds appropriate for each condition.
4. Drinking Water Accommodations: Provide drinking water accommodations as necessary, including paper supply.

G. Dewatering Facilities and Drains: For temporary drainage and dewatering facilities and operations not directly associated with construction activities included under individual Sections, comply with dewatering requirements of applicable Division 2 Sections. Where feasible, utilize the same facilities. Maintain the site, excavations and construction free of water.

H. Temporary Enclosures - Demising Walls: Provide temporary enclosure for protection of construction in progress from public view and foul weather.

I. Temporary Lifts and Hoists: Provide facilities for hoisting materials, if required.

J. Existing Elevator Use: Use of existing public elevators is NOT ALLOWED by construction personnel during the duration of this Project.

K. Temporary Project Identification Sign /Construction Company Identification Sign: Contractor shall furnish, install and maintain all sign materials including sign posts, weighted stands, brackets, any required mounting hardware and miscellaneous materials required for temporary project identification signs as required by location. Prepare project identification sign of the size indicated; install sign where indicated to inform the public and persons seeking entrance to the Project. Securely attach, as required, to demising wall. Install sign at commencement of construction and remove upon issuance of the Certificate of Occupancy/Certificate of Completion (CofO).

1. Size:

    a. Exterior: Four by Six feet(4’ x 6’) landscape orientation utilizing provided template within this section.
    b. Interior: Eleven by seventeen inches (11” x 17”) portrait orientation utilizing provided template within this section..

2. Materials for exterior signage:

    a. Structure and Framing: New construciton grade lumber, structurally adequate and suitable for exterior application and specified finish.
    b. Sign Panels: New A-B Grade, exterior type. APA MDO plywood both sides. Thickness as required by standards to span framimg members, to provide even, smooth surface without waves or buckles, minimum 3/4 inch.

3. Materials for interior signage:

    a. 11” x 17” paper, Ledger size, 28 lb. paper, 100 Bright min., inserted into 11” x 17” clear vinyl sheet protector, adhesdive backing, installed on demising wall.

4. Rough Hardware for exterior signage: Galvanized steel, of sizes and types to enable sign assemblies to resist wind loads as required by authorities having jurisdiction but not less than wind velocity of 50 mph. Use minimum 1/2 inch diameter button head carriage bolts to fasten sign panels to supporting structures or #10 x 3.5” zinc wood screw spaced at 10” to center of pole. Bolt heads to be painted to match sign face.
5. Paint: Exterior quality, as specified in Division 9 or as a minimum as specified herein.

    a. Primer and finish coat: exterior, semi-gloss, enamel.
    b. Colors for structure, framing, back of sign: white.

6. Quality Assurance: Engage an experienced sign painter, or company to apply graphics.
7. Graphic Description: Information shall include at a minimum, the Project Name, Project Number, Owner, Contractor, and Designer name and logo, and completion date. Utilize standard detail drawing template on subsequent pages (Construction Sign Detail).

    a. Type Style: Frutiger 55 Roman
    b. Color: Provide per standard detail drawing template at the end of this section.
    c. Quantity: One sign per project.
    d. Project Identification sign design to be reviewed by GOAA Sigange Team prior to fabrication and installation.

8. Install sign at a heaight for optimum visibility, on ground mounted poles or attached to temporary structural surfaces.

9. Erect the sign on the site at a lighted location of high public visibility, adjacent to main entrance to site or project, as approved by the OAR. The sign must be located 5-feet from the right-of-way and 20-feet from all property lines.
10. Maintain signs and supports in a neat, clean condition; repair damages to structure, framing, or sign.

L. Pardon our dust sign may be provided via the Owner's sign shop. Coordinate request through GOAA Signage Team Project Manager.

M. Collection and Disposal of Waste: Collect waste from construction areas daily. Comply with requirements of NFPA 241 for removal of combustible waste material and debris. Enforce requirements strictly. Do not hold materials more than seven (7) days during normal weather or three (3) days when the temperature is expected to rise above 80 degrees F (27 degrees C). Handle hazardous, dangerous, or unsanitary waste materials separately from other waste by containerizing properly. Dispose of material in a lawful manner.

1. The Contractor shall not use the Owner's waste disposal systems.
2. The Owner will not provide waste disposal services.

N. Fuel tanks larger than 15 gallons

1. All Equipment

a. The Contractor will follow the guidance provided with regard to all equipment used on the work site. All equipment with Aboveground Storage Tanks (AST's) fuel tanks that have a capacity of 15 gallons or more but less than 550 gallons will adhere to the following guidelines. Equipment with tanks that have a capacity of 550 and more gallons will adhere to Florida Administrative Code 62-761.
b. Each piece of equipment with a tank capacity of 15 gallons or more will be required to have secondary containment. The capacity of the secondary containment will be 110% of the tank. As a minimum, five sheets of 10-mil visqueen will be used to line the secondary containment. The visqueen will overlap the outside walls of the secondary containment a minimum of 24 inches. The Owner recommends a single sheet of puncture resistant neoprene of ¼ inch thick as a liner in the secondary containment or concrete containment.
c. The secondary containment will be checked on a periodic basis and the fluid buildup will be disposed accordingly. Visible sheen will indicate contaminated water and will be disposed on in accordance with Florida Administrative Code (FAC) 62-777.
d. Mobile storage tanks that meet the criteria of FAC 62-677 are exempt from these procedures.

O. Temporary Wayfinding Signage

1. Provide temporary signs as required to maintain proper airport operations during all aspects of the Work.
2. Provide temporary signage that duplicates any removed or hidden permanent signs as a result of the Work.
3. Coordinate all temporary signs with the OAR and GOAA Planning Signage Team. Develop a temporary sign plan for review by the OAR and GOAA Planning Signage Team. At a minimum, the plan shall show where all temporary signs are to be located, the messages that are to appear, when the signs will be installed, how the signs will be installed, , when the signs will be removed, the sign face layouts, the sign colors, and the materials to be used.

4. Temporary signs shall be safely and securely installed. Repair any damage to any walls, building surfaces, or building finishes resulting from the installation or the removal of the temporary signs. Once they have been taken down, remove from the site and properly dispose of the temporary signs.
5. Coordinate the installation and removal of the temporary signs with the OAR. Also coordinate the installation and removal of the temporary signs with the Project phases and construction progress.

P. Designated Smoking Areas and Applicable Signage

1. Smoking shall be prohibited throughout the project/construction site with exception of designated areas. “No Smoking” signs shall be conspicuously posted at all entrances and throughout the site. See attached template at the end of this section.

3.4 SECURITY AND PROTECTION FACILITIES INSTALLATION

A. General: Except for use of permanent fire protection as soon as available, do not change over from use of temporary security and protection facilities to permanent facilities until Substantial Completion, or longer as requested by the OAR.

B. Temporary Fire Protection: Install and maintain temporary fire protection facilities of the types needed to protect against reasonably predictable and controllable fire losses. Comply with NFPA 10 "Standard for Portable Fire Extinguishers," and NFPA 241 "Standard for Safeguarding Construction, Alterations and Demolition Operations."

1. Locate fire extinguishers where convenient and effective for their intended purpose, but not less than one extinguisher on each floor at or near each usable stairwell.
2. Store combustible materials in containers in fire-safe locations.
3. Maintain unobstructed access to fire extinguishers, fire hydrants, temporary fire protection facilities, exitways and other access routes for fighting fires.
4. Provide supervision of welding operations, combustion type temporary heating units, and similar sources of fire ignition.

C. Barricades, Warning Signs and Lights: Comply with standards and code requirements for erection of structurally adequate barricades. Paint with appropriate colors, graphics and warning signs to inform personnel and the public of the hazard being protected against. Where appropriate and needed provide lighting, including flashing red or amber lights.

D. Environmental Protection: Provide protection, operate temporary facilities and conduct construction in ways and by methods that comply with environmental regulations, and minimize the possibility that air, waterways and subsoil might be contaminated or polluted, or that other undesirable effects might result. Avoid use of tools and equipment which produce harmful noise. Restrict use of noise making tools and equipment to hours that will minimize complaints from persons or firms near the site.

3.5 OPERATION, TERMINATION AND REMOVAL

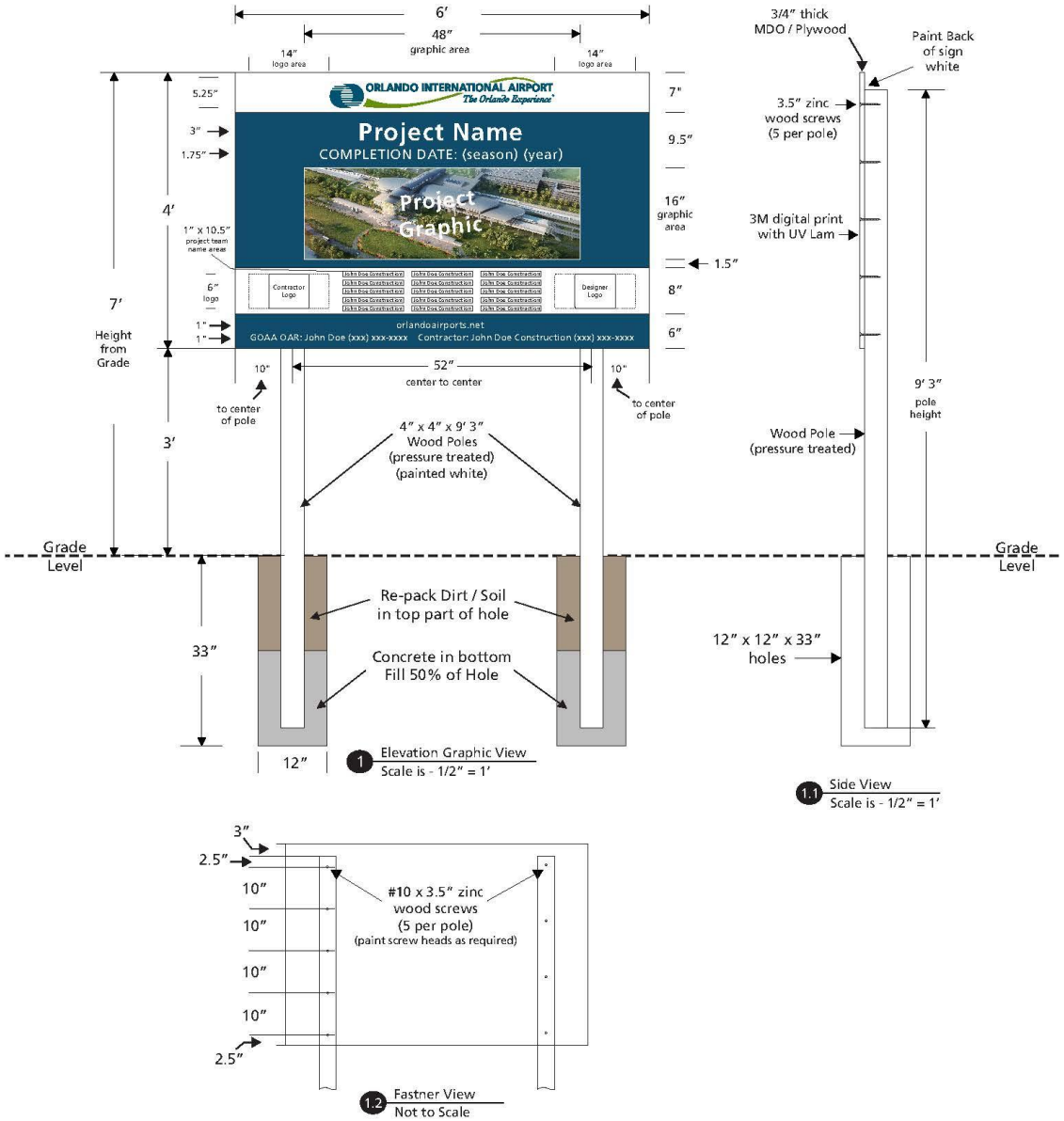
A. Maintenance: Maintain facilities in good operating condition until removal. Protect from damage by the elements.

B. Termination and Removal: Unless the OAR requests that it be maintained longer, remove each temporary facility when the need has ended, or when replaced by authorized use of a permanent facility, or no later than Final Acceptance. Complete or, if necessary, restore permanent construction that may have been delayed because of interference with the 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 the Contractor.
2. Prior to Final Acceptance, clean and renovate permanent facilities that have been used during the construction period, including but not limited to:

    a. Repair of any and all damages to existing materials or finishes. Repair shall be complete and made to the satisfaction of the OAR at no additional cost.
    b. Replace air filters and clean inside of ductwork and housings.
    c. Replace existing significantly work parts and parts that have been subject to unusual operating conditions due to the Work.
    d. Replace lamps that are burned out or noticeably dimmed by substantial hours of use.

Greater Orlando Aviation Authority — **Construction Project Sign Detail (exterior)**



Notes

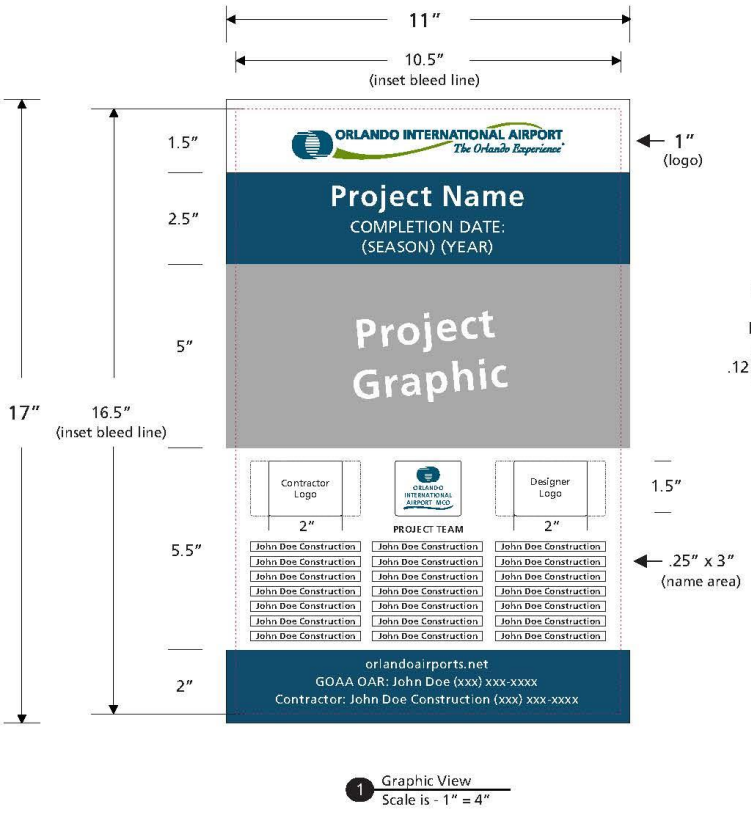
1. Frutiger font family as required. (14.5% L.S. & 120% W.S.)
2. Project name height may vary depending on length.
3. Project graphic size may vary in width per project.
4. Project team names may vary slightly with longer names.
5. Foundation to only have 50% concrete for removal purposes due to weather emergencies.

Colors

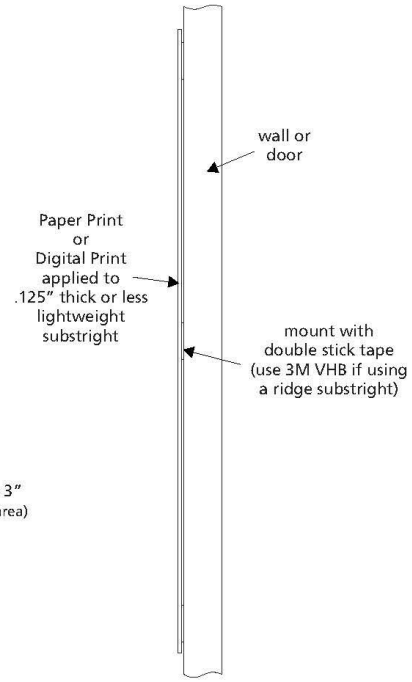
GOAA Blue PMS 3025 C	White	Project Graphic	3M 1170 Clear

3M Digital Printed Graphics

Greater Orlando Aviation Authority — **Construction Project Sign Detail (interior)**



1 Graphic View
Scale is - 1″ = 4″



1.1 Wall View
Scale is - 1″ = 4″

Notes

1. Frutiger font family as required. (14.5% L.S. & 120% W.S.)
2. Project name height varies depending on length.
3. Project graphic size may vary in size per project.
4. Project team names may vary slightly with longer names.

Colors

GOAA Blue PMS 3025 C	White	Project Graphic	3M 1170 Clear

3M Digital Printed Graphics



END OF SECTION 01 50 00

SECTION 01 55 30 - REQUIREMENTS FOR USE OF CANAL ROAD

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and General Conditions of Contract, including other Division 1 Specification Sections, apply to this Section. Refer to Specification Section 01 50 00 Temporary Facilities and Controls for additional requirements applicable to the use of lots on Canal Road.

1.2 DESCRIPTION

A. General: The following information indicates requirements for use of the Canal Road (Contractor's Row) staging area, and the requirements for employee (workers) parking. The Contractor shall notify the OAR at the pre-construction meeting for the need to be assigned a Canal Road staging area. The Contractor shall notify the OAR at the Pre-construction meeting for the need to park vehicles at the Project site or the Owners Parking structures.

1. All staging lot sites are marked on the roadway with site numbers. Each staging lot is approximately 75 feet wide, as measured along the roadway. Only one lot will be issued per Contractor, unless expressly approved by the OAR in advance. Lot locations will be determined on the need for available utilities.

    a. If utilities will be required at the lot site,

        1) an address request form is requested from the OAR,
        2) Contact the OAR to review the lots available. Once a lot has been selected, fill out the address request form with the lot number and submit it to the OAR, the request will be coordinated with the Owner’s Planning Department and an address assigned. This address assignment is necessary in order for the Contractor to arrange for utility hook-ups.
        3) The Contractor will take the completed address request form and Owner’s Canal road site map to the City of Orlando for temporary construction/trailer permit applications.

    b. If utilities will not be required at the lot site,

        1) contact the OAR for lot assignment.

2. Address is as follows: 6100 Canal Road, Orlando, FL 32827; Site Number: TO BE DETERMINED.
3. All trailers are to be located no less than 20 feet from Canal Road and oriented perpendicular to the road unless otherwise approved by the Owner. Trailers shall be a minimum of 25 feet setback to the rear of the lot.

    a. The Contractor's name, local contact person, Owner/Principal, and telephone number shall be clearly marked on weatherproof placards attached to each trailer. All names/numbers on the placards shall be visible and readable from Canal Road.

b. Office trailers, storage trailers, storage boxes, etc. shall be tied down in accordance with the Florida Department of Highway Safety and Motor Vehicles, Division of Motor Vehicles, Chapter 15C-1.

1. Vehicles associated with this project will be permitted to park between Canal Road and the canal. Canal Road must be kept clear for emergency vehicle access at all times. The Contractor is fully responsible for safety and security of personnel, vehicles and equipment.
2. Materials stored at trailer sites shall be located within lot limits. Chain link security fences may be erected at the trailer site. Fences shall be approved by the OAR.
3. Utility service exists as follows:

   a. Non-Potable water and electric service is limited in service area. The Contractor may extend service at its own expense and is responsible for hook-up of non-potable water and electric service. The Owner does not provide this service.
   b. Telephone may be provided by AT+T for direct connections or Owner's telecommunications for airport system connection at the Contractor's expense.
   c. Electric service will require the Contractor to provide a service pole.

4. No vehicle equipment maintenance activities will be allowed on the Owner's property.
5. Above ground petroleum refueling tanks will be allowed under 500 gallons with the Owner's express permission. See Specification Section 01 50 00 Temporary Facilities and Controls for further requirements.
6. All storage facilities for flammable substances, and hazardous substances must be approved by the Owner's Fire Department and the City of Orlando as required by code.
7. Remove all construction materials and environmentally contaminated soils. Restore the area to a clean, erosion-free area upon leaving.

   a. Keep grass and weeds cut, and trash and loose debris removed.
   b. Any lots not kept in a neat condition will be maintained by the Owner and the Contractor will be backcharged for these costs.

8. All waste shall be properly disposed of off the Owner's property.
9. Provide human waste holding and disposal off site. Only on-site holding tanks, installed per codes, will be allowed. Maintain tanks at regular intervals throughout the Work.
10. All lots will be provided in an "as-is" condition. Leave the site as stated in Paragraph 10 above, regardless of the prior condition of the site.
11. Worker vehicle parking area (between the road and the canal) must be kept in a manner that the Owner may mow and maintain at all times.

PART 2 - PRODUCTS (Not Applicable)

PART 3 - EXECUTION (Not Applicable)

END OF SECTION 01 55 30

SECTION 01 60 00 – PRODUCT REQUIREMENTS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and General Conditions of the Contract, including other Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section includes administrative and procedural requirements governing the Contractor's selection of products for use in the Project.

1.3 DEFINITIONS

A. Definitions used in this Article are not intended to change the meaning of other terms used in the Contract Documents, such as "specialties," "systems," "structure," "finishes," "accessories," and similar terms. Such terms are self-explanatory and have well-recognized meanings in the construction industry.

1. "Products" are items purchased for incorporation in the Work, whether purchased for the Project or taken from previously purchased stock. The term "product" includes the terms "material," "equipment," "system," and terms of similar intent.

    a. "Named Products" are items identified by the manufacturer's product name, including make or model number or other designation, shown or listed in the manufacturer's published product literature, that is current as of the date of the Contract Documents.
    b. "Foreign Products," as distinguished from "domestic products," are items substantially manufactured (50 percent or more of value) outside the United States and its possessions. Products produced or supplied by entities substantially owned (more than 50 percent) by persons who are not citizens of, nor living within, the United States and its possessions are also considered to be foreign products.

2. "Materials" are products substantially shaped, cut, worked, mixed, finished, refined or otherwise fabricated, processed, or installed to form a part of the Work.
3. "Equipment" is a product with operational parts, whether motorized or manually operated, that requires service connections, such as wiring or piping.

1.4 SUBMITTALS

A. Product List: Prepare a list of specified products. Include the manufacturer's name and proprietary product names for each item listed.

B. Coordinate product list with the Contractor's Construction Schedule and the Schedule of Submittals.

C. Form: Prepare product list with information on each item tabulated under the following column headings:

1. Related Specification Section number.
2. Generic name used in Contract Documents.
3. Proprietary name, model number, and similar designations.
4. Manufacturer's name and address.
5. Supplier's name and address.
6. Installer's name and address.
7. Projected delivery date or time span of delivery period.

D. Submit list following procedures and requirements as outlined in Division 1 Specifications Section Shop Drawings, Product Data, and Samples.

1.5 QUALITY CONTROL

A. Source Limitations: To the fullest extent possible, provide products of the same kind from a single source.

1. When specified products are available only from sources that do not, or cannot, produce a quantity adequate to complete project requirements in a timely manner, consult with the OAR to determine the most important product qualities before proceeding.

2. Qualities may include attributes, such as visual appearance, strength, durability, or compatibility. When a determination has been made, select products from sources producing products that possess these qualities, to the fullest extent possible.

B. Compatibility of Options: When the Contractor is given the option of selecting between 2 or more products for use on the Project, the product selected shall be compatible with products previously selected, even if previously selected products were also options.

1. The Contractor is responsible for providing products and construction methods that are compatible with products and construction methods of the subcontractors.

2. If a dispute arises over concurrently selectable, but incompatible products, the OAR will determine which products shall be retained and which are incompatible and must be replaced.

C. Nameplates: Except for required labels and operating data, do not attach or imprint manufacturer's or producer's nameplates or trademarks on exposed surfaces of products that will be exposed to view in occupied spaces or on the exterior.

D. Labels: Locate required product labels and stamps on concealed surfaces or, where required for observation after installation, on accessible surfaces that are not conspicuous.

1. Equipment Nameplates: Provide a permanent nameplate on each item of service-connected or power-operated equipment. Locate on an easily accessible surface that is inconspicuous in occupied spaces. The nameplate shall contain the following information and other essential operating data:

a. Name of product and manufacturer.

b. Model and serial number.
c. Capacity.
d. Speed.
e. Ratings.
f. UL Listing or other Owner approved listing agency.

1.6 PRODUCT DELIVERY, STORAGE, AND HANDLING

A. Deliver, store, and handle products according to the manufacturer's recommendations, using means and methods that will prevent damage, deterioration, and loss, including theft.

B. Schedule delivery to minimize long-term storage at the site and to prevent overcrowding of construction spaces.

1. Coordinate delivery with installation time to assure minimum holding time for items that are flammable, hazardous, easily damaged, or sensitive to deterioration, theft, and other losses.
2. Deliver products to the site in an undamaged condition in the manufacturer's original sealed container or other packaging system, complete with labels and instructions for handling, storing, unpacking, protecting, and installing.
3. Inspect products upon delivery to ensure compliance with the Contract Documents and to ensure that products are undamaged and properly protected.
4. Store products at the site in a manner that will facilitate inspection and measurement of quantity or counting of units.
5. Store heavy materials away from the Project structure in a manner that will not endanger the supporting construction.
6. Store products subject to damage by the elements above ground, under cover in a weathertight enclosure, with ventilation adequate to prevent condensation. Maintain temperature and humidity within range required by manufacturer's instructions.

PART 2 - PRODUCTS

2.1 PRODUCT SELECTION

A. General Product Requirements: Provide products that comply with the Contract Documents, that are undamaged and, unless otherwise indicated, new at the time of installation.

1. Provide products complete with accessories, trim, finish, safety guards, and other devices and details needed for a complete installation and the intended use and effect.
2. Standard Products: Where available, provide standard products of types that have been produced and used successfully in similar situations on other projects.

B. Product Selection Procedures: The Contract Documents and governing regulations govern product selection.

1. Visual Matching: Where Specifications require matching an established Sample, the Designer(s) decision will be final on whether a proposed product matches satisfactorily.

a. Where no product available within the specified category matches satisfactorily and complies with other specified requirements, comply with provisions of the Contract

Documents concerning "substitutions" for selection of a matching product in another product category.

2. Visual Selection: Where specified product requirements include the phrase "...as selected from manufacturer's standard colors, patterns, textures..." or a similar phrase, select a product and manufacturer that complies with other specified requirements. The Designer will select the color, pattern, and texture from the product line selected.
3. Allowances: Refer to individual Specification Sections and "Allowance" provisions (if included) in Division 1 for allowances that control product selection and for procedures required for processing such selections.

PART 3 - EXECUTION

3.1 INSTALLATION OF PRODUCTS

A. Comply with manufacturer's instructions and recommendations for installation of products in the applications indicated. Anchor each product securely in place, accurately located and aligned with other Work.

1. Clean exposed surfaces and protect as necessary to ensure freedom from damage and deterioration.

END OF SECTION 01 60 00

SECTION 01 71 23 - FIELD ENGINEERING

PART 1 - GENERAL

1. 1 RELATED DOCUMENTS

A. Drawings and General Conditions of the Contract, including other Division 1 Specification Sections, apply to this Section.

1. 2 SUMMARY

A. General: This Section specifies administrative and procedural requirements for field-engineering services including, but not limited to, the following:

1. Land survey work.
2. Civil-engineering services.
3. Damage surveys.
4. Geotechnical monitoring.
5. As-Built documentation.
6. Non-destructive testing services through electromagnetic investigation.

1. 3 SUBMITTALS

A. Certificates: Submit a certificate signed by the land surveyor or professional engineer certifying the location and elevation of improvements.

B. Final Property Survey and As-Built documentation Survey: Submit 2 paper copies, 1 mylar and and CD of AutoCAD & PDF files of the final property survey (42”x30” format).

1. 4 QUALITY CONTROL

A. Surveyor Qualifications: Engage a land surveyor registered in the State of Florida to perform required land-surveying services.

B. Engineer Qualifications: Engage an engineer of the discipline required, licensed in the State of Florida to perform required engineering services.

PART 2 - PRODUCTS (Not Applicable)

PART 3 - EXECUTION

3.1 EXAMINATION

A. Identification: The Contractor will be required to establish its own Project control points.

B. Verify layout information shown on the Drawings, in relation to the property survey, existing benchmarks and location of existing underground or concealed utilites and conduits, before proceeding to lay out the Work. Locate and protect existing benchmarks and control points. Preserve permanent reference points during construction.

1. Do not change or relocate benchmarks or control points without prior written approval of the OAR. Promptly report lost or destroyed reference points or requirements to relocate reference points because of necessary changes in grades or locations.
2. Promptly replace lost or destroyed Project control points utilizing the original survey control points.

C. Establish and maintain a minimum of 2 permanent benchmarks on the site, referenced to data established by survey control points.

1. Record benchmark locations, with horizontal and vertical data, on Project As-Built Documents.

D. Existing Utilities and Equipment: 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 or concealed utilities and other construction by use of non-destructuve testing such as electromagnetic investigation or other applicable means.

1. Prior to construction, verify the location and invert elevation at points of connection of sanitary sewer, storm sewer, and water-service piping. Document the information on the As-Built Documents.
2. Develop a detailed plan for non-destructive testing service by use of electromagnetic or other applicable means of investigation that includes the following (at a minimum):

a. area of investigation
b. depth of investigation
c. items to be located
d. operational constraints

3.2 PERFORMANCE

A. Work from lines and levels established by the Contract Documents. Establish benchmarks and markers to set lines and levels at each story of construction and elsewhere as needed to locate each element of the Project. Calculate and measure required dimensions within indicated or recognized tolerances. Do not scale Drawings to determine dimensions.

1. Advise entities engaged in construction activities of marked lines and levels provided for their use.
2. As construction proceeds, check every major element for line, level, and plumb.

B. Surveyor's Log: Maintain a surveyor's log of control and other survey work. Make this log available for reference to the OAR and the Designer.

1. Record deviations from required lines and levels, and advise the OAR when deviations that exceed indicated or recognized tolerances are detected. On Project As-Built Drawings, record deviations that are accepted and not corrected.

C. Site Improvements: Locate and lay out site improvements, including pavements, stakes for grading, fill and topsoil placement, utility slopes, and invert elevations.

D. Building Lines and Levels: Locate and lay out batter boards for structures, building foundations, column grids and locations, floor levels, and control lines and levels required for mechanical and electrical work.

E. Existing Utilities: Furnish information necessary to adjust, move, or relocate existing structures, utility poles, lines, services, or other appurtenances located in or affected by construction. Coordinate with the appropriate Utility and the local Authorities Having Jurisdiction.

F. As-Built Documents: All concealed and underground utilities, equipment, foundations or other permanent conditions shall be surveyed and documented on the As-Built Documents. This includes all discovered conditions. All shall be tied to permanent benchmarks showing horizontal and vertical data. GPS coordinates are to be provided for all beginning/end points and changes in direction. See Closeout Submittals 01 78 00 for all As-built requirements.

G. Final Property Survey: Prepare a final property survey showing significant features (real property) for the Project. Include on the survey a certification, signed by the surveyor, that principal metes, bounds, lines, and levels of the Project are accurately positioned as shown on the survey.

1. Recording: At Substantial Completion, have the final property survey recorded by or with local governing authorities as the official "property survey."

END OF SECTION 01 71 23

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SECTION 01 73 29 - CUTTING AND PATCHING

PART 1 - GENERAL

1. 1 RELATED DOCUMENTS

A. Drawings and General Conditions of Contract, including other Division 1 Specification Sections, apply to this Section. Refer to other Specification Sections for specific requirements and limitations applicable to cutting and patching individual parts of the work.

1. 2 SUMMARY

A. This Section includes cutting into existing construction to provide for installation or performance of the Work, subsequent fitting, and patching required to restore surfaces to original condition.

1. Execute cutting, fitting, and patching, including excavation and backfill, required to perform Work and to:

   a. Make parts fit together properly.
   b. Remove and replace defective work.
   c. Remove and replace Work not conforming to requirements of Contract Documents.
   d. Uncover Work to allow for the OAR’s observation of covered Work which has been covered prior to required observation of the OAR.

2. Drilling of holes for the installation of fasteners and similar operations is not considered to be cutting and patching.

1. 3 BUILDING MODIFICATIONS

A. General: Modifications to existing facililties and structures shall be provided as indicated and as necessary to accomplish the Work of these Contract Documents.

1. Modifications shall include the removal of existing structure, relocation of materials indicated, termination and relocation of utilities, cutting, patching, cleaning, adjusting, and refinishing, and all incidental work related and required for the installation of new Work.
2. It is intended to maintain daily occupancy functions during the progress of this Work. The Contractor shall closely coordinate his Work to minimize any inconvenience to the Owner or Owner's operations.
3. No Public Services or utility systems shall be interrupted without first notifying the OAR and obtaining concurrence for the interruption as instructed in the Summery of Work.

1. 4 SUBMITTALS

A. Cutting and Patching Proposal: Submit a proposal describing procedures well in advance of the time cutting and patching will be performed and request approval to proceed. Include the following information, as applicable:

1. Describe the extent of cutting and patching required and how it is to be performed.
2. Describe anticipated results in terms of changes to existing construction; include changes to structural elements and operating components as well as changes in the building's appearance and other significant visual elements.
3. List products to be used and firms that will perform Work.
4. Indicate dates when cutting and patching is to be performed.
5. List utilities that will be disturbed or affected, including those that will be relocated and those that will be temporarily out-of-service. Indicate how long service will be disrupted.
6. Where cutting and patching involves addition of reinforcement to structural elements, submit details and engineering calculations to show how reinforcement is integrated with the original structure.
7. Where cutting and patching activities occur within the building evelope, provide details of compliance with the project “Indoor Air Quality Plan”.
8. Approval by the OAR to proceed with cutting and patching does not waive the Owner’s right to later require complete removal and replacement of Work found to be cut and patched in an unsatisfactory manner.

B. Hot Work and Dust Hazard - Notify the OAR 48 hours (excluding weekends and holidays) in advance of any welding, cutting, burning, soldering, any dust creating activities or any hot work. Utilize the Owners Hot Work/Dust Hazard Permit Forms.

1. 5 QUALITY ASSURANCE

A. Requirements for Structural Work: Do not cut and patch structural elements in a manner that would reduce their load-carrying capacity or load-deflection ratio.

B. Operational and Safety Limitations: Do not cut and patch operating elements or safety related components in a manner that would result in reducing their capacity to perform as intended, or result in increased maintenance, or decreased operational life or safety.

1. Obtain approval of the cutting and patching proposal before cutting and patching the following operating elements or safety related systems:

a. Water, moisture, or vapor barriers.
b. Membranes and flashings.
c. Electrical wiring systems.
d. Control systems.
e. Communications systems.
f. Conveying systems.
g. Shoring, bracing, and sheeting.
h. Primary operational systems.
i. Air or smoke barriers.
j. Fire protection systems.
k. Noise and vibration control elements and systems.
l. Water lines.
m. Sewer lines.
n. Other special construction.

C. Visual Requirements: Do not cut and patch construction in a manner that would degrade the building's aesthetics, or result in visual evidence of cutting and patching. Remove and replace Work cut and patched unsatisfactorily.

PART 2 - PRODUCTS

2.1 MATERIALS

A. Use materials that are identical to existing materials. If identical materials are not available or cannot be used where exposed surfaces are involved, obtain the OAR's approval to use substitute materials that match existing adjacent surfaces to the fullest extent possible with regard to visual effect. Use materials whose installed performance will equal or surpass that of existing materials.

B. Verify that new materials are compatible with existing materials in all respects where cutting and patching occurs.

PART 3 - EXECUTION

3.1 INSPECTION

A. Before cutting existing surfaces, examine surfaces to be cut and patched and conditions under which cutting and patching is to be performed. Take corrective action before proceeding, if unsafe or unsatisfactory conditions are encountered.

1. Before proceeding, meet at the site with all parties involved in cutting and patching. Review areas of potential interference and conflict. Coordinate procedures and resolve potential conflicts with OAR before proceeding.

3.2 PREPARATION

A. Temporary Support: Provide temporary support of Work to be cut.

B. Protection: Protect existing construction during cutting and patching to prevent damage. Provide protection from adverse weather conditions for portions of the Project that might be exposed during cutting and patching operations.

1. Avoid interference with use of adjoining areas or interruption of free passage to adjoining areas.

C. Cutting: Take all precautions necessary to avoid cutting existing pipe or conduit serving the building, but scheduled to be removed or relocated until provisions have been made to bypass them.

3.3 PERFORMANCE

A. General: Employ skilled workmen to perform cutting and patching. Proceed with cutting and patching at the earliest feasible time and complete without delay.

1. Cut existing construction to provide for installation of other components or performance of other construction activities and the subsequent fitting and patching required to restore surfaces to their original condition.

B. Cutting: Cut existing construction using methods least likely to damage elements to be retained or adjoining construction. Where possible review proposed procedures with the original installer; comply with the original installer's recommendations.

1. In general, where cutting is required, use hand or small power tools designed for sawing or grinding, not hammering and chopping. Cut holes and slots neatly to size required with minimum disturbance of adjacent surfaces. Temporarily cover openings when not in use.
2. To avoid marring existing finished surfaces, cut or drill from the exposed or finished side into concealed surfaces.
3. Cut through concrete and masonry using a cutting machine such as a carborundum saw or diamond core drill.
4. Comply with requirements of applicable sections of Division 31 specifications where cutting and patching requires excavating and backfill.
5. By-pass utility services such as pipe or conduit, before cutting, where services are shown or required to be removed, relocated or abandoned. Cut-off pipe or conduit in walls or partitions to be removed. Cap, valve or plug and seal the remaining portion of pipe or conduit to prevent entrance of moisture or other foreign matter after by-passing and cutting.

C. Patching: Patch with durable seams that are as invisible as possible. Comply with specified tolerances.

1. Where feasible, inspect and test patched areas to demonstrate integrity of the installation.
2. Restore exposed finishes of patched areas and extend finish restoration into retained adjoining construction in a manner that will eliminate evidence of patching and refinishing.
3. Where removal of walls or partitions extends one finished area into another, patch and repair floor and wall surfaces to provide an even surface of uniform color and appearance. Remove existing floor and wall coverings and replace with new materials, if necessary to achieve uniform color and appearance.

    a. Where patching occurs in a smooth painted surface, extend final paint coat over entire unbroken surface containing the patch, after the patched area has received primer and second coat.

4. Patch, repair, or rehang existing ceilings as necessary to provide an even plane surface of uniform appearance.

3.4 CLEANING

A. Thoroughly clean areas where cutting and patching is performed or used as access. Remove completely any paint, mortar, oils, putty and items of similar nature. Thoroughly clean piping, conduit and similar features before painting or other finishing is applied. Restore damaged pipe covering to its original condition.

END OF SECTION 01 73 29

SECTION 01 74 23 - FINAL CLEANING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and General Conditions of the Contract, including other Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section includes: final cleaning at completion of work by individual trade and at Substantial Completion.

B. Environmental Requirements: When specified, final cleaning shall comply with Green Seal Standard GS 42.

C. Conduct cleaning and waste-disposal operations in compliance with local laws and ordinances. Comply fully with federal and local environmental and antipollution regulations.

~~D. Sustainable Design Requirements: When specified, final cleaning shall comply with the requirment in Section 01 81 13.14 “Sustainable Design Requirements - LEED v4 BD+C”.~~

E. Environmental Requirements: Conduct cleaning and waste-disposal operations in compliance with local laws and ordinances. Comply fully with federal and local environmental and antipollution regulations.

1. Do not dispose of volatile wastes, such as mineral spirits, oil, or paint thinner, in storm or sanitary drains.

B. Burning or burying of debris, rubbish, or other waste material on the premises is not permitted.

PART 2 - PRODUCTS

2.1 MATERIALS

A. Cleaning Agents: Use cleaning materials and agents recommended by the manufacturer or fabricator of the material to be cleaned. Do not use cleaning agents that are potentially hazardous to health or property or that might damage finished surfaces.

1. The cleaning products utilized shall be Green Seal complying with one or more of the following standards; by category:

a. Green Seal GS-37, for general-purpose, bathroom, glass and carpet cleaner use for industrial and institutional purposes

1) Environmental Choice CCD-110, for cleaning and degreasing compounds
2) Environmental Choice CCD-146, for hard-surface cleaners
3) Environmental Choice CCD-148, for carpet and upholstery care.

a) Disinfectants, metal polish, floor finishes, strippers or other products not addressed by GS-37 or Environmental Choice CCD-110, 146, or 148 shall meet at least one of the following standards for the appropriate category:

I. Green Seal GS-40, for industrial and institutional floor-care products
II. Environmental Choice CCD-112, for digestion additives for cleaning and odor control
III. Environmental Choice CCD-113, for drain or grease-trap additives
IV. Environmental Choice CCD-115, for odor-control additives
V. Environmental Choice CCD-147, for hard-floor care

b) California Code of Regulations maximum allowable VOC levels for the specific product category.
c) The product shall not contain alkyl phenol ethorylates, dibutyl phthalate heavy metals, ozone-depleting compounds or optical brighteners.
d) The product shall not be tested on animals.
e) Cleaning materials and agents shall be in accordance with manufacturers recommendations. Do not use cleaning agents that are potentially hazardous to health or property or that might damage finished surfaces.

2.2 PROHIBITED PRODUCTS

A. The following products shall not be utilized within the Work:

1. Diversey Care a division of Sealed Air; Bravo Heavy-Duty Low Odor Stripper.
2. Diversey Care a division of Sealed Air; BreakDown XC 40 Odor Eliminator Concentrate Fresh.
3. Diversey Care a division of Sealed Air; Alpha-HP Multi-Surface Cleaner.
4. Diversey Care a division of Sealed Air; Crew Clinging Toilet Bowl Cleaner.

PART 3 - EXECUTION

3.1 FINAL CLEANING

A. General: Provide final-cleaning operations. Employ experienced workers or professional cleaners for final cleaning. Clean each surface or unit of Work to the condition expected from a commercial building cleaning and maintenance program. Comply with manufacturer's instructions.

B. Cleaning Operations: Complete the following cleaning operations before requesting inspection for certification of Substantial Completion for the entire Project or a portion of the Project.

1. Clean the Project Site, yard and grounds, in areas disturbed by construction activities, including landscape development areas, of rubbish, waste material, litter, and foreign substances.

2. Sweep paved areas broom clean. Rake grounds that are neither planted nor paved to a smooth, even-textured surface.
3. Broom clean concrete floors in unoccupied spaces.
4. Remove petrochemical spills, stains, and other foreign deposits.
5. Remove tools, construction equipment, machinery, and surplus material from the site.
6. Vacuum clean carpet and similar soft surfaces, removing debris and excess nap. Shampoo, if required.
7. Clean exposed exterior and interior hard-surfaced finishes to a dirt-free condition, free of stains, films, and similar foreign substances. Avoid disturbing natural weathering of exterior surfaces. Restore reflective surfaces to their original condition.
8. Remove debris and surface dust from limited access spaces, including roofs, plenums, shafts, trenches, equipment vaults, manholes, and similar spaces.
9. Remove marks, stains, fingerprints, and other soils or other dirt from painted, decorated, and natural finished woodwork and other Work.
10. Clean cabinet work removing stains, paint, dirt and dust.
11. Remove spots, plaster, soil and paint from ceramic tile, marble, and other finished materials, and wash or wipe clean.
12. Clean transparent materials, including mirrors and glass in doors and windows. Remove glazing compounds and other substances that are noticeable vision-obscuring materials. Replace chipped or broken glass and other damaged transparent materials. Polish mirrors and glass, taking care not to scratch surfaces.
13. Clean flooring materials thoroughly, comply with materials manufacturer’s instructions and recommendations.
14. Remove labels that are not permanent labels.
15. Touch up and otherwise repair and restore marred, exposed finishes and surfaces. Replace finishes and surfaces that cannot be satisfactorily repaired or restored or that already show evidence of repair or restoration.

    a. All restoration efforts shall be in strict accordance with LEED v4 requirements for Low Emitting Materials.

    b. Do not paint over "UL" and similar labels, including mechanical and electrical nameplates.

16. Clean food-service equipment to a sanitary condition, ready and acceptable for its intended use.
17. Wipe surfaces of mechanical and electrical equipment, elevator equipment, and similar equipment. Remove excess lubrication, paint and mortar droppings, and other foreign substances.
18. Clean plumbing fixtures to a sanitary condition, free of stains, including stains resulting from water exposure.
19. Clean light fixtures, lamps, globes, and reflectors to function with full efficiency. Replace burned-out bulbs.
20. Replace disposable air filters and clean permanent air filters. Clean exposed surfaces of diffusers, registers, and grills.
21. Clean ductwork, blowers, and coils of units that were operated during construction.
22. Remove debris and surface dust from limited access spaces, including roofs, plenums, shafts, trenches, equipment vaults, manholes, attics, and similar spaces.
23. Leave the Project clean and ready for occupancy.

C. Pest Control: Engage an experienced, licensed exterminator to make a final inspection and rid the Project of rodents, insects, and other pests. Comply with regulations of local authorities.

D. Removal of Protection: Remove temporary protection and facilities installed during construction to protect previously completed installations during the remainder of the construction period.

E. Compliances: Comply with governing regulations and safety standards for cleaning operations. Remove waste materials from the site and dispose of lawfully and in strict compliance with the project Construction Waste Management Plan.

1. Where extra materials of value remain after completion of associated Work, they become the Owner's property. Dispose of these materials as directed by the OAR.

2. The Contractor shall not dispose of debris or waste materials on the Owner’s property without the prior approval of the Owner.

F. Maintenance: Provide maintenance on completed construction as frequently as necessary through the remainder of the construction period. Adjust and lubricate operable components to assure operability without damaging effects.

3.2 PROTECTIONS

A. General: Supervise construction operations to assure that no part of the construction, completed or in progress, is subject to harmful, dangerous, damaging, or otherwise deleterious exposure during the construction period. Where applicable, such exposures include, but are not limited to, the following:

1. Excessive static or dynamic loading.
2. Excessive internal or external pressures.
3. Excessively high or low temperatures.
4. Thermal shock.
5. Excessively high or low humidity.
6. Air contamination or pollution.
7. Water or ice.
8. Solvents.
9. Chemicals.
10. Light.
11. Radiation.
12. Puncture.
13. Abrasion.
14. Heavy traffic.
15. Soiling, staining, and corrosion.
16. Bacteria.
17. Rodent and insect infestation.
18. Combustion.
19. Electrical current.
20. High-speed operation.
21. Improper lubrication.
22. Unusual wear or other misuse.
23. Contact between incompatible materials.
24. Destructive testing.
25. Misalignment.
26. Excessive weathering.
27. Unprotected storage.
28. Improper shipping or handling.
29. Theft.

END OF SECTION 01 74 23

SECTION 01 78 00 - CLOSEOUT SUBMITTALS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and General Conditions of Contract, including other Division 01 Specification Sections, apply to this Section. Refer to other specification sections for requirements and limitations applicable to Project Closeout.

1.2 SUMMARY

A. Closeout is defined to include general requirements near end of Contract Time, in preparation for Substantial Completion, Final Completion and Acceptance, Final Payment, normal termination of Contract, occupancy by Owner and similar actions evidencing completion of the Work. Specific requirements for individual units of Work are specified in other sections.

1.3 SUBSTANTIAL COMPLETION

A. General: Refer to the General Conditions of the Contract.

B. Procedures to achieving Substantial Completion:

~~1. Thirty (30) Days prior to requesting inspection for the certification of Substantial Completion, prepare and submit the preliminary LEED Closeout Matrix for acceptance (see specification Section 01 33 29 Sustainable Material Content Forms). Matrix shall identify all relevant specification sections.~~

2. The Contractor shall, five (5) business days prior to requesting inspection for certification of Substantial Completion, prepare and submit to the OAR the following:

    a. The Contractor's prepared comprehensive punch list of items to be completed or corrected. The punch list shall include all incomplete Work items and the schedule to complete each item.
    b. Draft Operation and Maintenance (O&M) Manuals for review by the OAR for conformance with the Contract documents. These will be returned to the Contractor.
    c. As-Built Documents (from Contractor) for review by the OAR for conformance with the Contract Documents. These will be returned to the Contractor.

3. The Contractor will request a preliminary inspection from the OAR for the determination that the Project is ready for the Substantial Completion Inspection. The Contractor will prior to the request:

    a. Complete its punch list and provide a copy to the OAR.
    b. Schedule inspections from the Authorities Having Jurisdiction and provide the time and date to the OAR.

4. If the OAR's preliminary inspection discloses any item that is not in accordance with the requirements of the Contract Documents, whether or not included on the Contractor's punch list, the OAR shall so notify the Contractor and the Contractor shall add the items to its punch list. The Contractor shall proceed to complete or correct every item on the revised punch list and request re-inspection from the OAR.
5. If the OAR determines that the Work is ready, the Substantial Completion Inspection will be scheduled at a minimum of three (3) business days after the OAR's preliminary inspection.
6. Form #008 Substantial Completion Acceptance (SCA) will be used to: document the time and place of the project closeout inspections, establish the participants to be involved in the inspections, establish the date of Substantial Completion, document the acceptance of the Substantial Completion punch list, document the date all Substantial Completion punch list items were completed and document the date of Final Completion.
7. The following parties will attend the Substantial Completion inspection: the OAR, the Contractor, and the Designer. The following Owner representatives may attend: GOAA ARFF, GOAA Construction, GOAA Engineering, GOAA Environmental, GOAA IT, GOAA Maintenance, GOAA Operations, GOAA Properties, GOAA Risk Management, and any involved tenant(s).
8. Following the inspection, the OAR and Designer will determine if the Work is substantially complete. If it is determined to be Substantially Complete, the OAR will use this date in the preparation of Form #007 Certificate of Substantial Completion (CoSC) and the Contractor in the preparation of the written warranties. The following will be used in the determination of the Substantial Completion date:

    a. Certificate of Occupancy/Certificate of Completion (CofO) or Agency Sign Off (as required). The date of the CofO does not establish the date for Substantial Completion.
    b. Recommendation from the OAR and Designer that the Project is Substantially Complete.
    c. Acceptance from the Contractor and OAR that the preliminary Substantial Completion punch lists represent most of the items required for completion of the Work. The OAR shall distribute the preliminary Substantial Completion punch lists to the Contractor within a maximum of three (3) business days after the date of Substantial Completion.
    d. Acceptance by the OAR of the draft warranties.
    e. Acceptance by the OAR of the draft Operation & Maintenance Manuals.
    f. Agreement from the Contractor and OAR that the Owner will have complete use or occupancy and may use, operate, and maintain the Project in all respects, for its intended purpose and without undue interference by the Contractor's Final Completion efforts.
    g. If any of the above items are not accepted or incomplete the Contractor shall correct any items found not to be in accordance with the requirements of the Contract Documents and once the items have been corrected, the Contractor shall provide a written request for re-review and or re-inspection.

9. When the Project is determined to be Substantially Complete the OAR will prepare a typed Substantial Completion punch list which includes any items from the preliminary Substantial Completion punch list that have not yet been completed plus all punch list items from the Designer, OAR, Owner and others, and Form #007 Certificate of Substantial Completion (CoSC) within fifteen (15) business days from the date of Substantial Completion. As a condition for Final Completion, the Contractor remains responsible for the correction of any work which does not comply with the requirements of the Contract, even if not listed on the Substantial Completion Punchlist and discovered after the Substantial Completion Punchlist and has been published. The OAR will schedule a meeting with the Contractor, Designer, and any Owner's representatives to:

1) Review Form #007 CoSC, all of its requirements and submit to the Contractor for appropriate acceptance and signature.
2) Review the attachments: Form #008 SCA, Substantial Completion punch list and the CofO.
3) Establish the date for the completion of the Substantial Completion punch list items.
4) Establish the responsibilities of the Owner and Contractor for security, maintenance, operations, cleaning and housekeeping, heating and cooling, utilities, damage to the Work and insurance.
5) Review and accept the Contractor's written warranties and guarantees from its Subcontractors and Suppliers bearing the date of Substantial Completion stating the period of warranty as required by the Contract Documents, the Final Operation & Maintenance Manuals, and As-built Documents.

1.4 PARTIAL OCCUPANCY OR USE

A. General: Refer to the General Conditions of the Contract.

B. The Owner may occupy or use any completed or partially completed portion of the Work at any stage and, if the Owner chooses such partial occupancy, the Contractor and Owner shall designate by an agreement the conditions of such partial occupancy, provided such occupancy or use is consented to by the Owner's insurer and authorized by public authorities having jurisdiction over the Work.

1. Such partial occupancy or use may commence whether or not the portion is Substantially Complete.

C. Procedures to achieving partial occupancy or use:

1. The Owner will request the OAR to coordinate with the Contractor for a partial occupancy or use of a portion of the Work.
2. If the OAR determines that the Work is ready, a partial occupancy or use inspection will be scheduled at a minimum of three (3) business days after the OAR's preliminary inspection.
3. Immediately prior to such partial occupancy or use inspection, the Owner, OAR, Contractor and Designer shall jointly inspect the area to be occupied or portion of the Work to be used in order to determine and record the condition of the Work.

a. The following parties will attend the partial occupancy or use inspection: the OAR, the Contractor, and the Designer. The following Owner representatives may attend: GOAA Construction, GOAA Engineering, GOAA Environmental, GOAA Maintenance, GOAA Operations, GOAA Properties, GOAA Risk Management, GOAA ARFF, and any involved tenant(s).
b. Following the inspection, the OAR and Designer will determine if the Work is ready for partial occupancy or use. If it is determined to be ready, the OAR will use this date in the preparation of Form #009 Partial Occupancy/Use (POUA) and the Contractor in preparation of any agreed upon written warranties. The following will be used in the determination of the POUA date:

1) Certificate(s) of Occupancy (CofO) / Agency Sign Off (as required) for the area being occupied.

2) Recommendation from the OAR and Designer that the Project is ready for partial occupancy or use.
3) Acceptance from the Contractor and OAR that the preliminary punch lists represent most of the items required for completion of the Work. The OAR shall distribute the preliminary punch lists to the Contractor within three (3) business days after the date of the POUA.
4) Acceptance by the OAR of the draft warranties if requested.
5) Acceptance by the OAR of the draft Operation & Maintenance Manuals if requested.
6) Agreement from the Contractor and OAR that the Owner will have complete occupancy or use and may use, operate, and maintain the Project in all respects, for its intended purpose and without undue interference by the Contractor's Final Completion efforts.
7) Agree that partial occupancy or use of a portion or portions of the Work shall not constitute acceptance of Work which is not in conformance with the requirements of the Contract Documents.

c. When the Project is determined to be ready for partial occupancy or use the OAR will prepare a typed punch list which includes any items from the preliminary punch list that have not yet been completed plus all punch list items from the Designer, OAR, Owner and others, and Form #009 Partial Occupancy/Use (POUA) within a maximum of fifteen (15) business days of the date of POUA. As a condition for Substantial and Final Completion, the Contractor remains responsible for the correction of any work which does not comply with the requirements of the Contract, even if not listed on the punch list and discovered after the punch list has been published. The OAR will schedule a meeting with the Contractor, Designer, and any Owner's representatives to:

1) Review Form #009 POUA, all of its requirements and submit to the Contractor for appropriate acceptance and signature.
2) Review the attachments: punch list and the CofO.
3) Establish the date for the completion of the punch list items.
4) Establish the responsibilities of the Owner and Contractor for security, maintenance, operations, cleaning and housekeeping, heating and cooling, utilities, damage to the Work and insurance.
5) Review and accept the requested Contractor's written warranties and guarantees from its Subcontractors and Suppliers bearing the date of the POUA stating the period of warranty as required by the Contract Documents.

1.5 FINAL COMPLETION

A. General: Refer to the General Conditions of the Contract.

B. Procedures: Complete the following.

1. Before requesting final inspection for certification of Final Completion and final payment, prepare and submit to the OAR the following:

a. Contractor's certified copy of the Substantial Completion punch list of items to be completed or corrected, stating that each item has been completed or otherwise resolved for acceptance, and the list has been endorsed and dated by the OAR.

b. Final meter readings for utilities, and similar data as of the date of Substantial Completion, or when the Owner took possession of and responsibility for corresponding elements of the Work.
c. Closeout Documentation Manual.

2. If the OAR determines that the Work is ready, the Final Completion Inspection will be scheduled at a minimum of three (3) business days after the OAR's preliminary inspection.

3. The following parties will attend the Final Completion inspection: the OAR, the Contractor, and the Designer. The following Owner representatives may attend: GOAA ARFF, GOAA Construction, GOAA Engineering, GOAA Environmental, GOAA IT, GOAA Maintenance, GOAA Operations, GOAA Properties, GOAA Risk Management, and any involved tenant(s).

4. Upon acceptance of the Final Completion Inspection, the Designer, OAR and GOAA Maintenance are to sign off on Part IV of Form #008 SCA and provide the final inspection date. The OAR is to provide the Contractor's completed punch list which will be field verified and each item initialed complete by the Designer and the OAR. The OAR is to provide documentation of FAA/FDOT final inspections, as required. Part IV of Form #008 SCA must be completed prior to processing the Contractor's final pay application.

C. If necessary, re-inspection will be repeated at the Contractor's expense. Re-inspection Procedure: The OAR and Designer will re-inspect the Work upon receipt of notice that the Work, including inspection list items from earlier inspections, has been completed, except items whose completion has been delayed because of circumstances acceptable to the OAR and Designer. Repeat Final Completion Procedures above until Final Completion is accepted.

1.6 CLOSEOUT DOCUMENTATION MANUAL

A. Description: Submit the manual in a vinyl covered, 3-ring binder; white, with hard cover, with clear vinyl pockets on front (sized to hold 8-1/2" x 11" sheets) and spine (minimum spine size 1", maximum 3"). Binder shall be "View Binder" as manufactured by Avery Consumer Products, AVE 0560 series, or approved equal. Each section shall be divided by an 8-1/2" x 11" reinforced, clear ring binder index, 5 tabs, as manufactured by Wilson Jones, Stock No. WJ-54125, or approved equal. Documents shall also be submitted in PDF format on a CD. The PDF file shall be enabled for Adobe Reader's Comment and Markup functionality. All stamps and markings described herein shall be electronically duplicated.

1. Full size, machine lettered labels shall be inserted into the front, back, and spine pockets. Labels shall be on white paper with black print, and shall clearly identify the following:

GREATER ORLANDO AVIATION AUTHORITY
ORLANDO INTERNATIONAL AIRPORT
H-00370, AIRSIDE 3 APRON PCC SLAB REHABILITATION
(Manual Title)
(Date)

2. Contents of the Manual shall include:

    a. First page shall be a Cover Page, identifying:

GREATER ORLANDO AVIATION AUTHORITY
ORLANDO INTERNATIONAL AIRPORT
H-00370, AIRSIDE 3 APRON PCC SLAB REHABILITATION
(Manual Title)
(Date)

    b. Second page shall be a Table of Contents.
    c. The next section shall list the Names, Addresses, Contacts, and Phone Numbers for the following:

        1) OAR(s)
        2) Designer(s)
        3) Contractor
        4) Subcontractors (first-tier)

    d. Change Order Summary (prepared by GOAA)
    e. Summary of Disbursements (prepared by GOAA)
    f. Receipt/Acceptance Form for As-Built Documents

        1) Progress and As-Built Drawing Certification(s) for each applicable Subcontractor (Exhibit D; prepared by Contractor)
        2) GOAA Construction Form # 011 (prepared by OAR) with Transmittal to GOAA ENGINEERING (signed by GOAA Engineering)

    g. Receipt Form for O&M Manuals (GOAA Construction Form # 012; prepared by OAR) with Transmittal to GOAA MAINTENANCE (signed by GOAA Maintenance)
    h. Parking Permit Office Release Form (GOAA Construction Form # 001; prepared by Contractor) (signed by GOAA Ground Transportation)
    i. Badge & I.D. Office Release Form (GOAA Construction Form # 002; prepared by Contractor) (signed by GOAA Access Control)
    j. Key Shop Release Form (GOAA Construction Form # 003; prepared by Contractor) (signed by GOAA Lockshop)
    k. Environmental Group Letter of Concurrence for Closeout (if applicable; prepared by GOAA)
    l. Certificate(s) of Substantial Completion (GOAA Construction Form # 007; prepared by OAR)

        1) Substantial Completion Acceptance with Final Substantial Completion Punch list initialed and dated by Contractor (GOAA Construction Form # 008; prepared by OAR)
        2) Partial Occupancy / Use Agreement(s), or POUA (GOAA Construction Form # 009; prepared by OAR)
        3) FAA / FDOT Final Inspection(s) (if applicable; if project has FAA and/or FDOT funding, provide documentation of the invitation to FAA / FDOT and/or the appropriate sign off)

    m. Certificate(s) of Occupancy / Agency Sign Off (furnished by Contractor)

n. Current Certificate of Insurance: (furnished by Contractor)

1) a certificate evidencing that insurance required by the Contract Documents to remain in force after final payment is currently in effect and will not be canceled or allowed to expire until at least 30 days prior written notice has been given to the Owner: and

2) a written statement that the Contractor knows no substantial reason that the insurance will not be renewable to cover the period required by the Contract Documents

o. Consent of Surety to Final Payment with Power of Attorney (AIA Form # G707; furnished by Contractor) (original)
p. Final Release Form from General Contractor (Specification Section 00 65 19.29; prepared by Contractor) (original, notarized with corporate seal)
q. Final Release Form(s) from Subcontractors / Suppliers (Specification Section 00 65 19.33; prepared by Subcontractor)
r. Final Payment Application (2 originals, signed and notarized by Contractor and signed by Designer and OAR (DBE/MWBE/LDB Disbursement Page completed with Subcontractor performance rating and total payment)
s. Executed Originals of Warranties/Guarantees.

1.7 AS-BUILT DOCUMENTS

A. General: Do not use as-built documents for construction purposes; protect from deterioration and loss in a secure, fire-resistive location; provide access to as-built documents for the OAR's reference during normal working hours.

1. Submit all As-Built Documents to the OAR as specified in Paragraph 1.3.B.
2. Include fire alarm and building control system(s) drawings and specifications.

B. As-Built Documents: As-Built Documents include Drawings, Specifications, Addenda, Change Orders, and other Modifications. Maintain a clean, undamaged set of blue or black line white-prints of Contract Drawings and Shop Drawings. Mark the set to show the actual installation where the installation varies from the Work as originally shown. Mark whichever drawing is most capable of showing conditions fully and accurately; where Shop Drawings are used, record a cross-reference at the corresponding location on the Contract Drawings. Give particular attention to concealed elements that would be difficult to measure and record at a later date.

1. Mark As-Built sets with red erasable pencil; use other colors to distinguish between variations in separate categories of the Work.
2. Mark new information that is important to the Owner, but was not shown on Contract Drawings or Shop Drawings.
3. Note related Change Order numbers where applicable.
4. Organize As-Built drawing sheets into manageable sets, bind with durable paper cover sheets, and print suitable titles, dates and other identification on the cover of each set.
5. Mark EVERY PAGE of the Drawings with "As-Built".

C. Accurate as-built documents are very important for the Owner and serve several important functions. The Owner utilizes the as-built documents for operation and maintenance, and future

modifications, renovations, and particularly for mechanical, plumbing and electrical systems, which are mostly hidden from view.

1. The working as-built shall show, but shall not be limited to, the following:

   a. All concealed and underground utilities, equipment, foundations or other permanent conditions shall be surveyed and documented. This includes all discovered conditions. All shall be tied to permanent benchmarks showing horizontal and vertical data including but not limited to: beginning/end points, changes in direction points, inverts, grades of drainage, depths below the surface, all surface or underground components such as valves, manholes, drop inlets, clean outs, meters, corner points, etc. Each of the above shall also include a description of: actual quantity, size, and material. GPS coordinates are to be provided for all.
   b. The location and dimensions of any changes within the building structure and architectural components. The dimensions shall be actual field measurements.
   c. Correct dimensions and details transferred from shop drawings.
   d. Correct grade, elevations, cross section, or alignment of roads, earthwork, structures or utilities if any changes were made from contract plans.
   e. Actual location of anchors, construction and control joints, etc., in concrete.
   f. Changes in location of equipment and architectural features.
   g. Where Contract drawings or specifications present options, only the option selected for construction shall be shown on the final as-built prints. Cross out such words and phrases as "optimal requirement," "or approved substitution," etc., and list specifically the items of material provided.
   h. Unusual or uncharted obstructions that are encountered in the contract work area during construction.
   i. Changes in details of design or additional information obtained from working drawings specified to be prepared and/or furnished by the Contractor; including but not limited to fabrication, erection, installation plans and placing details, pipe sizes, insulation material, dimensions of equipment foundations, etc.
   j. If borrow material for this project is from sources on the Owner’s property, or if Owner’s property is used as a spoil area, the Contractor shall furnish a contour map of the final borrow pit/spoil area elevations.
   k. Layout and schematic drawings of electrical circuits and piping. See the Electrical Specifications for the level of detail required to be accurately documented.
   l. Layout and schematic drawings of mechanical and plumbing systems and piping. All shall be tied to permanent benchmarks showing horizontal and vertical data of primary and secondary branches.
   m. Systems designed or enhanced by the Contractor, such as HVAC controls, fire alarm, fire sprinkler, and irrigation systems. All shall be tied to permanent benchmarks showing horizontal and vertical data of primary and secondary branches.
   n. Changes or modifications that result from the final inspection.

1.8 OPERATION & MAINTENANCE MANUALS

A. General: If all specified information can be submitted in a single binder without being overfilled, submit two (2) copies in a white binder with white labels.

   1. If all of the information cannot be submitted in a single binder, submit two (2) per design discipline as follows:

a. Architectural; submit in a white binder with white labels.
b. Mechanical; submit in a white binder with green labels.
c. Fire Protection; submit in a white binder with red labels.
d. Electrical; submit in a black binder with white labels.
e. Civil; submit in a white binder with yellow labels.

2. Submit O&M Manuals to OAR as specified in Paragraph 1.3.B.

B. Description: Submit the manual in a vinyl covered, 3-ring binder; with hard cover, with clear vinyl pockets on front (sized to hold 8-1/2" x 11" sheets) and spine (minimum spine size 1", maximum 3"). Binder shall be "View Binder" as manufactured by Avery Consumer Products, AVE 0560 series, or approved equal. Provide additional binders if a single 3-inch binder is insufficient to contain all closeout information. Each section shall be divided by an 8-1/2" x 11" reinforced, clear ring binder index, 5 tabs. as manufactured by Wilson Jones, Stock No. WJ-54125, or approved equal. Documents shall also be submitted in PDF format on a CD. The PDF file shall be enabled for Adobe Reader's Comment and Markup functionality. All stamps and markings described herein shall be electronically duplicated.

1. Full size, machine lettered labels shall be inserted into the front, back, and spine pockets. Labels shall be on paper in color(s) specified with black print, and shall clearly identify the following:

GREATER ORLANDO AVIATION AUTHORITY
ORLANDO INTERNATIONAL AIRPORT
H-00370, AIRSIDE 3 APRON PCC SLAB REHABILITATION
(Manual Title)
(Date)

2. Contents of the Manual shall include:

a. First page shall be a Cover Page, identifying:

GREATER ORLANDO AVIATION AUTHORITY
ORLANDO INTERNATIONAL AIRPORT
H-00370, AIRSIDE 3 APRON PCC SLAB REHABILITATION
(Manual Title)
(Date)

b. Second page shall be a Table of Contents indicating the contents of the binder(s).
c. The third page shall list the Names, Addresses, Contacts, and Phone Numbers for the following:

1) OAR
2) Designer(s)
3) General Contractor
4) Subcontractors
5) Sub-subcontractors
6) Suppliers

d. The remaining portions of the manual shall be separated by each major division of work as identified by the Contract Documents.

1) PROJECT INFORMATION (Exhibit A).
2) Within each major division of work, each section shall be individually identified by a typed index/tab. For each specification requirement, submit the following information in the order outlined below:

a) Copies of all warranties/guarantees, as specifically required by the specification section, and Letters of Certification. Executed original warranties/guarantees shall be included in the appropriate section of the Closeout Manual(s).
b) Copies of the "Approved" Shop Drawing/Submittals/ Equipment Manufacturer's Schematics. Oversized drawings shall be folded and inserted in clear vinyl pockets or, for large sets of drawings, provide an insert page stipulating that the drawings are stored at GOAA ENGINEERING. All copies shall be stamped with the appropriate review stamp, marked, signed, and dated.
c) Operation and Maintenance Instructions, including but not limited to:

- Manufacturer's Recommended Care and Cleaning
- Installation Instructions
- Parts Lists
- Lubrication Checklists
- Equipment Supplier Lists
- Special Instructions
- Preventive Maintenance Instructions.

d) Service and Maintenance Contracts: Include Name, address, and phone number and contact of Manufacturer's authorized repair company.
e) Completed GOAA Turnover Forms:

- Performance Verification and Demonstration to Owner (Exhibit B) signed by Contractor and GOAA representative
- Voltage and amperage Readings (Exhibit C) signed by Contractor, Designer and OAR
- Motor Test Information (Exhibit D) signed by Contractor and OAR
- Check-out Memo (Exhibit E) signed by Contractor and Manufacturer’s representative

f) Equipment and/or Systems Test Data and Conductor Insulation Resistance Test Data Sheets by installer and/or manufacturer where required. Form(s) to be provided by the installer and/or manufacturer performing the test [Exhibits G, H (signed by Contractor, Designer and GOAA representative), I (signed by Contractor, Subcontractor and GOAA), J (signed by Contractor and OAR) and K (signed by Contractor, Designer and OAR)].
g) Copies of electrical panel schedules and directories.

C. Submit one copy of the O&M manual in PDF format on CD-ROM. Create a PDF file for each section of the manual. PDF files shall be named BPXXX OM Sec XXXXX.pdf

PART 2 - PRODUCTS (Not Applicable)

PART 3 - EXECUTION

3.1 CLOSEOUT PROCEDURES

A. Operation and Maintenance Instructions: Arrange for each installer of equipment that requires regular maintenance to meet with the Owner's personnel to provide instruction in proper operation and maintenance. If installers are not experienced in procedures, provide instruction by manufacturer's representatives. Include a detailed review of the following items:

1. Operation and Maintenance manuals.
2. As-Built Documents.
3. Spare parts and materials.
4. Tools.
5. Lubricants.
6. Fuels.
7. Identification systems.
8. Control sequences.
9. Hazards.
10. Cleaning.
11. Warranties and bonds.
12. Maintenance agreements and similar continuing commitments.

B. As part of instruction for operating equipment, demonstrate the following procedures:

1. Start-up.
2. Shutdown.
3. Emergency operations.
4. Noise and vibration adjustments.
5. Safety procedures.

3.2 CLEANING

A. General: General cleaning during construction is required.

B. Final Cleaning: Refer to Section 01 74 23, Final Cleaning.

3.3 ATTACHMENTS

A. The following information sheets have been included in this Section:

1. Exhibit A: Project Information
2. Exhibit B: Performance Verification and Demonstration to Owner
3. Exhibit C: Voltage and Amperage Readings
4. Exhibit D: Motor Test Information
5. Exhibit E: Check-Out Memo
6. Exhibit F: Progress and As-Built Document Certification

7. Exhibit G: D-C High Voltage Cable Test Report
8. Exhibit H: Ground Test Information
9. Exhibit I: Spare Parts Certification Memo
10. Exhibit J: Existing Facilities Investigation Memo
11. Exhibit K: Conductor Insulation Resistance Test Memo
12. Example: Description Sheet – Cover
13. Example: Description Sheet - Spine

EXHIBIT A
PROJECT INFORMATION
Orlando International Airport

Contractor shall fill in the blanks below and insert in the Operation and Maintenance Manuals.
Submit one (1) sheet for each major division of Work.

Project Name: _____

Specification Division Number & Name: _____

Subcontractor: _____

Contact:_____ Phone: ____

Date Project Bid: _____

Project Start Date: _____

Days allowed for Construction: _____

Target Completion: _____

Substantial Completion Certification Date: _____

	Date Submitted	Date Provided
Close-out Documentation Manual:	_____	_____
Operation and Maintenance Manuals:	_____	_____
Owner Performance Verification and Demonstrations:	_____	_____
Manufacturer's Performance Verification Memos:	_____	_____
Manufacturer's Test Data:	_____	_____
Record Documents:	_____	_____

EXHIBIT B
PERFORMANCE VERIFICATION AND DEMONSTRATION TO OWNER
Orlando International Airport

This form verifies that the Owner has been given a demonstration of the proper operation on the equipment or systems noted below.

Project Name: _____

Specification Division Number & Name: _____

Equipment/Systems Demonstrated: _____

Along with a complete demonstration of the equipment/system, these items have been reviewed at this demonstration and shall be included in the Operation and Maintenance Manuals, under the appropriate specification section:

1) Written operating instructions.
2) Test data and performance verification information as required by the installer and/or manufacturer.
3) Maintenance information published by manufacture's representative.
4) Check-out Memo signed by manufacturer's representative.
5) Printed warranties by manufacturer of equipment.
6) Explanation of the warranty/guarantee on the system.
7) Prints showing actual "As-Built" conditions.

(Name of General Contractor) ___ (Signature, Title, Date)

(Name of Subcontractor) ___ (Signature, Title, Date)

A demonstration of the system/equipment in operation and of the maintenance procedures has been successfully completed.

GREATER ORLANDO AVIATION AUTHORITY

(Signature, Date) ___ (GOAA Department)

EXHIBIT C
VOLTAGE AND AMPERAGE READINGS
Orlando Executive Airport

Project Name: _____

Switchgear/Panelboard: _____

Full Load Amperage Readings: Date: _____ Time: _____

Phase A: _____
Phase B: _____
Phase C: _____
Neutral: _____
Ground: _____

Full Load Voltage Readings: Date: _____ Time: _____

Phase: A to N _____ A to B _____
B to N _____ A to C _____
C to N _____ B to C _____

Voltage at the End of the Longest Branch: _____

Type of Load: _____

No Load Voltage Readings: Date: _____ Time: _____

Phase: A to N _____ A to B _____
B to N _____ A to C _____
C to N _____ B to C _____

Contractor's Representative: _____
Date

Engineer's Representative: _____
Date

Owner's Authorized Representative: _____
Date

EXHIBIT D
MOTOR TEST INFORMATION
Orlando Executive Airport

Project Name: _____

Description of Motor: _____

Checked By: _____ Date Checked: _____

a) Name and Identifying Mark of Motor (Indicate at existing): _____

b) Manufacturer: _____

c) Model Number: _____

d) Serial Number: _____

e) RPM: _____

f) Frame Size: _____

g) Code Letter: _____

h) Horsepower: _____

i) Nameplate, Voltage and Phase: _____

j) Nameplate Amps: _____

k) Actual Voltage: _____

l) Actual Amps: _____

m) Starter Manufacturer: _____

n) Starter Size: _____

o) Heater Size, Catalog No. and Amp Rating: _____

p) Manufacturer of Dual-Element Fuse: _____

q) Amp Rating of Fuse: _____

r) Power Factor: _____

Contractor's Representative: _____
Date

Signature of Checker: _____
Date

Owner's Authorized Representative: _____
Date

EXHIBIT E
CHECK-OUT MEMO
Orlando International Airport

This form shall be completed and a copy provided to the Owner at the Owner's Performance Verification and Demonstration meeting. A copy shall also be included in the specification section of the Operation and Maintenance Manual for the equipment checked.

Project Name: _____

Type of Equipment Checked: _____

Equipment Number: _____

Name of Equipment Manufacturer: _____

Signature below by the Manufacturer's authorized representative signifies that the equipment has been satisfactorily tested and checked out on the job by the manufacturer.

1. The attached Test Data and Performance Verification information was used to evaluate the equipment installation and operation.

2. The equipment is properly installed, has been tested by the manufacturer's authorized representative, and is operating satisfactorily in accordance with all requirements, except for items noted below. *

3. Written operating and maintenance information has been presented to the Contractor, and gone over with him in detail.

4. Sufficient copies of all applicable operating and maintenance information, part lists, lubrication checklists, and warranties have been furnished to the Contractor for insertion in the Operation and Maintenance Manuals.

Manufacturer's Representative: _____
(Print or Type Name and Title)

(Print or Type Address and Phone Number)

Signature of Manufacturer's Representative: _____
Date Checked
Witnessed By: _____
(Signature and Title of Contractor's Representative)

*Exceptions Noted at Time of Check-Out: (Use additional pages if necessary.)

EXHIBIT F
PROGRESS AND AS-BUILT DRAWING CERTIFICATION
Orlando International Airport

This form shall be completed and submitted with the As-Built Documents. Submit one form for each contractor/subcontractor providing as-built information. Include a copy of this form in the Close-out Documentation Manual.

Project Name: _____

Specification Division Number & Name: _____

The Contractor's and Subcontractor's signatures below certify that the attached drawings and specifications were marked and revised as items were installed/changed during the course of construction, and that these documents represent and accurate "As-Built" condition of the work as actually installed.

_____
(Name of General Contractor)

_____
(Signature, Title, Date)

_____
(Name of Subcontractor)

_____
(Signature, Title, Date)

EXHIBIT G
D-C HIGH VOLTAGE CABLE TEST REPORT
(Refer to Specification Section 26 00 90)

Project Name: _____
Location: _____

Description: _____
Rated Voltage: _____

TEST DATA

Set Leakage at Test Voltage _____ma Variac _____

Pri. Voltage _____ Sphere Gap _____Inches

Duct Temp. _____Ambient Temp._____ Weather_____
Cable Status _____1 hour prior to test.

TEST RESULTS

Phase or Conductor	A	B	C	Remarks
Starting Time				
	MA	MA	MA	
0				
15 sec.				
30 sec.				
45 sec.				
1 min.				
2 min.				
3 min.				
4 min.				
5 min.				

Final Test Voltage: _____ Time Finish: _____

KV DC After 1 Min.: Test Procedure _____ No. of Terminals _____
Joints _____
Witnessed By: _____
Performed By: _____ _____

EXHIBIT H
GROUND TEST INFORMATION
(Refer to Specification Section 26 00 10)

Project Name: _____

Ground Type: _____

Test By: _____

Date of Test: _____

Ground Location: _____

Ground Type (rod, water pipe, etc.): _____

Prior to Connection to System: Ground: _____(OHMS)

After Connection to System: Ground: _____(OHMS)

Weather Conditions (Wet/Dry): _____ Soil Conditions (Wet/Dry): _____

Contractor's Representative: _____
Date

Engineer's Representative: _____
Date

Owner's Representative: _____
Date

EXHIBIT I
SPARE PARTS CERTIFICATION MEMO
(Refer to Division 26 Specifications)

This form shall be completed and a copy provided to the Owner at the Owner's Performance Verification and Demonstration meeting. A copy shall also be included in the specifications section of each Operation and Maintenance Manual for the equipment checked.

Name of Project: _____

Type of Spare Parts: _____

Specification Reference: _____

Quantity of Spare Parts: _____

Signature below by the Contractor and subcontractor signifies that the spare parts required by the drawings and/or specifications have been turned over to the Owner. Signature by the Owner acknowledges receipt of the same spare parts.

Name of General Contractor: _____

Authorized Signature and Title: _____

Date: _____

Name of Subcontractor: _____

Authorized Signature and Title: _____

Date: _____

Name of Owner: _____

Authorized Signature and Title: _____

Date: _____

EXHIBIT J
EXISTING FACILITIES INVESTIGATION MEMO
(Refer to Specification Section 26 00 90)

Name of Project: _____

The existing systems on the above project have been investigated and checked to determine the existing condition of all existing electrical systems within the area(s) affected by the scope of work on this project. The investigation consisted of testing all electrical systems/devices as required by Section 26 00 90 of these specifications.

All equipment was found to be operational except as noted herein:

_____

_____

_____

_____

_____

_____

_____

Name of Prime Contractor: _____

Authorized Signature and Title: _____
Date
Name of Authorized Owner Representative: _____

Authorized Signature and Title: _____
Date

Note To Contractor: Upon completion of investigation and one week prior to the commencement of work, submit five copies of the completed EXISTING FACILITIES INVESTIGATION MEMO to the Owner's Authorized Representative, signed and dated by the Contractor. The Owner's Authorized Representative signature and date is required to verify receipt of memo. Retain copy(ies) and submit copy of MEMO in each Operation and Maintenance Manual. Contractor shall submit quantities of Memos as required to present required information.

EXHIBIT K
CONDUCTOR INSULATION RESISTANCE TEST MEMO
(Refer to Specification Section 26 00 90)

NAME OF PROJECT: _____

Conductor Location From: _____ To: _____

Size of Conductor _____

Insulation Type _____ Insulation Voltage Rating _____

Date of Test_____Time of Test _____

Weather Conditions _____

Test Voltage (DC) _____ Range _____

Megger Instrument/Serial Number _____

Testing Methodology _____

INSULATION RESISTANCE MEASUREMENT
(Acceptable Measurement not to be less than one (1) Megohm)

Phase A to Ground _____

Phase B to Ground _____

Phase C to Ground _____

Neutral to Ground _____

Isolated Ground to Ground _____

Name of General Contractor: _____

Authorized Signature and Title: _____
Date

Name of Consulting Engineer: _____

Authorized Signature and Title: _____
Date

Name of Owner's Authorized Representative: _____

Authorized Signature and Title: _____
Date

EXAMPLE - Description Sheet - Cover

GREATER ORLANDO
AVIATION AUTHORITY

ORLANDO
INTERNATIONAL
AIRPORT

BID PACKAGE NO. H-00370

H-00370, AIRSIDE 3 APRON PCC SLAB REHABILITATION

OPERATION AND MAINTENANCE MANUAL

EXAMPLE - Description Sheet - Spine

G.O.A.A. **O.I.A.** **H-00370** **H-00370, AIRSIDE 3 APRON PCC SLAB REHABILITATION** **ELECTRICAL** **OPERATION** **AND** **MAINTENANCE** **MANUAL**

G.O.A.A. **O.I.A.** **H-00370** **H-00370, AIRSIDE 3 APRON PCC SLAB REHABILITATION** **SYSTEMS** **OPERATION** **AND** **MAINTENANCE** **MANUAL**

END OF SECTION 01 78 00

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DIVISION 2

TECHNICAL SPECIFICATIONS

SECTION	TITLE
C-100	CONTRACTOR QUALITY CONTROL PROGRAM (CQCP)
C-102	TEMPORARY AIR AND WATER POLLUTION, SOIL EROSION, AND SILTATION CONTROL
C-105	MOBILIZATION
C-106	SAFETY, SECURITY AND MAINTENANCE OF TRAFFIC (CSPP)
C-110	METHOD OF ESTIMATING PERCENTAGE OF MATERIAL WITHIN SPECIFICATION LIMITS (PWL)
P-101	PREPARATION/REMOVAL OF EXISTING PAVEMENTS
P-152	EXCAVATION, SUBGRADE AND EMBANKMENT
P-306	LEAN CONCRETE BASE COURSE
P-501	CEMENT CONCRETE PAVEMENT
P-605	JOINT SEALANTS FOR PAVEMENTS
P-620	RUNWAY AND TAXIWAY MARKING

APPENDIX A FAA ADVISORY CIRCULARS

AC 150/5370-2G	OPERATIONAL SAFETY ON AIRPORTS DURING CONSTRUCTION
AC 150/5200-18D	AIRPORT SAFETY SELF INSPECTION
AC 150/5210-5D	PAINTING, MARKING & LIGHTING OF VEHICLES USED ON AN AIRPORT

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ITEM C-100 CONTRACTOR QUALITY CONTROL PROGRAM (CQCP)

100-1 General. Quality is more than test results. Quality is the combination of proper materials, testing, workmanship, equipment, inspection, and documentation of the project. Establishing and maintaining a culture of quality is key to achieving a quality project. The Contractor shall establish, provide, and maintain an effective Contractor Quality Control Program (CQCP) that details the methods and procedures that will be taken to assure that all materials and completed construction required by this contract conform to contract 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 here and elsewhere in the contract technical specifications, the Contractor shall assume full responsibility for accomplishing the stated purpose.

The Contractor shall establish a CQCP that will:

a. Provide qualified personnel to develop and implement the CQCP.

b. Provide for the production of acceptable quality materials.

c. Provide sufficient information to assure that the specification requirements can be met.

d. Document the CQCP process.

The Contractor shall not begin any construction or production of materials to be incorporated into the completed work until the CQCP has been reviewed and approved by the ***Owner's Authorized Representative (OAR)*** ~~Resident Project Representative (RPR)~~. No partial payment will be made for materials subject to specific quality control (QC) requirements until the CQCP has been reviewed and approved.

The QC requirements contained in this section and elsewhere in the contract technical specifications are in addition to and separate from the quality assurance (QA) testing requirements. QA testing requirements are the responsibility of the ~~RPR~~ ***OAR*** or Contractor as specified in the specifications.

A Quality Control (QC)/Quality Assurance (QA) workshop with the Engineer, ~~Resident Project Representative (RPR)~~ ***OAR***, Contractor, subcontractors, testing laboratories, and Owner's representative must be held prior to start of construction. The QC/QA workshop will be facilitated by the Contractor. The Contractor shall coordinate with the Airport and the ~~RPR~~ ***OAR*** on time and location of the QC/QA workshop. Items to be addressed, at a minimum, will include:

a. Review of the CQCP including submittals, QC Testing, Action & Suspension Limits for Production, Corrective Action Plans, Distribution of QC reports, and Control Charts.

b. Discussion of the QA program.

c. Discussion of the QC and QA Organization and authority including coordination and information exchange between QC and QA.

d. Establish regular meetings to discuss control of materials, methods and testing.

e. Establishment of the overall QC culture.

100-2 Description of program.

a. General description. The Contractor shall establish a CQCP to perform QC inspection and testing of all items of work required by the technical specifications, including those performed by subcontractors. The CQCP shall ensure conformance to applicable specifications and plans with respect to materials, off-site fabrication, workmanship, construction, finish, and functional performance. The CQCP shall be effective for control of all construction work performed under this Contract and shall specifically 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 QC.

b. Contractor Quality Control Program (CQCP). The Contractor shall describe the CQCP in a written document that shall be reviewed and approved by the ***OAR*** ~~RPR~~ prior to the start of any production, construction, or off-site fabrication. The written CQCP shall be submitted to the ***OAR*** ~~RPR~~ for review and approval at least 14 calendar days before the CQCP Workshop. The Contractor's CQCP and QC testing laboratory must be approved in writing by the ***OAR*** ~~RPR~~ prior to the Notice to Proceed (NTP).

The CQCP shall be organized to address, as a minimum, the following:

1. QC organization and resumes of key staff
2. Project progress schedule
3. Submittals schedule
4. Inspection requirements
5. QC testing plan
6. Documentation of QC activities and distribution of QC reports
7. Requirements for corrective action when QC and/or QA acceptance criteria are not met
8. Material quality and construction means and methods. Address all elements applicable to the project that affect the quality of the pavement structure including subgrade, subbase, base, and surface course. Some elements that must be addressed include, but is not limited to mix design, aggregate grading, stockpile management, mixing and transporting, placing and finishing, quality control testing and inspection, smoothness, laydown plan, equipment, and temperature management plan.

The Contractor must add any additional elements to the CQCP that is necessary to adequately control all production and/or construction processes required by this contract.

100-3 CQCP organization. The CQCP shall be implemented by the establishment of a QC organization. An organizational chart shall be developed to show all QC personnel, their authority, and how these personnel integrate with other management/production and construction functions and personnel.

The organizational chart shall identify all QC staff by name and function, and shall indicate the total staff required to implement all elements of the CQCP, including inspection and testing for each item of work. If necessary, different technicians can be used 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 CQCP, the personnel assigned shall be subject to the qualification requirements of paragraphs 100-03a and 100-03b. The organizational chart shall indicate which personnel are Contractor employees and which are provided by an outside organization.

The QC organization shall, as a minimum, consist of the following personnel:

a. Program Administrator. The Contractor Quality Control Program Administrator (CQCPA) must be a full-time on-site employee of the Contractor, or a consultant engaged by the Contractor. The CQCPA must have a minimum of five (5) years of experience in QC pavement construction with prior QC experience on a project of comparable size and scope as the contract.

Included in the five (5) years of paving/QC experience, the CQCPA must meet at least one of the following requirements:

(1) Professional Engineer with one (1) year of airport paving experience.

(2) Engineer-in-training with two (2) years of airport paving experience.

(3) National Institute for Certification in Engineering Technologies (NICET) Civil Engineering Technology Level IV with three (3) years of airport paving experience.

(4) An individual with four (4) years of airport paving experience, with a Bachelor of Science Degree in Civil Engineering, Civil Engineering Technology or Construction.

The CQCPA must have full authority to institute any and all actions necessary for the successful implementation of the CQCP to ensure compliance with the contract plans and technical specifications. The CQCPA authority must include the ability to immediately stop production until materials and/or processes are in compliance with contract specifications. The CQCPA must report directly to a principal officer of the construction firm. The CQCPA may supervise the Quality Control Program on more than one project provided that person can be at the job site within two (2) hours after being notified of a problem.

b. QC technicians. A sufficient number of QC technicians necessary to adequately implement the CQCP must be provided. These personnel must be either Engineers, engineering technicians, or experienced craftsman with

qualifications in the appropriate field equivalent to NICET Level II in Civil Engineering Technology or higher, and shall have a minimum of two (2) years of experience in their area of expertise.

The QC technicians must report directly to the CQCPA and shall perform the following functions:

(1) Inspection of all materials, construction, plant, and equipment for conformance to the technical specifications, and as required by paragraph 100-6.

(2) Performance of all QC tests as required by the technical specifications and paragraph100-8.

(3) Performance of tests for the ***OAR*** ~~RPR~~ when required by the technical specifications.

Certification at an equivalent level of qualification and experience by a state or nationally recognized organization will be acceptable in lieu of NICET certification.

c. Staffing levels. The Contractor shall provide sufficient qualified QC 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 CQCP shall state where different technicians will be required for different work elements.

100-4 Project progress schedule. Critical QC activities must be shown on the project schedule as required by ***the contract documents*** ~~Section 80, paragraph 80-03, *Execution and Progress*~~.

100-5 Submittals schedule. The Contractor shall submit a detailed listing of all submittals (for example, mix designs, material certifications) and shop drawings required by the technical specifications. The listing can be developed in a spreadsheet format and shall include as a minimum:

a. Specification item number

b. Item description

c. Description of submittal

d. Specification paragraph requiring submittal

e. Scheduled date of submittal

100-6 Inspection requirements. QC 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 paragraph 100-9.

Inspections shall be performed as needed to ensure continuing compliance with contract requirements until completion of the particular feature of work. Inspections shall include the following minimum requirements:

a. During plant operation for material production, QC test results and periodic inspections shall be used to ensure the quality of aggregates and other mix components, and to adjust and control mix proportioning to meet the approved mix design and other requirements of the technical specifications. All equipment used in proportioning and mixing shall be inspected to ensure its proper operating condition. The CQCP shall detail how these and other QC functions will be accomplished and used.

b. During field operations, QC test results and periodic inspections shall be used to ensure the quality of all materials and workmanship. All equipment used in placing, finishing, and compacting shall be inspected to ensure its proper operating condition and to ensure that all such operations are in conformance to the technical specifications and are within the plan dimensions, lines, grades, and tolerances specified. The CQCP shall document how these and other QC functions will be accomplished and used.

100-7 Contractor QC testing facility.

a. For projects that include Item P-401, Item P-403, and Item P-404, the Contractor shall ensure facilities, including all necessary equipment, materials, and current reference standards, are provided that meet requirements in the following paragraphs of ASTM D3666, *Standard Specification for Minimum Requirements for Agencies Testing and Inspecting Road and Paving Materials*:

- 8.1.3 Equipment Calibration and Checks;
- 8.1.9 Equipment Calibration, Standardization, and Check Records;

- 8.1.12 Test Methods and Procedures

b. For projects that include P-501, the Contractor shall ensure facilities, including all necessary equipment, materials, and current reference standards, are provided that meet requirements in the following paragraphs of ASTM C1077, Standard Practice for Agencies Testing Concrete and Concrete Aggregates for Use in Construction and Criteria for Testing Agency Evaluation:

- Test Methods and Procedures
- Facilities, Equipment, and Supplemental Procedures

100-8 QC testing plan. As a part of the overall CQCP, the Contractor shall implement a QC 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 QC tests that the Contractor deems necessary to adequately control production and/or construction processes.

The QC testing plan can be developed in a spreadsheet fashion and shall, as a minimum, include the following:

a. Specification item number (e.g., P-401)

b. Item description (e.g., Hot Mix Asphalt Pavements)

c. Test type (e.g., gradation, grade, asphalt content)

d. Test standard (e.g., ASTM or American Association of State Highway and Transportation Officials (AASHTO) test number, as applicable)

e. Test frequency (e.g., as required by technical specifications or minimum frequency when requirements are not stated)

f. Responsibility (e.g., plant technician)

g. Control requirements (e.g., target, permissible deviations)

The QC testing plan shall contain a statistically-based procedure of random sampling for acquiring test samples in accordance with ASTM D3665. The ***OAR*** ~~RPR~~ shall be provided the opportunity to witness QC sampling and testing.

All QC test results shall be documented by the Contractor as required by paragraph 100-9.

100-9 Documentation. The Contractor shall maintain current QC records of all inspections and tests performed. These records shall include factual evidence that the required QC 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.

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. Legible copies of these records shall be furnished to the ***OAR*** ~~RPR~~ daily. The records shall cover all work placed subsequent to the previously furnished records and shall be verified and signed by the CQCPA.

Contractor QC records required for the contract shall include, but are not necessarily limited to, the following records:

a. Daily inspection reports. Each Contractor QC technician shall maintain a daily log of all inspections performed for both Contractor and subcontractor operations. These technician's daily reports shall provide factual evidence that continuous QC inspections have been performed and shall, as a minimum, include the following:

(1) Technical specification item number and description

(2) Compliance with approved submittals

(3) Proper storage of materials and equipment

(4) Proper operation of all equipment

(5) Adherence to plans and technical specifications

(6) Summary of any necessary corrective actions

(7) Safety inspection.

(8) Photographs and/or video

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

The daily inspection reports shall be signed by the responsible QC technician and the CQCPA. The ***OAR*** ~~RPR~~ shall be provided at least one copy of each daily inspection report on the work day following the day of record. When QC inspection and test results are recorded and transmitted electronically, the results must be archived.

b. Daily test reports. The Contractor shall be responsible for establishing a system that will record all QC test results. Daily test reports shall document the following information:

(1) Technical specification item number and description

(2) Test designation

(3) Location

(4) Date of test

(5) Control requirements

(6) Test results

(7) Causes for rejection

(8) Recommended remedial actions

(9) Retests

Test results from each day's work period shall be submitted to the ***OAR*** ~~RPR~~ prior to the start of the next day's work period. When required by the technical specifications, the Contractor shall maintain statistical QC charts. When QC daily test results are recorded and transmitted electronically, the results must be archived.

100-10 Corrective action requirements. The CQCP 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 CQCP as a whole, and for individual items of work contained in the technical specifications.

The CQCP shall detail how the results of QC inspections and tests will be used for determining the need for corrective action and shall contain clear rules to gauge when a process is out of control and the type of correction to be taken to regain process control.

When applicable or required by the technical specifications, the Contractor shall establish and use statistical QC charts for individual QC tests. The requirements for corrective action shall be linked to the control charts.

100-11 Inspection and/or observations by the *OAR* ~~RPR~~. All items of material and equipment are subject to inspection and/or observation by the ***OAR*** ~~RPR~~ at the point of production, manufacture or shipment to determine if the Contractor, producer, manufacturer or shipper maintains an adequate QC system in conformance with the requirements detailed here and the applicable technical specifications and plans. In addition, all items of materials, equipment and work in place shall be subject to inspection and/or observation by the ***OAR*** ~~RPR~~ at the site for the same purpose.

Inspection and/or observations by the ***OAR*** ~~RPR~~ does not relieve the Contractor of performing QC inspections of either on-site or off-site Contractor's or subcontractor's work.

100-12 Noncompliance.

a. The ~~Resident Project Representative (RPR)~~ ***OAR*** will provide written notice to the Contractor of any noncompliance with their CQCP. After receipt of such notice, the Contractor must take corrective action.

b. When QC activities do not comply with either the CQCP or the contract provisions or when the Contractor fails to properly operate and maintain an effective CQCP, and no effective corrective actions have been taken after notification of non-compliance, the ~~RPR~~ ***OAR*** will recommend the Owner take the following actions:

(1) Order the Contractor to replace ineffective or unqualified QC personnel or subcontractors and/or

(2) Order the Contractor to stop operations until appropriate corrective actions are taken.

METHOD OF MEASUREMENT

100-14 Basis of measurement and payment. Contractor Quality Control Program (CQCP) is for the personnel, tests, facilities and documentation required to implement the CQCP. The CQCP will be paid as a lump sum with the following schedule of partial payments:

a. With first pay request, ~~25%~~ ***10%*** with approval of CQCP and completion of the Quality Control (QC)/Quality Assurance (QA) workshop. ***The remaining 90% shall be divided equally over the life of the project or as agreed to by the Owner and the Contractor.***

~~**b.** When 25% or more of the original contract is earned, an additional 25%.~~

~~**c.** When 50% or more of the original contract is earned, an additional 20%.~~

~~**d.** When 75% or more of the original contract is earned, an additional 20%~~

~~**e.** After final inspection and acceptance of project, the final 10%.~~

BASIS OF PAYMENT

100-14 Payment will be made under:

Item C-100-1 Contractor Quality Control Program (CQCP) – **per lump sum**

REFERENCES

The publications listed below form a part of this specification to the extent referenced. The publications are referred to within the text by the basic designation only.

National Institute for Certification in Engineering Technologies (NICET)

ASTM International (ASTM)

ASTM C1077	Standard Practice for Agencies Testing Concrete and Concrete Aggregates for Use in Construction and Criteria for Testing Agency Evaluation
ASTM D3665	Standard Practice for Random Sampling of Construction Materials
ASTM D3666	Standard Specification for Minimum Requirements for Agencies Testing and Inspecting Road and Paving Materials

END OF ITEM C-100

ITEM C-102 TEMPORARY AIR AND WATER POLLUTION, SOIL EROSION, AND SILTATION CONTROL

DESCRIPTION

102-1. This item shall consist of temporary control measures as shown on the plans or as ordered by the ***Owner's Authorized Representative (OAR)*** ~~Resident Project Representative (RPR)~~ during the life of a contract to control pollution of air and water, soil erosion, and siltation through the use of silt fences, berms, dikes, dams, sediment basins, fiber mats, gravel, mulches, grasses, slope drains, and other erosion control devices or methods.

Temporary erosion control shall be in accordance with the approved erosion control plan; the approved Construction Safety and Phasing Plan (CSPP) and AC 150/5370-2, *Operational Safety on Airports During Construction*. 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.

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.

Temporary control measures shall be designed, installed and maintained to minimize the creation of wildlife attractants that have the potential to attract hazardous wildlife on or near public-use airports.

102-1.1 Any permits which the Owner has obtained for any purpose such as NPDES, etc., does not include nor cover the Contractor's haul routes, equipment access points, staging areas, office compounds, materials stockpiles, blending and batch plant areas and operations or other project related activity areas outside the project limits or off site.

102-1.2 The Contractor shall prepare all required documentation, pay all fees and perform all services and work necessary to obtain all permits and approvals from any and all local, state and federal regulatory agencies for the Contractor's staging, stockpile, blending and batch plant areas and operations. The cost of all permitting shall be subsidiary to other items of work.

MATERIALS

102-2.1 Grass. Grass that will not compete with the grasses sown later for permanent cover per Item T-901shall be a quick-growing species (such as ryegrass, Italian ryegrass, or cereal grasses) suitable to the area providing a temporary cover. Selected grass species shall not create a wildlife attractant.

102-2.2 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 per Item T-908. Mulches shall not create a wildlife attractant.

102-2.3 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.

102-2.4 Slope drains. Slope drains may be constructed of pipe, fiber mats, rubble, concrete, asphalt, or other materials that will adequately control erosion.

102-2.5 Silt fence. Silt fence shall consist of polymeric filaments which are formed into a stable network such that filaments retain their relative positions. Synthetic filter fabric shall contain ultraviolet ray inhibitors and stabilizers to provide a minimum of six months of expected usable construction life. Silt fence shall meet the requirements of ASTM D6461.

102-2.6 Other. All other materials shall meet commercial grade standards and shall be approved by the ***OAR*** ~~RPR~~ before being incorporated into the project.

CONSTRUCTION REQUIREMENTS

102-3.1 General. In the event of conflict between these requirements and pollution control laws, rules, or regulations of other federal, state, or local agencies, the more restrictive laws, rules, or regulations shall apply.

The ***OAR*** ~~RPR~~ shall be responsible for assuring compliance to the extent that construction practices, construction operations, and construction work are involved. ***This does not relieve the Contractor from having the total responsibility for the prevention, control and abatement of erosion and water pollution during the project.***

102-3.2 Schedule. Prior to the start of construction, the Contractor shall submit schedules in accordance with the approved Construction Safety and Phasing Plan (CSPP) and the plans for accomplishment of temporary and permanent erosion control work for clearing and grubbing; grading; construction; paving; and structures at watercourses. The Contractor shall also submit a proposed method of erosion and dust control on haul roads and borrow pits and a plan for disposal of waste materials. Work shall not be started until the erosion control schedules and methods of operation for the applicable construction have been accepted by the ***OAR*** ~~RPR~~.

102-3.3 Construction details. The Contractor will be required to incorporate all permanent erosion control features into the project at the earliest practicable time as outlined in the plans and approved CSPP. Except where future construction operations will damage slopes, the Contractor shall perform the permanent seeding and mulching and other specified slope protection work in stages, as soon as substantial areas of exposed slopes can be made available. Temporary erosion and 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 may be a problem, schedule and perform clearing and grubbing operations so that grading operations and permanent erosion control features can follow immediately if project conditions permit. Temporary erosion control measures are required if permanent measures cannot immediately follow grading operations. The ***OAR*** ~~RPR~~ shall 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, mulching, seeding, and other such permanent control measures current with the accepted schedule. If seasonal limitations make such coordination unrealistic, temporary erosion control measures shall be taken immediately to the extent feasible and justified as directed by the ***OAR*** ~~RPR~~.

The Contractor shall provide immediate permanent or temporary pollution control measures to minimize contamination of adjacent streams or other watercourses, lakes, ponds, or other areas of water impoundment as directed by the ***OAR*** ~~RPR~~. If 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 directed by the ***OAR*** ~~RPR~~, the work shall be performed by the Contractor and the cost shall be incidental to this item.

The ***OAR*** ~~RPR~~ may increase or decrease the area of erodible earth material that can be exposed at any time based on an analysis of project conditions.

The erosion control features installed by the Contractor shall be maintained by the Contractor during the construction period.

Provide temporary structures whenever construction equipment must cross watercourses at frequent intervals. Pollutants such as fuels, lubricants, bitumen, raw sewage, wash water from concrete mixing operations, and other harmful materials shall not be discharged into any waterways, impoundments or into natural or manmade channels.

The Contactor shall provide equipment wash out areas and these areas will be constructed and protected as to prevent any discharge of silt, waste concrete, fuels, lubricants and other harmful materials into nearby impoundments, ponds or surface water drainage system.

The Contactor shall periodically inspect the pollution control features and immediately after each rainfall and at least daily during prolonged rainfall and immediately correct any deficiencies.

The Contractor shall also remove all temporary erosion/pollution control facilities and restore those sites. This work will included the repair of any trenching for silt fence, removal of silt build-up, the

removal of fencing, barriers, silt bales and the associated stakes and appurtenances and seeding and mulching or sodding to restore those areas. All new or existing inlets, catch basins, manholes etc. including connecting pipes shall be cleaned and flushed by the Contractor.

102-3.4 Installation, maintenance and removal of silt fence. Silt fences shall extend a minimum of 16 inches (41 cm) and a maximum of 34 inches (86 cm) above the ground surface. Posts shall be set no more than 10 feet (3 m) on center. Filter fabric shall be cut from a continuous roll to the length required minimizing joints where possible. When joints are necessary, the fabric shall be spliced at a support post with a minimum 12-inch (300-mm) overlap and securely sealed. A trench shall be excavated approximately 4 inches (100 mm) deep by 4 inches (100 mm) wide on the upslope side of the silt fence. The trench shall be backfilled and the soil compacted over the silt fence fabric. The Contractor shall remove and dispose of silt that accumulates during construction and prior to establishment of permanent erosion control. The fence shall be maintained in good working condition until permanent erosion control is established. Silt fence shall be removed upon approval of the ***OAR*** ~~RPR~~.

METHOD OF MEASUREMENT

102-4.1 Temporary erosion and pollution control work required will be performed as scheduled or directed by the ***OAR*** ~~RPR~~. Completed and accepted work ~~will be measured as follows~~ ***shall be considered incidental and no separate payment shall be made. This shall include all equipment, labor, materials, and incidentals to complete the work.***

~~**a.** Temporary seeding and mulching will be measured by the square yard (square meter).~~

~~**b.** Temporary slope drains will be measured by the linear foot (meter).~~

~~**c.** Temporary benches, dikes, dams, and sediment basins will be measured by the cubic yard (cubic meter) of excavation performed, including necessary cleaning of sediment basins, and the cubic yard (cubic meter) of embankment placed as directed by the ***OAR*** RPR.~~

~~**d.** All fertilizing will be measured by the ton (kg).~~

~~**e.** Installation and removal of silt fence will be measured by the linear foot.~~

102-4.2 Control work performed for protection of construction areas outside the construction limits, such as borrow and waste areas, haul roads, equipment and material storage sites, and temporary plant sites, will not be measured and paid for directly but shall be considered as a subsidiary obligation of the Contractor.

BASIS OF PAYMENT

102-5.1 Accepted quantities of temporary water pollution, soil erosion, and siltation control work ordered by the ***OAR*** ~~RPR~~ and measured ~~as provided in paragraph 102-4.1 will be paid for under:~~ ***shall be considered incidental and no separate payment shall be made. This price shall be full compensation for all equipment, labor, materials, and incidentals to complete the work.***

~~Item C-102-1 Temporary Erosion and Pollution Control – per lump sum~~

Temporary Erosion and Pollution Control shall be incidental to other work items.

Where other directed work falls within the specifications for a work item that has a contract price, the units of work shall be measured and paid for at the contract unit price bid for the various items.

Temporary control features not covered by contract items that are ordered by the ***OAR*** ~~RPR~~ will be paid for under the lump sum for Temporary Erosion and Pollution Control.

REFERENCES

The publications listed below form a part of this specification to the extent referenced. The publications are referred to within the text by the basic designation only.

Advisory Circulars (AC)

AC 150/5200-33 *Hazardous Wildlife Attractants on or Near Airports*

AC 150/5370-2 *Operational Safety on Airports During Construction*

ASTM International (ASTM)

ASTM D6461 *Standard Specification for Silt Fence Materials*

United States Department of Agriculture (USDA)

FAA/USDA Wildlife Hazard Management at Airports, A Manual for Airport Personnel

END OF ITEM C-102

ITEM C-105 MOBILIZATION

105-1 Description. This item of work shall consist of, but is not limited to, work and operations necessary for the movement of personnel, equipment, material and supplies to and from the project site for work on the project except as provided in the contract as separate pay items.

105-2 Mobilization limit. Mobilization shall be limited to 10 percent of the total project cost.

105-3 Posted notices. Prior to commencement of construction activities, the Contractor must post the following documents in a prominent and accessible place where they may be easily viewed by all employees of the prime Contractor and by all employees of subcontractors engaged by the prime Contractor: Equal Employment Opportunity (EEO) Poster "Equal Employment Opportunity is the Law" in accordance with the Office of Federal Contract Compliance Programs Executive Order 11246, as amended; Davis Bacon Wage Poster (WH 1321) - DOL "Notice to All Employees" Poster; and Applicable Davis-Bacon Wage Rate Determination. These notices must remain posted until final acceptance of the work by the Owner.

~~**105-4 Engineer/*CM* RPR field office.** The Contractor shall provide dedicated space for the use of the ***Owner's Authorized Representative (OAR)*** field RPR and inspectors, as a field office for the duration of the project. This space shall be located conveniently near the construction and shall be separate from any space used by the Contractor. The Contractor shall furnish water, sanitary facilities, heat, air conditioning, and electricity in accordance with local building codes.~~

METHOD OF MEASUREMENT

105-9 Basis of measurement and payment.

105-9-1 Based upon the contract lump sum price for "Mobilization" partial payments will be allowed as follows ***or as agreed to between the Owner and the Contractor***:

a. With first pay request, 25%.

b. When 25% or more of the original contract is earned, an additional 25%.

c. When 50% or more of the original contract is earned, an additional 40%.

d. After Final Inspection, Staging area clean-up and delivery of all Project Closeout materials as required by Section 90, paragraph 90-11, *Contractor Final Project Documentation,* the final 10%.

BASIS OF PAYMENT

105-10 Payment will be made under:

Item C-105-1	Mobilization and General Conditions – **per lump sum**

REFERENCES

The publications listed below form a part of this specification to the extent referenced. The publications are referred to within the text by the basic designation only.

Office of Federal Contract Compliance Programs (OFCCP)

Executive Order 11246, as amended

EEOC-P/E-1 – Equal Employment Opportunity is the Law Poster

United States Department of Labor, Wage and Hour Division (WHD)

WH 1321 – Employee Rights under the Davis-Bacon Act Poster

END OF ITEM C-105

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ITEM C-106
SAFETY, SECURITY AND MAINTENANCE OF TRAFFIC

PART 1 - DESCRIPTION

106-1.1 The work under this Section consists of furnishing all measures required to maintain the safe and orderly movement of Air Operations Area (AOA) traffic in and around the construction areas as shown on the Plans and as described in the Contract documents. The AOA is defined as all areas, used or intended to be used for aircraft operations including active runways, aprons, taxiways, and taxilanes.

106-1.2 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 Circulars 150/5370-2 "Operational Safety on Airport During Construction", and 150/5300-13, "Airport Design". The Contractor shall be responsible for all activities under his control, as specified in the above referenced Advisory Circulars, and in other referenced documents.

106-1.3 CONSTRUCTION ACTIVITIES. Construction activity, personnel, equipment, or materials shall not be permitted within 250 feet of an active runway, 160 feet from the centerline of an active ADG-V taxiway, unless otherwise shown on the Plans or directed by the Owners Authorized Representative (OAR).

The Contractor may work within these minimum construction setbacks when the minimums are reduced or providing the runway, taxiway, or taxilane is closed and closure has been authorized by the OAR and Airfield Operations.

106-1.4 MARKING AND LIGHTING OF CONSTRUCTION AREAS. The Contractor shall install lighting, marking, and marking removal, lighted barricades, and other measures as shown on the plans, described in the Specifications, or directed by the OAR, to delineate access routes, closed areas, and hazardous areas during construction. All costs shall be covered under Lump Sum Pay Item C-106-1.

106-1.5 LOOSE MATERIAL AND DEBRIS. Loose materials shall be removed from the Project Limits on a daily basis to prevent dispersion into active portions of the AOA. The Contractor shall exercise care in the transportation of materials within the AOA to ensure that no material is tracked or spilled onto the AOA. Materials tracked or spilled in these areas 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 or aircraft parking areas, it shall be immediately removed using powered vacuum sweepers which shall continuously patrol the affected areas. The vacuum sweepers shall be supplemented by power brooms, hand sweepers, loaders, and trucks as necessary. Power brooms and sweepers shall not contain metal bristles.

106-1.6 STOCKPILED MATERIALS. Stockpiled materials shall be stored in a manner so they are not a hazard to personnel and shall be protected from being dislodged by winds or jet blast. At no times shall materials be stockpiled within the Project Limits or the AOA. All millings shall be stockpiled at a location designated by the airport on airport property and will remain property of the Authority.

106-1.7 VEHICLES AND MOBILE EQUIPMENT. All Contractor vehicles and mobile equipment operating in the AOA shall meet requirements of Division 0, Specification 00 73 93.01; and all other Contract requirements.

106-1.8 RADIO COMMUNICATION. The Contractor shall provide and monitor a radio capable of receiving transmissions from the MCO FAA Air Traffic Control Tower and Airport Ground Control. The number of radios shall be as required for the Contractor's Superintendent and Flagmen to ensure safe and orderly movement of AOA traffic to, in and around the construction areas. The ATCT and Airport Ground Control frequency will be provided in the Movement Area Driver Training Course. Flaggers shall be required to have a company walkie-talkie to communicate with each other.

106-1.9 PORTABLE LIGHTED RUNWAY CLOSURE MARKERS (RCM). Portable Lighted Runway Closure Markers will not be required for this project.

106-1.10 CLOSURES. 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, the Airfield Operations Project & Construction Coordinator during the Weekly Airfield Coordination Meeting, held each Monday Morning at the GOAA Planning and Engineering Facility, which the Contractor is required to attend.

When the Contractor's operations require the closure of any portion of a runway, taxiway, apron, or taxilane the Contractor shall notify the OAR not less than 72 hours prior to need. No closures may occur without prior permission from the OAR and Airfield Operations.

106-1.11 LIGHTED BARRICADES AND TEMPORARY PAVEMENT MARKINGS. Temporary pavement markings, lighted barricades and other measures shall be provided, installed, relocated, and maintained on a 24-hour basis by the Contractor to delineate construction areas available to the Contractor and limits of aircraft operational areas. On a daily basis, the Contractor shall verify that the temporary lighted barricades are in proper operating condition. Any necessary maintenance repairs shall be performed immediately by the Contractor. The proposed layout of lighted barricades and other measures for each construction area are shown on the Plans. The actual field installation of lighted barricades, and other measures and attendant operational procedures shall be inspected by the OAR and any necessary changes or modifications will be promptly implemented by the Contractor as directed at no additional cost to the Contract. The revised installation will be re-inspected and approved by the OAR and Airfield Operations before the Contractor may commence any construction or any other work which revises operational procedures in each affected area.

106-1.12 OPERATIONS SAFETY INSPECTION. The entire work site shall be inspected daily and more frequently if construction activities have potential to accumulate debris 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 and as set forth in the FAA Advisory Circulars. Inspections shall be conducted jointly by representatives of the Contractor, Airside Operations, and the OAR. These inspections shall cover the several safety items noted in and referred by in this Section. The report of such inspections shall be filed utilizing the attached Pre-Operation and Pre-Construction checklist forms.

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, he shall immediately notify the OAR. No area shall be approved for aircraft operations while it is in violation unless specifically authorized in writing by Airfield Operations and the OAR.

106-1.13 OPERATIONAL EMERGENCIES. During periods of severe weather conditions or other operational emergencies, GOAA may direct the Contractor to relinquish areas under construction and to prepare the areas for the severe weather or aircraft operations. In this event the OAR will so direct the Contractor to evacuate the area and the OAR 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 operations. The Contractor shall promptly and fully comply with the OAR's directive. Should the directive entail extra work under the Contract, as determined by the OAR, the Contractor will be reimbursed for such extra work in accordance with the General Conditions of this Contract. Should the directive entail a delay in the completion of the Contract or any defined subdivision of the contract, as determined by the OAR, the Contractor may be granted an extension of time in accordance with the provisions of General Conditions of this Contract.

106-1.14 PROTECTION OF FAA FACILITIES. In areas where Contractor vehicles and equipment cross over FAA facilities, Contractor to install steel plates to protect underlying utilities from damage as described in the electrical specifications and drawings.

106-1.15 CONSTRUCTION SAFETY AND PHASING PLANS (CSPP) AND SAFETY PLAN COMPLIANCE DOCUMENT (SPCD). The Contractor shall review the attached CSPP provided as the Appendix to this specification. The CSPP has been developed for this project and is mandated by FAA AC 150/5370-2 "Operational Safety on Airports During Construction" (Latest Edition) for any projects funded by the Airport Improvement Program (AIP) or the Passenger Facility Charge (PFC) Program when located on a Part 139 Airport, such as MCO. The CSPP was created as a standalone document and has been submitted and reviewed by the FAA. All FAA revisions to the CSPP have been incorporated in the attached CSPP.

The Contractor shall complete the H-00370 Airside 3 Apron PCC Slab Rehabilitation project SPCD. The SPCD must be submitted for approval from the Design Team, OAR, FAA ATCT and Airfield Operations, prior to the issuance of the Contractor's Notice to Proceed (NTP). The SPCD will be used to supplement the CSPP document written to comply with the FAA AC 150/5370-2 "Operational Safety at Airports During Construction" (Latest Edition). 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, per Chapter 2 of the CSPP. 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. All modification to the CSPP, due to construction activities, shall be highlighted in the SPCD.

All costs associated with the review, production and updating of the SPCD shall be incidental to C-106-1.

PART 2 - MATERIALS AND CONSTRUCTION METHODS

106-2.1 DEACTIVATION OF AIRFIELD LIGHTS, SIGNS AND MARKINGS. The Contractor shall deactivate or cover lights, signs, and markings that lead into a construction zone, are in a construction zone, or are in a closed portion of a runway as directed by the OAR and/or described in the Contract Plans.

106-2.2 LIGHTED BARRICADES. The Contractor shall install and maintain lighted low-profile barricades at the locations shown on the plans, in accordance to the plan details, and as directed by the OAR. Lighted low-profile barricades shall be inspected daily and repaired or replaced immediately when damaged or not functioning.

106-2.3 PLASTIC TRAFFIC CONES AND TUBULAR MARKERS. The Contractor shall install and maintain low-profile lighted barricades or other approved marking methods to mark the construction set-back lines as directed by the OAR. The devices shall be bright in color and designed to remain usable following vehicular impact. The Contractor shall specify suitable ballasting to these traffic devices during high winds or jet blast.

106-2.4 HAUL ROUTES. All haul routes shall be maintained throughout the construction period and shall be restored to original or better than original condition at the completion of the project.

PART 3 - METHOD OF MEASUREMENT

106-3.1 There will be no separate measurement for individual work elements associated with this Section. Payment for this work will be made under the lump sum or an allowance for all aspects of this Section per the pay items listed below.

PART 4 - BASIS OF PAYMENT

106-4.1 GENERAL. Payment for safety, security and maintenance of traffic and all items covered in this Section and as shown on the Plans shall be made at the lump sum price bid for this item unless payment for this work is already specifically covered under a separate pay item. The price and payment shall constitute full compensation for furnishing all labor, materials, equipment and incidentals required to complete the work under this Section.

106-4.2 PARTIAL PAYMENTS. Partial payments will be made throughout the duration of the project and shall match the percent of the project completed as determined by the OAR.

Payment shall be made under:

Item C-106-1	Safety, Security and Maintenance of Traffic	- per Lump Sum (LS)

PRE-OPERATION CHECKLIST
Orlando International 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.

ITEMS	OK (Check)	REMARKS/EXCEPTIONS
Operational pavements free of dust, dirt and debris.		
Operational pavement shoulders free of dust, dirt and debris.		
Striping, marking, signs and lighting on operational pavements operable and in correct location.		
Construction barricades secured in correct location and associated lighting systems operable and in correct location.		
All equipment, vehicles, materials, etc., removed from areas in service or being returned to service.		

Work Area Inspected:

Remarks:

This inspection covered by this report was made on_____, at a.m./p.m.

Date *Time*

By: _____

(Contractor) Signature

By:

(Operations) Signature

By:

(Owner's Authorized Representative) Signature

For work involved in the construction of GOAA Contract No. H-00370
at Orlando International Airport.

PRE-CONSTRUCTION CHECKLIST
Orlando International Airport

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

ITEMS	OK (Check)	REMARKS/EXCEPTIONS
Striping, lights, marking, 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 property 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:

This inspection covered by this report was made on_____, at a.m./p.m.

Date *Time*

By: _____

(Contractor) Signature

By:

(Operations) Signature

By:

(Owner's Authorized Representative) Signature

For work involved in the construction of GOAA Contract No. H-00370 at Orlando International Airport.

END OF ITEM C-106

ORLANDO INTERNATIONAL AIRPORT (MCO)
GREATER ORLANDO AVIATION AUTHORITY

H-00370 AIRSIDE 3 APRON PCC SLAB REHABILITATION

CONSTRUCTION SAFETY AND PHASING PLAN (CSPP)

Prepared For:

GREATER ORLANDO AVIATION AUTHORITY

Prepared By:

AECOM

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CHAPTER 1: INTRODUCTION

Section 1. Orlando International Airport

101. General. The Greater Orlando Aviation Authority (GOAA) is the manager and operator of Orlando International Airport (MCO), which is situated in Orange County, Florida, on approximately 13,430 acres of property bounded by Beach Line Expressway (State Road 528) to the north, Narcoossee Road to the east, Boggy Creek Road and State Road 417 (Central Florida Greenway) to the south, and Tradeport Drive to the west. MCO is located just 12 miles southeast of downtown Orlando, Florida. The physical address of MCO is One Jeff Fuqua Boulevard, Orlando, FL 32827.

The airport is the primary commercial service airport for Orlando and the surrounding counties. The four major runways at MCO and their lengths/widths are Runway 18L-36R (12,005 feet x 200 feet), Runway 18R-36L (12,004 feet x 200 feet), Runway 17R-35L (10,000 feet x 150 feet) and Runway 17L-35R (9,000 feet x 150 feet).

MCO's Airport Reference Point (ARP) is located at latitude 28°25'44"N, longitude 81°18'57"W. The airport's official elevation, which is defined as the highest point on the airport's usable runway, is 96 feet above mean sea level.

Figure 1 contains the Federal Aviation Administration (FAA) Airport Diagram which shows all major facilities located within the Air Operations Area (AOA) at MCO.

AECOM Technical Services, Inc. (AECOM) was contracted to develop the Construction Safety and Phasing Plan (CSPP), as regulated by FAA Advisory Circular (FAA AC) 150/5370-2 "Operational Safety on Airports During Construction" (Latest Edition) for the H-00370 Airside 3 Apron PCC Slab Rehabilitation Project. In addition, AECOM will also provide an outline for the Safety Plan Compliance Document (SPCD) which will be completed by the awarded Contractor for the construction of this project. The requirement for development of the CSPP and SPCD is mandatory for airport construction projects receiving funds under the Airport Improvement Program (AIP) or the Passenger Facility Charge (PFC) Program. At a minimum the CSPP shall provide the following:

1. Identification of the affected areas.
2. Description of current or existing operational conditions.
3. Guidelines for temporary changes to operational conditions due to project(s).
4. Taking action to revise operational conditions due to project(s).
5. Managing of safety risk by determining appropriate level of Safety Risk Management (SRM) documentation.

102. Project Construction Scope of Work. The H-00370 Airside 3 Apron PCC Slab Rehabilitation project consists of the removal and replacement of cracked and damaged PCC slabs, and includes spalled pavement repair and joint sealant replacement on the PCC aircraft parking aprons of Airside 3.
A brief scope of work for the construction components of the Project includes:

- Pavement Rehabilitation;
- Full Strength PCC Pavement; and,
- Temporary and Permanent Pavement Marking.

The detailed scope of work for the construction components of this project is shown in the Contract Documents (drawings and project manual/specifications).

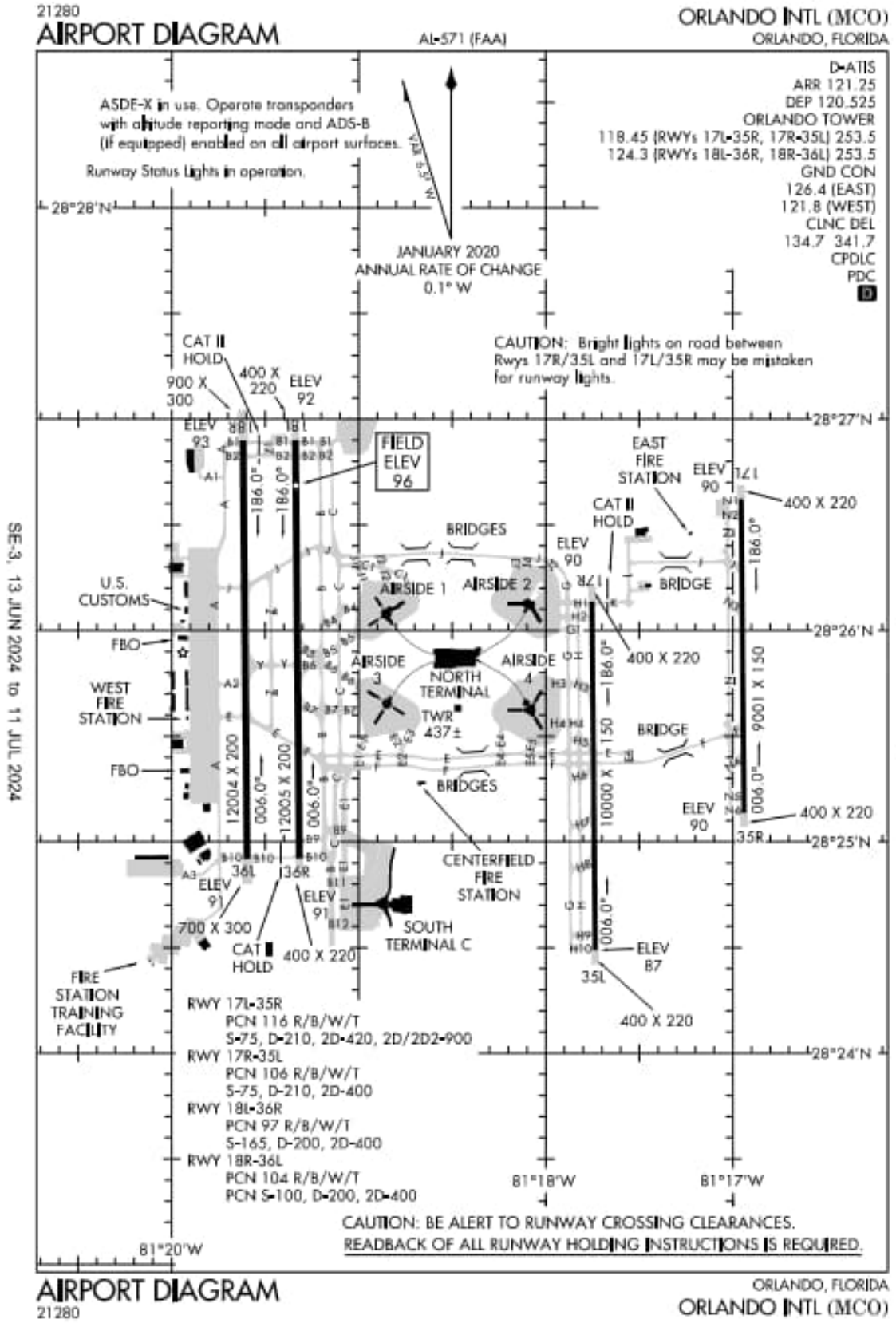


Figure 1: FAA Airport Diagram for MCO

CHAPTER 2: CONSTRUCTION SAFETY AND PHASING PLAN

Section 1. Basic Considerations

201. Overview. Aviation safety is the primary consideration at airports, especially during construction. A Construction Safety and Phasing Plan (CSPP) must be developed for each airfield construction project funded by the Airport Improvement Program (AIP) or the Passenger Facility Charge (PFC) Program when located on a Part 139 Airport, such as Orlando International Airport (MCO). As per Federal Aviation Administration (FAA) Order 5200.11 "FAA Airports (ARP) Safety Management System (SMS)", such projects do not include construction, rehabilitation, or change of any facility that is entirely outside the Air Operations Area (AOA), 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.

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 within the AOA. The CSPP and the SPCD documents identify aspects of the construction project that pose a potential safety hazard to airport operations and outline respective mitigation procedures for each hazard. These documents provide information necessary for the Greater Orlando Aviation Authority (GOAA) Airfield Operations Department to conduct safe operations, conduct airfield inspections, and quickly identify, mitigate and correct unsafe conditions during construction. All provisions included related to aviation safety within contract drawings, contract specifications, and other related documents are reflected, to the extent possible, in the CSPP and shall be reflected in the SPCD by the awarded Contractor.

202. Assume Responsibility. The Airfield Operations and Airport's Design Consultants (Design Team) shall develop, certify and submit, through Airfield Operations, the CSPP for the FAA's approval. If conditions warrant changes to the original CSPP, the Design Team shall revise the CSPP and submit the revised CSPP, through Airfield Operations, to the FAA for approval. The project's Contractor must submit, for review and approval, a SPCD to the Owner Authorized Representative (OAR), Airfield Operations and Design Team as outlined in Chapter 3.

203. Submit the CSPP. The CSPP should be developed concurrently with the project design. While these milestones are not mandatory, early submission is encouraged to avoid delays. Submittals are preferred in 8.5 x 11 in or 11 x 17 in format for compatibility with the FAA's Obstruction Evaluation/Airport Airspace Analysis (OE/AAA) process. The **typical timelines** for submitting the CSPP and SPCD are outlined below:

A. Submit a CSPP. The FAA recommends that the CSPP should be formally submitted for FAA approval when the project design is 80% to 90% complete. Since provisions in the CSPP will influence contract costs, it is important to obtain FAA approval in time to include all such provisions in the procurement contract. The formal submittal of the CSPP Report for the H-00370 project will occur at the Advance Bid documents submittal milestone.

B. Submit SPCD. The Contractor should submit the SPCD to the airport operator for approval at the onset of the Mobilization Phase of construction.

C. Submit CSPP Revisions. All revisions to the approved CSPP prior to the bid procurement phase shall be submitted to the FAA for approval. During construction all revisions to the CSPP shall be submitted via the SPCD by the Contractor, with concurrence and coordination with OAR and GOAA, to the FAA for approval.

204. CSPP Requirements.

A. To the extent possible the CSPP should address the items outlined in Chapter 3, “Guidelines for Writing a CSPP”” of the FAA AC 150/5370-2 “Operational Safety on Airports During Construction” (Latest Edition).

B. The SPCD should include a general statement by the Contractor that they have 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 awarding of the construction contract. 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 as outlined in Chapter 3. 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 from the CSPP. The Contractor’s 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’s Contract Signee/Construction Company Name), have read the “H-0370 Airside 3 Apron PCC Slab Rehabilitation” CSPP, approved on (Date), and will abide by it as written and with the following additions as noted:”

SECTION 2. Plan Requirements

205. Coordination. The Design Team, Airfield Operations, GOAA Engineering and Construction, FAA representatives, and/or tenants, conducting design and construction on the leased properties at MCO, should conduct/attend Project Kickoff, Pre-Design/Design Review, Pre-Bid, Pre-Construction and Contractor Progress/Job Coordination conferences/meetings to thoroughly review the subject of airport operational safety during the design/construction as it relates to the project. Per FAA AC 150/5300-9 "Predesign, Prebid, and Pre-construction Conferences for Airport Grant Projects" (Latest Edition), these meetings should be facilitated to discuss various items relating to design parameters, airport safety, routing of aircraft and equipment, sequencing of construction operations, and environmental considerations.

A. Project Kickoff, Pre-Design/Design Review, Pre-Bid, Pre-Construction and Contractor Progress/Job Coordination Conferences.

A1. Project Kickoff Conference. A project kickoff meeting for the H-00370 Airside 3 Ramp Slab Rehabilitation Project will be/was attended by GOAA Representatives (Airfield Operations, Planning, Engineering, and Construction) and the Design Team. The agenda of this meeting in brief, included the following items:

(i) Project overview and review of project work plan.
(ii) Project Administration and Communication Protocol.
(iii) Scope of Project/Technical Requirements.
(iv) Project Schedule and Deliverables (including CSPP).
(v) Project Phasing and Maintenance of Traffic
(vi) Quality Control Procedures.

A2. Pre-Design/Design Review Conferences. In addition to the project kickoff meeting, periodic project coordination and status meetings should be held between the Design Team, GOAA, and FAA where applicable to discuss the principal elements of the CSPP. Typically at 50% project design, the Design Team should submit a Draft of the CSPP to the Airport Operator and the FAA for review and comments. The CSPP will be submitted for FAA approval along with the project's 95% to 100% design submittal. See Section 203 for further explanation regarding these tasks and the history of this project.

Since provisions in the CSPP may influence contract costs, it is important to obtain FAA approval in time to include all such provisions in the bid documents and the contract. The typical items discussed at the design review meeting shall include the following:

Scope of proposed project	Design Alternatives
Design Standards	Pavement Design
Site Conditions	Drainage Design
Phasing Requirements	Permitting Requirements
Construction Duration	Electrical/Utilities Design
Engineer's Estimate of Construction	Markings and Signage Design
Safety Requirements (CSPP and SPCD)	Modification to Construction Standards Specifications
Modification to Design Standards	

A3. Pre-Bid Conference. Typically the Design Team, in conjunction with GOAA, shall conduct a pre-bid conference at the Maintenance Shop Building Conference Room, 8648 Casa Verde Road, Orlando, Florida, 32827, prior to the bid opening date and within a week of the bid advertisement date. This meeting is intended to review the project requirements, bid procedures, answer potential contractor questions and conduct a site visit. The typical agenda items include the following:

- Scope of Work;
- Phasing Requirements;
- Safety Requirements (CSPP and SPCD);
- Construction Duration;
- Liquidated Damages;
- Labor and Construction Technique Requirements;
- DBE/MWBE/LDB Requirements; and,
- Insurance Requirements.

The pre-bid conference will cover relevant information concerning the Contractor's requirements for conforming to the CSPP, FAA AC 150/5370-2 "Operational Safety on Airports During Construction" (Latest Edition) and developing and submitting a SPCD for review and approval. This will include both general and specific elements required in the SPCD. In addition, information on how the Contractor shall format the document will also be provided.

Any changes or modifications resulting from the Pre-Bid conference will be issued as an addendum to be incorporated into the bid documents. A copy of each addendum will be furnished to each prospective bidder who has requested or purchased a set of the project's bid documents. Copies of the proceedings, containing all items discussed, including responses to questions, will be made available to each of the bidding contractors.

A4. Pre-Construction Conference. The pre-construction conference shall be held at GOAA as soon as practicable after the contract has been awarded and before issuance of the notice to proceed for construction. This meeting should assist all parties affected by the construction activities of this project to get a better understanding of potential problems and possible solutions related to construction activities and safety for the duration and performance of the construction contract.

The attendees for the pre-construction conference meeting shall include a combination of the following: Design Team; Owners Authorized Representatives (OAR) as identified by GOAA and their Subconsultants; Materials Testing Laboratory Representatives; GOAA Engineering and Construction; GOAA Maintenance; Airfield Operations; Prime Contractor and their Subcontractors; FAA ATCT (Air Traffic Control Tower); MCO ARFF (Airport Rescue and Fire Fighting); Impacted Airport Tenants; and, FAA Representatives.

The OAR shall prepare an agenda for this meeting and issue meeting minutes which will include:

- Scope of the Project;
- Identification of the Contractors Security and Safety Officer (CSSO);
- Scheduling of work and the need to perform certain items at various times during the project;
- Work required prior to construction NTP;
- Construction NTP Date;
- Safety during construction and compliance with the FAA AC 150/5370-2 “Operational Safety on Airports During Construction” (Latest Edition) CSPP, SPCD, and other GOAA requirements; including the responsibility for marking and lighting of closed and hazardous areas.
- Security Requirements.

A5. Contractor Progress Meeting or Job Coordination Meetings (JCM). During the construction phase, a JCM shall be held on a weekly or bi-weekly basis. Operational safety will be a standing agenda item for discussion during the JCMs throughout the project.

The attendees for the JCMs shall include a combination of the following: Design Team; OAR and their Subconsultants; Materials Testing Laboratory Representatives; GOAA Engineering and Construction; GOAA Maintenance; Airfield Operations; Prime Contractor and their Subcontractors; FAA ATCT (Air Traffic Control Tower); MCO ARFF (Airport Rescue and Fire Fighting) [if applicable]; Impacted Airport Tenants; and, FAA Representative (if applicable).

The OAR shall prepare an agenda for this meeting and issue meeting minutes which shall include:

- Schedules (1 week look ahead and overall);
- Safety and Security/Emergency Procedures;
- Site Access/Parking;
- Working Hours;
- Submittals;
- RFI/DSIs; and,
- Change Orders.

B. Scope or Schedule Changes. Any changes in the scope or duration of the project, during the construction phase, may necessitate revisions to the CSPP and review and approval by the Airport and the FAA. The Contractor shall revise all applicable sections of the CSPP via the SPCD. All revisions shall be submitted to the OAR and Airfield Operations for the FAA's review and approval.

C. FAA Air Traffic Organization (ATO) Coordination. The FAA ATO at MCO will be represented by the FAA ATCT representatives at MCO AOA Airfield Meeting. Coordination between the Design Team, GOAA Engineering and Construction, Airfield Operations, and the FAA ATO/ATCT will be held regularly during the design phase to help prepare design, electrical, maintenance of traffic and phasing drawings, with developed with input from all parties.

Early coordination with the FAA ATCT shall be conducted to schedule airway facility shutdowns and restarts within the AOA. Relocation or adjustments to NAVAIDs, or changes to final grades in critical areas, may require an FAA flight inspection prior to restarting the facility. Flight inspections, if determined necessary, shall be coordinated and scheduled well in advance of the intended facility restart by Airfield Operations and the FAA. Flight inspections may require a reimbursable agreement between the GOAA and FAA. Reimbursable agreements should be coordinated a minimum of 12 months prior to the start of construction. See Paragraph 213.E for required FAA notification regarding FAA owned NAVAIDs.

The GOAA Airfield Operations Project & Construction Coordinator conducts a Weekly Airfield Coordination Meeting each Monday Morning at the GOAA Planning and Engineering Facility, to discuss operational impacts at MCO due to all construction and maintenance related activities. The H-00370 project Contractor shall be required to attend each of these meetings, throughout the duration of the H-00370 project, to discuss construction activities/progress and inform Airfield Operations regarding all currently closed AOA's and future required closures. This shall enable Airfield Operations and the FAA ATCT to plan closures for different construction and maintenance activities together, to minimize aircraft operational restrictions within the AOA.

206. Phasing. The sequence of construction and phasing, for this project, was developed in order to maintain the maximum efficiency of aircraft operations while maintaining safety and allowing for the required construction activities for this project. For each project's phase the CSPP identifies the requirements outlined in Paragraph 206 of FAA AC 150/5370-2 "Operational Safety on Airports During Construction" (Latest Edition). See Chapter 1 Paragraph 102 for the Scope of Work for the bid schedules of this project. The project phasing and the detailed work areas or sub-work areas are shown on the contract document's drawing set as **Sheet C60.0.1**.

The total construction duration should be **60** Calendar Days: **30** total Calendar Days for Construction and **30** Calendar Days for Final Closeout. This Project will consist of one (1) work area to minimize impacts to airport operations and their descriptions are provided below:

Work Area 1: Work Area 1 will be for a period of **30** calendar days of construction. The construction of this phase will require the closure of the Airside 3 Taxilane, between Taxiways B6 and B7, and Gate 56. Taxiway B7, between Taxiway C and Airside 3, as well as Gates 41, 43, 47, 50, and 54 will all be reduced to ADG IV aircraft. Temporary Taxilane markings will be install for access to Gates 41, 43, 47, 50, and 54.

The construction activities anticipated for Work Area 1 include: full depth pavement removal, joint sealant removal and replacement, existing pavement repairs, and temporary pavement markings.

Overall Project Phasing Elements.

1. **Areas Closed to Aircraft Operations:** The contract document's drawing set Sheet C60.0.1 indicate which taxiways, taxilanes, and gates are closed for each work area to aircraft operations.

2. **Durations of Closures:** The Overall Phasing Plan Sheet C60.0.1 indicates the duration of closures allowed for each work area. The overall construction duration for this project is **30** calendar days.

3. **Taxi Routes:** The Barricade Location Plans, Sheet C60.0.1 indicate all active taxiways and taxi routes to runways and aprons to be used by aircraft for each work area in the vicinity of this project.

4. **ARFF Access Routes:** The Contractor shall be required to maintain emergency ARFF access into, out of, and around the construction site for the duration of the contract. The Contractor shall prominently light and mark open trenches and excavations at all times. Prior to beginning of construction in each work area and/or on a timely manner, the Contractor shall request the ARFF personnel to tour the site so ARFF personnel are aware of the access routes into, out of, and around the work areas and the on-going construction activities of the project.

5. **Construction Staging Areas:** The Contractors storage and staging areas will be outside the Object Free Areas of all taxiways and runways.

6. **Construction Access and Haul Routes:** The Project Location, Construction Haul Route and Notes, Sheet C2.0.2 indicates the proposed locations of the Contractor's Construction Access and Haul Routes for this project. The Contractor shall establish the actual size and exact location of the haul routes as approved by the OAR and Airfield Operations.

7. **Impacts to NAVAIDs:** No impacts to NAVAIDS are expected as part of this project.

8. **Lighting and Marking Changes:** All changes associated to the lighting and markings due to construction activities of this project are depicted on the contract drawings. These changes incorporate the design criteria as mandated by the FAA.

9. **Available Runway Length:** The available runway length for all runways at MCO for this project will not be impacted.

10. **Declared Distances:** The takeoff run available (TORA), takeoff distance available (TODA), accelerate-stop distance available (ASDA), and landing distance available (LDA) for Runways at MCO will not be altered for this project.

11. **Required Hazard marking and Lighting:** This project utilizes the following to delineate work areas, hazards, and closed portions of the AOA on the airfield:

    - Low profile lighted barricades to delineate work areas to delineate access routes, closed AOA areas, and hazardous areas.

12. **Lead Times for Required Notifications:** Adequate lead times for each element of construction shall be provided by the Contractor. Required lead times are spelled out in the construction documents and will be further established at the pre-construction meeting. See Paragraph 213 for additional information.

A. Construction Safety Drawings. The contract documents include Drawings that specifically address the construction phasing of the project.

Prior to closing a work area, the Contractor shall submit for approval all modifications to the phasing plan provided in the contract documents and obtain authorization to proceed from the OAR and Airfield Operations.

B. Phasing Elements. The construction for the project is anticipated to be completed within **30** calendar days. The construction activities will be divided into one (1) work area as shown on the contract document's drawing set as **Sheet C60.0.1.**

207. Areas and Operations Affected by Construction Activity. Runways and taxiways should remain in use by aircraft to the maximum extent possible without compromising safety. All parties involved shall conduct meetings with the FAA Air Traffic Organization (ATO) to ensure sufficient AOA pavements are provided to support operational simulations. The Operational Effects to the MCO AOA as a result of construction activities, in each work area and sub-work area of this Project, are discussed in this section.

A. Identification of Affected Areas. The identification of airfield areas and aircraft operations affected by the construction will help to determine possible safety problems. The affected areas are identified in the contract drawings for each construction phase or work area. See Paragraph 206 for details particularly concerning the following:

1. **Closing, or Partial Closing, of Runways, Taxiways and Aprons.** The Contract Drawings Phasing Plans and Paragraph 206 Phasing discuss the proposed closing or partial closures of runways, taxiways and taxilanes due to construction activities.

2. **Impact to or Closure of Aircraft Rescue and Firefighting (ARFF) Access Routes.** The Design Team and Airfield Operations shall provide ARFF personnel with construction plans for each work area, for their information and review, so that any impact to the routing of emergency vehicles can be assessed. During construction, ARFF personnel will be notified of potential access routes and construction activities via Pre-Construction Conference, Monday Morning Airfield Operations Construction Coordination Meeting and H-00370 Job Coordination Meetings.

3. **Closing of Access Routes used by Airport and Airline Support Vehicles.** The access routes closed due to this project and all potential alternative access routes for each work area to be used by airport and airline support vehicles shall be clearly marked and delineated with lighted barricades. All applicable Airport Tenants will be informed by the Airfield Operations and OAR.

4. **Interruption of Utilities, including Water Supplies for Firefighting.** Any proposed impacts to utilities that serve any airport facility shall be properly coordinated, through the OAR, with the appropriate airport facility that is to be impacted.

5. **Approach/Departure Surfaces Affected by Heights of Objects.** For this project, the approach or departure surfaces will not be impacted due to construction equipment heights. At the onset of the project, the Contractor, through the OAR, shall confirm that the FAA Form 7460-1 “Notice of Proposed Construction or Alteration”, for this project is approved. The Contractor vehicles and equipment will be limited to 20 feet height restriction throughout this project.

6. **Construction Areas, Storage Areas, and Access Routes near Runways, Taxiways, Aprons, or Helipads.** The Project Haul Route & Staging Area Sheet C2.0.2 indicate the approximate location of the access gates and proposed haul routes. The actual location of the haul route shall be established prior to construction with the approval of the OAR and Airport.

B. Mitigation of Effects. During the design conferences, the Design Team shall obtain the approval from the FAA ATCT and Airfield Operations to close runway(s) and taxiways, in a manner that will minimize aircraft operational restrictions at MCO. During construction, the Contractor shall coordinate closely with the OAR to

establish and follow the specific procedures to maintain the safety and operational efficiency of the airport, as established in the contract drawings.

1. **Temporary Changes to Runway and/or Taxi Operations.** The Contractor must provide adequate notice to the OAR and Airfield Operations and obtain approval before a runway or a taxiway is completely closed.

2. **Detours for ARFF and other Airport Vehicles.** It is imperative that emergency vehicles have access to all areas on the airport and that ARFF personnel are advised of construction activities and airfield closures so that they may alter their proposed routes to specific areas on the airfield.

3. **Maintenance of Essential Utilities.** This project is not anticipated to impact utilities. However, it shall be the responsibility of the Contractor to contact all utility owners for all utilities that are located within the project limits. The Contractor shall locate all utilities within the project limits whether shown on the contract drawings or not, and support and protect them from damage. Prior to performing any site work, the Contractor shall supply to the OAR a comprehensive checklist of utility facility owner's contacts including: telephone number, contact name, date contacted and date utility was flagged at site. Construction activities shall not commence until the comprehensive utility locates checklist is approved by the OAR and written approval is granted by the OAR. Additionally, prior to any work proceeding at the project site(s), the Contractor shall flag or paint the location of all utilities (water, sewer, FAA cables, reclaimed water, power, telephone, fuel, gas, and all others) in the field that are located within the proximity of the work limits of this project in order to locate any possible conflicts. The Contractor shall provide written approval that flagged locations of utilities have been completed to the OAR prior to proceeding with construction activities.

   Various direct buried FAA and other airport/utility cables pass through the work area. Some of these cables serve FAA facilities (such as NAVAIDs) and other airport facilities which are critical for the safe operation of the airport. It is of the utmost importance that damage to these cables be prevented. Cable locations shown on the plans are based upon the best information available but are not precise. Scaling dimensional data from the contract drawings is specifically prohibited. Dimensional data necessary for the construction of the project has been provided on the contract drawings. The Contractor shall keep the OAR informed of their excavation plans at least fourteen (14) working days in advance. The OAR shall notify the FAA and request that existing cables be staked in the field. The Contractor is responsible to coordinate with all other utility owners. The Contractor shall maintain all cable locates marked in the field. Even after the cables are staked, the Contractor shall use electronic detection devices and carefully hand excavate to locate cables. After cables are located, Contractor shall specify exact locations (stationing, offset, elevation and type of cable) and shall accurately measure and record their location data on the As-Built drawings. Copies of this measurement and recording of the data shall be considered an important part of the contract requirements. When encasing

existing FAA cables in split duct or otherwise excavating in their vicinity, Contractor shall hand dig and use extreme caution to avoid damaging cables. All damage, even if superficial, shall be reported to the OAR. In many cases superficial cable nicks may be inexpensively repaired, but if not repaired will lead to failure of the cable. The OAR shall make the determination if repair or replacement of the damaged utility is necessary. Replacement shall be at the OAR's sole discretion. All repair methods must be acceptable to the FAA and documented as such by OAR. All repairs shall be made at the Contractor's expense. See the electrical related requirements of this contract for additional utility protection requirements.

4. **Temporary Changes to Air Traffic Control Procedures.** Any and all temporary changes to the Air Traffic Control procedures must be coordinated and approved by the airport ATO/FAA ATCT/Airfield Operations. The FAA ATCT and Airfield Operations will be involved in all design conferences to establish the project phasing and work areas. During construction, the OAR and Contractor will attend the Monday Morning Airfield Operations Construction Coordination Meetings held at GOAA Planning and Engineering Facility to inform the FAA ATCT and Airfield Operations regarding all construction activities that impact the existing AOA and any upcoming impacts due to beginning of new construction work areas.

Operations Effects for H-00370 Airside 3 Ramp Slab. The series of tables within this Sub-Paragraph show the operational effects due to the construction of this project. For additional information see Paragraph 206 and refer to contract documents phasing sheets.

Project	H-00370 Airside 3 Apron PCC Slab Rehabilitation	
Phase	**Work Area 1** - 30 Calendar Days	
Scope of Work	• Full Strength PCC Pavement • Crack Repair • Spall Repair • Pavement Markings	
Operational Requirements	**Existing**	**Work 1 (Anticipated)**
Taxiway B7 (between TW C and Airside 3)	ADG V	ADG IV
Airside 3 Taxilane (between TW B6 and B7)	ADG V	Closed
Airside 3 – Gate 56	ADG IV	Closed
Airside 3 – Gate 54	ADG IV	ADG IV
Airside 3 – Gate 50	ADG IV	ADG IV
Airside 3 – Gate 41	ADG IV	ADG IV
Airside 3 – Gate 43	ADG IV	ADG IV
Airside 3 – Gate 47	ADG IV	ADG IV
ATCT (Hours)	24 hours	24 hours
ARFF Index	E	E

208. Navigation Aid (NAVAID) Protection. Before commencing construction activities, parking vehicles, or storing construction equipment and materials near a NAVAID, the Contractor shall coordinate, through the OAR, with the FAA ATCT to evaluate the effect of construction activity and the required distance and direction from the NAVAID. Construction activities, materials/equipment storage, and vehicle parking near electronic NAVAIDs require special consideration since they may interfere with signals essential to air navigation. The stockpiling of construction material, as well as to movement and parking of construction equipment shall not be permitted in areas where these materials or equipment may interfere with line of sight from the FAA ATCT or with electronic emissions devices. Interference from construction equipment and activities may require NAVAIDs shutdown or adjustment of instrument approach minimums for low visibility operations. If these conditions are required a NOTAM will be needed per Paragraph 213. All construction activities and materials/equipment stored near NAVAIDs must not obstruct access to the equipment and instruments for maintenance by GOAA/FAA personnel.

209. Contractor Access. All construction personnel shall regularly be reminded that within the AOA, aircraft always has “the Right-Of-Way”. The Contractor personnel shall familiarize themselves with the access routes and remember at all times that, “keeping people and vehicles from areas of the airport where they don’t belong is each Contractor personnel’s responsibility”. The Project Location, Construction Haul Route and Notes

Sheet C2.0.2 identifies the proposed routes that the Contractor should utilize to access the project work areas and the Contractor's Staging and Storage Area.

A. Location of Stockpiled Construction Materials. The locations of the stockpiles shall be approved by the OAR and the Airport. Stockpiled materials are not permitted in the Safety Area, Object Free Area or Obstacle Free Zone of an active runway or taxiway. At the onset of the project, the Contractor, through the OAR, shall confirm that FAA Form 7460-1 "Notice of Proposed Construction or Alteration", for this project is approved and on record. The Contractor must ensure that stockpiled materials and equipment adjacent to these areas are prominently marked and lighted during hours of restricted visibility or darkness. 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. All FOD resulting from stockpiled materials shall be removed and cleaned immediately.

The height of all stockpiled materials within the AOA shall be limited to 20 feet unless authorized by the OAR and the Airport.

B. Vehicle and Pedestrian Operations. Vehicle and pedestrian access to the airport secure area must be controlled to prevent inadvertent or unauthorized entry of persons, vehicles, or animals onto the AOA. The Contractor should coordinate requirements for vehicle operations with airport operations. In regard to vehicle and pedestrian operations, the CSPP outlines the following details and its associated training requirements:

1. **Construction Site Parking.** Contractor employees shall park in an area designated and approved by the OAR and Airport to prevent any unauthorized entry of persons or vehicles onto the AOA. Only authorized vehicles will be permitted in the secure area. All parked vehicles should be at least 8 feet away from any fencing.

2. **Construction Equipment Parking.** Contractor must park and service all construction vehicles in an area designated by the OAR and Airfield Operations outside the Obstacle Free Zone and never in the Safety Area of an active runway or taxiway, or in the Object Free 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 runway of taxiway. If it is necessary to leave specialized equipment on a closed taxiway or runway at night, the equipment must be well lighted. Contractor should park all construction vehicles outside the object free area of an active runway or an active taxiway when not in use by construction personnel (for example, overnight, on weekends, or during other periods when construction is not active). Equipment/vehicles parking areas must not obstruct the clear line of sight by the ATCT to any runways, taxiways, taxilanes or aprons under air traffic control nor obstruct any runway visual aids, signs, or navigation aids. The FAA must also study those areas to determine effects on airport design criteria, surfaces established by 14 CFR Part 77, Safe, Efficient Use, and Preservation of the

Navigable Airspace (Part 77), and on NAVAIDs and Instrument Approach Procedures (IAP). See Paragraph 213.E (1) for further information.

3. **Access and Haul Roads.** The Project Location, Construction Haul Route and Notes Sheet C2.0.2 shows the location of the Contractor's access to the construction site and the proposed haul routes. The Contractor shall not utilize any access roads or haul routes other than those that are approved. Access routes used by Contractor vehicles must be clearly marked to prevent confusion and/or 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 routes does not interfere with NAVAIDs or approach surfaces of operational AOA features.

4. **Marking and lighting of vehicles.** Marking and lighting of vehicles shall be in accordance with FAA AC 150/5210-5 "Painting, Marking, and Lighting of Vehicles Used on an Airport" (Latest Edition), and per requirements outlined in the construction documents.

5. **Description of proper Vehicle Operations.** Contractor employees shall take training classes to properly prepare themselves to drive in authorized areas, under normal, lost communications, and emergency conditions.

6. **Required Escorts.** Vehicles that are not authorized to drive in the secure airport area on their own shall be properly escorted in accordance with GOAA requirements by approved Contractor personnel.

7. **Training Requirements for Vehicle Drivers.** Specific training should be provided to those vehicle operators providing escorts to ensure compliance with GOAA vehicle rules and regulations. See FAA AC 150/5210-20 "Ground Vehicle Operations to include Taxiing or Towing Aircraft on Airports" (Latest Edition), for information on training and records maintenance requirements. All Contractor vehicles shall obey the speed limits posted on the AOA roads. All vehicles traveling on haul routes, closed runways and taxiways shall not drive faster than 25 mph and/or maximum posted GOAA speed limits.

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 by the FAA Air Traffic Control Tower to cross an active taxiway or any other area open to aircraft operations. In addition, it is the responsibility of the escort vehicle driver or flagmen to verify the movement/position of all escorted vehicles at any given time.

9. **Two-way radio communication procedures.**

   a) **General.** The Contractor and their personnel must understand the critical importance of maintaining radio contact, as directed by the airport, from and with the FAA ATCT. The Contractor must ensure that personnel engaged in activities involving unescorted operations within AOA observe the proper

procedures for communications, and are properly trained in performing these duties, including using appropriate radio frequencies, for the FAA ATCT. All Contractor vehicles that are required to access or cross active taxiways shall do so under the direct control of flagmen in radio contact with the FAA ATCT. Flagmen shall be trained and instructed by Airfield Operations in the regulations governing operations on the AOA and radio procedures at the airport, pass a written test, and receive approval in writing. Flagmen shall remain with their vehicle or monitor vehicle crossing at all times. Flagmen and radios shall be furnished by the Contractor. The radios shall operate on a common frequency approved by Airfield Operations and the OAR. It shall be understood by the Contractor that airport traffic on runways, taxiways, taxilanes and aprons shall have priority over Contractor's traffic. Contractor must notify the FAA ATCT and Airfield Operations before any flagging activity begins each day and when the flagging activity ends each day.

b) Areas requiring two-way radio communication with the FAA ATCT. Vehicular traffic crossing active aircraft movement areas must be controlled either by an authorized Airport escort or authorized flagmen, who must be in direct contact with the ATCT via a two-way radio communication capability with the ATCT.

c) Frequencies to be used. Airfield Operations will provide the Contractor with the correct radio frequencies to be utilized for the project. All Contractor personnel expected to utilize these frequencies should tape the frequency numbering to the vehicles dashboard so they do not forget.

d) The Contractor must be trained in proper radio usage, including read back requirements.

e) The Contractor must be trained in proper phraseology, including the International Phonetic Alphabet.

10. Maintenance of the Secured Area of the Airport, including:

a) Fencing and Gates. Contractor must 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 and vehicles. Procedures should be in place to ensure that only authorized persons and vehicles have access to the AOA and to prohibit “piggybacking” behind another person or vehicle. The Department of Transportation (DOT) document DOT/FAA/AR-00/52, Recommended Security Guidelines for Airport Planning and Construction, provides more specific information on fencing. A copy of this document can be obtained from the Airport Consultants Council, Airports Council International, or American Association of Airport Executives.

b) Badging Requirements. Contractor shall comply with Section 007393.01 of the Contract Documents Specifications for meeting badging requirements of this project. GOAA issued identification/access badges are required for this project. The airport ID program is under constant review by the FAA and Transportation Security Administration (TSA) whose authority and all contemporary requirements shall govern. The Contractor shall assign a Contractor Safety Officer(s) as the point(s) of contact for all identification and badging requirements.

While Contractor personnel are in the Security Identification Display Areas (SIDA) they must have their GOAA approved badges visible at all time, on the outermost garment of clothing and about their waists. If Contractor personnel are being escorted by approved escorts, the escort and escorted personnel must stay within close proximity of each other.

c) MCO is subject to 49 CFR Part 1542 “Airport Security” and is in compliance of the standards for access control, movement of ground vehicles, and identification of construction Contractor and tenant personnel. The Contractor shall comply with all requirements established by GOAA and/or amended due to revisions implanted by the FAA regulations throughout the duration of the construction of this project.

210. Wildlife Management. The CSPP and SPCD must be in accordance with the airport operator’s wildlife hazard management plan, if applicable. See FAA AC 150/5200-33 “Hazardous Wildlife Attractants On or Near Airports”, and Certalert 98-05, Grasses Attractive to Hazardous Wildlife. The Contractor must carefully control and continuously remove waste or loose materials that might attract wildlife. Surrounding the entire perimeter of the MCO AOA, there is security fencing in place to eliminate and minimize wildlife from encroaching into the AOA. Contractor personnel must be aware of and avoid construction activities that can create wildlife hazards on airports, such as:

A. Trash. Food scraps must be collected from contractor and subcontractor personnel activities. All trash resulting from food shall be securely placed in Contractor vehicles or trash cans, such that the trash does not fly away or enter the AOA. Food scraps must be removed from the work site at the end of each work day.

B. Standing Water. Water shall not be allowed to collect and pool, within construction areas of this project, for more than any single 24-hour period unless as depicted on the drainage related contract drawings.

C. Tall Grass and Seeds. The use of millet seed and turfing operations shall not be permitted. The typical requirement is to place T-904 Sodding, per Contract Documents, on all earthwork areas that were disturbed by the project.

D. Poorly Maintained Fencing and Gates. Contractor must maintain security

during construction when access points are created in the security fencing to permit the passage of construction vehicles or personnel. All gates and fencing within the vicinity of the project are required to be checked by the Contractor. Airfield Operations also conducts random checks to ensure that none of the existing gates are poorly maintained or monitored. All Contractor discrepancies pointed out by the OAR and Airfield Operations shall be immediately corrected by the Contractor.

E. **Disruption of Existing Wildlife Habitat.** The Contractor personnel should immediately notify Airfield Operations and the OAR of wildlife sightings.

211. Foreign Object Debris (FOD) Management. Waste and loose materials, commonly referred to as FOD, are capable of causing damage to aircraft landing gears, propellers, and jet engines. The Contractor 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 of the project. Prior to accessing the construction site, the Contractors shall inspect their vehicles (i.e., tires, truck beds, construction equipment, etc.) to ensure that nothing can fall/fly off of them to create potential FOD hazards.

If FOD is observed, the material shall be removed immediately by the Contractor. The OAR may direct that debris problems during construction, not corrected by the Contractor, be corrected by others at the expense of the Contractor. The Contractor shall have power brooms and automatic motorized vacuum equipment with drivers available on site at all times. Cleaning equipment shall be suitable for cleaning construction debris from the pavement. Power brooms or sweepers shall not contain metal bristles.

Contractor shall also have water trucks with drivers available to control dust when informed by Airfield Operations and OAR. Excessive dust can cause pilot confusion due to the loss of line of sight.

212. Hazardous Materials (HAZMAT) Management. The Contractor 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 FAA AC 150/5320-15 “Management of Airport Industrial Waste” (Latest Edition). The Contractor shall develop and implement spill prevention and response procedures for vehicle operations.

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

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

Entity	Title	Name	Phone Number
GOAA	Airfield Operations	Supervisor Desk	407-825-2036 407-825-2037
GOAA	Construction Sr. Project Manager	Scott Shedek	407-825-2465
GOAA	Project and Construction Coordinator	Greg Caesar	Cell: 407-902-8129 Office: 407-825-3822
GOAA	Environmental Permitting	Dan Carrington	407-825-3463
GOAA	AVP, Engineering	Tuan Nguyen	407-825-4662
GOAA	Planning	Keith Addison	407-825-3145
GOAA	Airfield Electrical Shop	Richard Schulz	407-825-3374
GOAA	Telecom	Joe Ambrose	407-825-3203
FAA	ESU Coordinator	Ken Sexton	407-852-7845
Police	Orlando Int'l Airport Police	In Case of Emergency	911
Police	Orlando Police – Airport Division	Non-Emergency	407- 825-2075
ARFF	MCO Westfield	N/A	407-825-3044 407-825-3045
ARFF	MCO Eastfield	N/A	407-825-3066 407-825-3067
ARFF	MCO Centerfield	N/A	407-825-3038 407-825-3042 407-825-3043
Poison	Poison Control National	N/A	800-222-1222
Hospital	Florida Hospital Orlando	N/A	407-303-7747

B. NOTAMs. Only Airfield Operations may initiate or cancel NOTAMs on airport conditions, and is the only entity that can close or open an AOA feature. Airfield Operations shall coordinate the issuance, maintenance, and cancellation of NOTAMs about airport conditions resulting from construction activities, maintenance, tenants and FAA ATCT, and must provide information on closed or hazardous conditions on airport movement areas to the FAA Flight Service Station (FSS) so it can issue a NOTAM. The airport operator must file and maintain a list of authorized representatives with the FSS. See FAA AC 150/5200-28 "Notices to Airmen (NOTAMs) for Airport Operators", for a sample NOTAM form. Only the FAA may issue or cancel NOTAMs or 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.

During the design phases, Airfield Operations will be notified of potential AOA features that will be impacted during the actual construction of the project. At the onset of construction activities, the Contractor shall provide a tentative schedule, through the OAR, to Airfield Operations regarding all potential AOA features that will require a closure or multiple closures throughout the construction of the project. The Contractor shall submit specific closure requests for runway(s), taxiway(s) or other AOA features well in advance of the planned closures at the Weekly Airfield Coordination Meeting. Any NOTAMs required shall be coordinated with Airfield Operations, through the OAR, at least two (2) weeks in advance of the actual closure.

C. Emergency notification procedures for medical, fire fighting, and police response. All life or death related emergency situations will require the Contractor or Contractor personnel to contact the Police or "911". The Police Dispatch will notify the appropriate agencies required for the handling of the emergency. The Contractor shall also contact the OAR and Airfield Operations of all such matters.

D. Coordination with ARFF. The Contractor shall have a plan of action for coordinating, through the OAR, with ARFF personnel, mutual aid providers, and other emergency services if construction requires:

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

The MCO ARFF may be contacted using the information provided under Paragraph 213.

E. Notification to the FAA

1) **Part 77.** All Contractor construction activities or alteration of objects that will affect the navigable airspace, as defined in Part 77, must be identified and approved by the OAR, Airfields Operations and the FAA. This includes construction equipment and proposed parking areas for their equipment (i.e. cranes, graders, other equipment) on airports. The FAA Form 7460-1 "Notice of Proposed Construction or Alteration", shall be used for this purpose and submitted to the FAA Orlando Airports District Office by GOAA and Design Team prior to the construction award of the contract. All alterations during the construction of the project shall be resubmitted by the Contractor, OAR and GOAA for the FAA's approval.

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. This notification involves submitting of the FAA Form 7480-1 “Notice of Landing Area Proposal”, to the Orlando FAA Airports District Office by GOAA.

3) **NAVAIDS.** For emergency (short notice) notification about impacts to both airport owned and FAA owned NAVAIDs, contact: 866-432-2622 or the MCO FAA ATCT.

(a) Airport owned/FAA maintained. If construction operations require a shutdown of more than 24 hours, or more than 4 hours daily on consecutive days, of NAVAIDs owned by the airport but maintained by the FAA, the Contractor shall provide a 45-day minimum notice to FAA ATO/Technical Operations/FAA ATCT prior to facility shutdown.

(b) FAA owned.

(i) The Contractor, Airfield Operations and OAR shall notify the appropriate FAA ATO Service Area Planning and Requirements (P&R) Group a minimum of 45 days prior to implementing an event that causes impacts to NAVAIDs. (Impacts to FAA equipment may be covered by a Reimbursable Agreement (RA) and do not have to be reported by the MCO).

(ii) The Contractor, Airfield Operations and OAR shall coordinate work for a FAA owned NAVAID shutdown with the local FAA ATO/Technical Operations Office/FAA ATCT, including any necessary reimbursable agreements and flight checks. The Contractor shall detail procedures that address unanticipated utility outages and cable cuts that could impact FAA NAVAIDs. In addition, seven (7) days advanced notice is required to schedule the actual shutdown.

214. Inspection Requirements.

A. Daily Inspections. Inspections should be conducted at least daily, but more frequently if necessary to ensure conformance with the CSPP. A sample checklist is provided in Appendix 4 of the FAA AC 150/5370-2 “Operational Safety on Airports During Construction” (Latest Edition) and is described in Chapter 3 Paragraph 324 of the CSPP, to be utilized by the Contractor. The OAR will have full time inspectors monitoring activity throughout construction. The Contractor will also be required to conduct daily inspections per GP-100 Contractors Quality Control Program as outlined in FAA AC 150/5370-10 “Standards for Specifying Construction of Airports” (Latest Edition).

Prior to opening any work area or phase for aircraft traffic use, the OAR will arrange for an inspection by OAR and Airfield Operations. All areas will be

subject to inspection by Airfield Operations and the FAA at any time and noted deficiencies shall be corrected by the Contractor immediately.

B. Final Inspections. All extended runway/Taxiway closures may require safety inspections at certified airports prior to allowing air carrier service. Airfield Operations and the OAR shall coordinate with the FAA Airport Certification Safety Inspector (ACSI) to determine if a final inspection will be necessary. Personnel from the FAA, GOAA, Design Team, OAR and Contractor will conduct a final inspection at the completion of the construction of the project. All discrepancies from the Contract Documents, identified during the substantial completion inspections, must be corrected by the Contractor prior to the Final Completion Inspection.

215. Underground Utilities. The CSPP outlines procedures for locating and protecting existing underground utilities, cables, wires, pipelines, and other underground facilities in excavation areas. This involves coordinating with public utilities and FAA ATO/Technical Operations. Note that the, “One Call” services does not include FAA ATO/Technical Operations. See Paragraph 207.B.3 for detailed procedures related to underground utilities. At MCO, all FAA Utilities are located by FAA personnel working at MCO, upon a timely request made by the Contractor and OAR through GOAA.

216. Penalties. Penalty for noncompliance with FAA and/or Airport rules and regulations and the safety plans (for example, if a vehicle is involved in a runway incursion, lost/no/expired badge, lost/no/expired vehicle decal) will be the sole responsibility of the Contractor. Such penalties can typically include rescission of driving privileges or access to the AOA and/or fines assessed for violations by the governing agencies. All SIDA violations will be assessed by Airfield Operations and the GOAA Badging Office.

217. Special Conditions. During periods of severe weather conditions or other special operational emergencies, Airfield Operations and the OAR may direct the Contractor to relinquish areas under construction and to prepare the areas for the severe weather or aircraft operations. Other special operational emergencies may include low-visibility operations, aircraft in distress, aircraft accident, security breach, Vehicle/Pedestrian Deviation (VPD) and other activities requiring construction suspension/resumption. In this event the OAR and Airfield Operations will direct the Contractor to evacuate the area. The OAR 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 operations. The Contractor shall promptly and fully comply with the OAR’s directive. Should the directive entail extra work under the Contract, as determined by the OAR, the Contractor will be reimbursed for such extra work in accordance with the General Conditions of the Contract Documents. Should the directive entail a delay in the completion of the Contract or any defined subdivision of the contract, as determined by the OAR, the Contractor may be granted an extension of time if allowed by the provisions of General Conditions of the Contract Documents.

218. Runway and Taxiway Visual Aids. The Contractor shall ensure that airfield marking, lighting, signs, and visual NAVAIDS, that aircraft rely on and where aircraft are operating, are protected and clearly and visibly separated from construction areas. Throughout the duration of the construction project, the Contractor shall ensure that construction areas are clearly marked and visible at all times and that marking, lighting, signs, and visual NAVAIDs, that are to remain operational, are protected, remain in place and remain operational.

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

B. Markings. Markings must be in compliance with the standards of FAA AC 150/5340-1 “Standards for Airport Markings” (Latest Edition), and in compliance with the Construction Documents. Runway exit taxiways closed to aircraft operations are marked with a yellow X. Temporary runway closures are designated by Portable Runway Closure Markers (lighted X) placed on or near the runway designation numbers.

1) **Temporarily Closed Runways.** The Contractor shall use a lighted X (Portable Lighted Runway Closure Markers), both at night and during the day, placed at each end of the runway facing the approach and on or near the runway designation numbers. See FAA AC 150/5345-55, “Specification for L-893, Lighted Visual Aid to Indicate Temporary Runway Closure” (Latest Edition). The Contractor through coordination with OAR and Airfield Operations shall disconnect the lighting circuits or secure switches to prevent inadvertent activation for NAVAIDs associated with the temporarily closed Runway.

2) **Temporarily Closed Taxiways.** The Contractor shall place low profile barricades to prevent aircraft from entering closed portions of taxiways. At runway/taxiway intersections, the Contractor shall place an X at the entrance to the closed taxiway from the runway.

   If the taxiway will be closed for any approved duration per Airfield Operations, obliterate taxiway centerline markings, including runway leadoff lines, leading to the closed section. If the centerline markings will be reused upon reopening the taxiway, it is preferable to paint over the marking. This will result in less damage to the pavement when the upper layer of paint is ultimately removed. The application rate of paint to mark a short-term temporary taxiway closure may not deviate from the P-620, “Runway and Taxiway Painting,” Specification provided in the Contract Documents.

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

3) **Permanently Closed Runways and Taxiways.** These conditions do not exist on this project. If needed, refer to FAA AC 150/5370-2 “Operational Safety at Airports During Construction” Section 218 (Latest Edition).

4) **Partially Closed Runways and Displaced Thresholds.** These conditions do not exist on this project. If needed, refer to FAA AC 150/5370-2 “Operational Safety at Airports During Construction” Section 218 (Latest Edition).

C. Signs, Temporary, Including Orange Construction Signs, and Permanent Signs. To the extent possible, signs are designed to be in conformance with the FAA AC 150/5345-44 “Specification for Runway and Taxiway Signs” (Latest Edition) and FAA AC 150/5340-18 “Standard for Airport Sign Systems” (Latest Edition). Any time a sign does not serve its normal function; it must be securely covered or removed to prevent misdirecting pilots or equivalent method approved by the OAR and Airfield Operations. Note that information signs identifying a crossing taxiway continue to perform their normal function even if the crossing taxiway is closed. The electrical construction plans provide details regarding relocation or covering of the guidance signs. The Contractor shall request approval from the OAR and Airfield Operations, prior to taking a guidance sign out of service.

D. Lighting and Visual NAVAIDs. When disconnecting runway and taxiway lighting fixtures, disconnect the associated isolation transformers. Alternately, cover the light fixture in such a way as to prevent light leakage. Avoid removing the lamp from energized fixtures because an excessive number of isolation transformers with open secondaries may damage the regulators and/or increase the current above its normal value. Secure, identify, and place any above ground temporary wiring in conduit to prevent electrocution and fire ignition sources.

Temporary airfield electrical fixtures and conductors are allowable when necessary, but shall be installed as follows:

1. Temporary lights shall be bolted to the pavement in a manner rendering the light stationery and allowing space for conductors to enter or exit and to be spliced.

2. When the above is not practical, lights shall be fastened to a weighted object adaptable for the purpose and of sufficient weight to inhibit movement by jet engine blast.

3. Temporary conductors supplying temporary lights shall be installed in a rigid galvanized steel conduit system and secured every five feet to prevent movement by jet engine blast.

4. All joints or splices in temporary conductors shall have heat shrink tubing with integral sealant or tape applied in accordance with the Contract Documents to secure mechanical and electrical connection and prevent water entry.

5. All plug-in connections shall have tape or heat shrink tubing with integral sealant applied to prevent accidental disconnection and shall be color code taped to expedite quick, efficient disconnection and restoration.

6. Temporary lights and signage shall conform as closely as possible to permanent locations normally on the taxiway or runway but shall guide aircraft in a safe path. Please refer to the temporary airfield lighting details provided in the Contract Documents for additional requirements.

Closed taxiways shall be blacked out in a manner acceptable to FAA, OAR and Airport Operations and said black/out/marking/lighting shall be kept in acceptable condition.

1. The recommended method of temporarily bypassing a fixture is to unplug and bypass the primary side of the L-830 isolation transformer. No more than 5% of the fixtures in each airfield lighting circuit may be unplugged from the L-830 isolation transformer secondary or have the lamp removed. If at any time a larger number of fixtures are required to be bypassed at the L-830 isolation transformer secondary (or have the lamp removed) a shorting device shall be installed.

2. Pipe sleeves used to obscure the elevated edge lights shall be of sufficient length to block all light output.

3. Airfield signs providing directions to closed areas shall be covered (black out). No stray light may be emitted from the covered portions of the sign. The signs shall be covered with 3/8” thick exterior plywood panels or equivalent method approved by the OAR and Airfield Operations. The plywood panels shall be painted black and shall be banded to the sign. Please refer to the temporary airfield lighting details provided in the Contract Documents for additional requirements.

4. Areas closed to aircraft shall not be lighted (black out). Adequate lighting, in the opinion of the OAR or Airfield Operations, shall be provided to delineate the active and closed areas of the AOA.

The Contractor shall provide temporary wiring as required to reconnect existing circuits to provide guidance for aircraft to pass through the construction areas on those taxiways/runways, which must remain open. The Contractor shall bypass

or otherwise render inoperative those portions of the runway/taxiway lighting circuits in closed areas of the airfield.

All runways/taxiways not closed for construction shall have fully operable airfield lighting systems using the airport airfield lighting control system. The Contractor shall coordinate the temporary airfield lighting requirements for each phase with the OAR. The Contractor shall submit a temporary airfield lighting plan to the OAR two weeks prior to the need for the temporary airfield lighting. The OAR will coordinate the plan with the airport and FAA. The Contractor shall make revisions/corrections to the temporary airfield lighting plan as required by the OAR.

219. Marking and Signs for Access Routes. The pavement markings and signs for construction personnel shall conform to the FAA AC 150/5340-18 “Standard for Airport Sign Systems” (Latest Edition) and the Federal Highway Administration Manual on Uniform Traffic Control Devices (MUTCD) and/or Florida Department of Transportation Design Standards or Specifications. Signs adjacent to areas used by aircraft must comply with the frangibility requirements of FAA AC 150/5220-23, “Frangible Connections” (Latest Edition), which may require modification to size and height guidance provided in the MUTCD and FDOT Design Standards and Specifications.

220. Hazard Marking, Lighting and Signing.

a. Hazard Marking, Lighting and Signing. The hazard markings, lighting and signage prevent pilots from entering areas closed to aircraft; these features also prevent construction personnel from entering areas open to aircraft operations. The “Phasing Plan” and “Safety and Security Notes and Details” Drawings provided in the Contract Documents specify prominent, comprehensible warning indicators for areas affected by construction that is normally accessible to aircraft, personnel, or vehicles. The Contractor is directed to provide hazard marking and lighting as specified to identify open manholes, trenches, small areas under repair, stockpiled material, waste areas, and areas subject to jet blast. The Contractor shall stay clear of all FAA, MCO, and National Weather Service facilities cables and power lines; instrument landing system (ILS) critical areas; and airport surfaces, such as RSA, TSA, OFA, and OFZ.

b. Equipment.

(1) Barricades (low-profile light mounted barricades), weighted with 25 lbs. sand bags are the acceptable methods used to identify and define the limits of construction on this project. The barricades and materials used to secure the barricades shall be those that pose the least danger to aircraft but shall be sturdy enough to remain in place when subjected to typical winds, prop wash and jet blast. The spacing of barricades shall be 4 (four) feet to exclude vehicles from driving through the space between barricades. At select locations, as approved by the OAR, Airfield Operations and ARFF, barricades spacing shall be increased to permit access for construction and

emergency vehicles.

All barricades shall be moved at least once a week and the Contractor shall sweep any debris that has accumulated and remove this debris from the site. The barricades shall then be replaced at the appropriate location.

(2) Lights must be red, either steady burning or flashing, and must meet the luminance requirements of FDOT Design Standards and Specifications. Batteries powering lights will last longer if lights flash. These lights must be affixed on the barricades. Lights must be mounted on barricades and spaced at no more than 4 feet apart. 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 to turn them on manually during periods of low visibility during daytime hours.

(3) Supplement barricades with signs. The Contractor shall provide additional signs (for example “No Entry,” “No Vehicles”) as necessary in accordance with the FDOT Design Standards and Specifications.

(4) Air Operations Area – General. Barricades shall not be permitted in any active runway, taxiway or taxilane safety area. Within a runway or taxiway object free area, and on aprons, use collapsible barricades marked with diagonal with alternating orange and white stripes; along with flashing or steady burning red lights as noted above, and/or signs to separate all construction/maintenance areas from the movement area. All barricades shall be supplemented with alternating orange and white flags at least 20 inches by 20 inches square and securely fastened to eliminate FOD. All barricades adjacent to any open runway, taxiway or 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, or other surface wind currents. If affixed to the surface (on aprons only), they must be frangible at grade level or as low as possible, but not to exceed 3 inches above the ground.

(5) Air Operations Area – Runway/Taxiway Intersections. The Contractor shall utilize highly reflective low profile barricades with lights to close taxiways leading to closed runways, as described above and per the Contract Documents. For this project 10 to 15 minutes closure periods are not anticipated.

(6) Air Operations Area – Other. Beyond runway, taxiway and taxilane object free areas and aprons, barricades intended for construction vehicles and

personnel may vary but shall be in compliance with the FDOT Design Standards and Specifications.

(7) Maintenance. The construction specifications and drawings provide 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 OAR, Airfield Operations and FAA ATCT. Lighting should be checked for proper operation at least once per day, preferably at dusk.

221. Protection of Runway and Taxiway Safety Areas. Runway and taxiway safety areas, obstacle free zones, object free areas, and approach surfaces are described in FAA AC 150/5300-13 "Airport Design" (Latest Edition). Protection of these areas includes limitations on the location and height of equipment and stockpiled material. The "Phasing Plan" and "Safety and Security Notes and Details" Drawings provided in the Contract Documents are designed such that all construction activities will remain clear of all applicable safety areas, object free areas, obstacle free zones and approach departure surfaces affected by construction. For this project the Contractor vehicles and equipment heights shall not exceed 20 feet. In addition to items mentioned under this Section the Contractor shall see and review the following:

- Section 209: Contractor Access.
- Section 213: Notification of Construction Activities.
- Section 218: Runway and Taxiway Visual Aids.
- Section 220: Hazard Marking, Lighting and Signage.

A. Runway Safety Area (RSA). A runway safety area is the defined surface surrounding the runway prepared or suitable for reducing the risk of damage to airplanes in the event of an undershoot, overshoot, or excursion from the runway. See FAA AC 150/5300-13A "Airport Design" (Latest Edition). Construction activities within the existing RSA are subject to the following conditions:

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

(2) The Airport will not need to coordinate the adjustment of RSA Length beyond runway end dimensions as the operational characteristics of runways at MCO will not be altered for this project. The CSPP and phasing drawings will be submitted to the FAA for approval. During construction the Contractor/OAR will coordinate with the Airport Operations and FAA ATCT to issue all appropriate NOTAMs.

(3) The Contractor shall not enter the RSA of any open runways at any time. No construction activities shall be permitted on a pullback basis within the RSA. The RSA and RSA Length beyond runway end of 1,000 feet will be maintained for ensuring adequate distance for protection from blasting operations.

(4) Excavations.

(i) The Contractor will not be permitted to have open trenches or excavations within the RSA while a runway is open. If necessary due to emergency operational conditions, the Contractor shall backfill trenches before the reopening of the temporarily closed runway. If the runway must be opened before excavations are backfilled, cover the excavations appropriately. Covering for open trenches must be designed to allow the safe operation of the heaviest aircraft operating on the runway across the trench without damage to the aircraft.

(ii) The Contractor shall prominently mark open trenches and excavations at the construction site with low profile barricades, as approved by the Airfield Operations and OAR, and light them with red lights during hours of restricted visibility or darkness.

(5) Erosion Control. Soil erosion must be controlled to maintain RSA standards, that is, the RSA must be cleared and graded and have no potentially hazardous ruts, humps, depressions, or other surface variations, and capable, under dry conditions, of supporting aircraft rescue and fire fighting equipment, and the occasional passage of aircraft without causing structural damage to the aircraft. The project grading plans issued to the Contractor for construction of the RSA are designed to conform to the gradients requirements mandated by FAA AC 150/5300-13B “Airport Design” (Latest Edition).

B. Runway Object Free Area (ROFA). Construction, including excavations, may be permitted in an active ROFA providing they are marked with lighted low-profile barricades. All construction 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 ROFA requires submittal of a FAA Form 7460-1 “Notice of Proposed Construction or Alteration”, and justification provided to the FAA Orlando Airport District Office for approval.

C. Taxiway Safety Area (TSA). A taxiway safety area is a defined surface alongside the taxiway prepared or suitable for reducing the risk of damage to an airplane unintentionally departing the taxiway. See FAA AC 150/5300-13B “Airport Design” (Latest Edition). Construction activities within the TSA are subject to the following conditions:

(1) No construction may occur within the TSA while the taxiway is open for aircraft operations. The TSA dimensions may be temporarily adjusted if the taxiway is restricted to aircraft operations requiring a TSA that is equal to the TSA width available during construction. See FAA AC 150/5300-13B “Airport Design”, Table 4-1 Design standards based on Airplane Design Group (ADG) [Latest Edition]. The TSA dimensions summary is provided in the table below:

Airplane Design Group	TSA Dimension centered along centerline
Group I	49 feet
Group II	79 feet
Group III	118 feet
Group IV	171 feet
Group V	214 feet
Group VI	262 feet

(2) The airport operator must coordinate the adjustment of the TSA width as permitted above with the FAA Orlando Airport District Office, FAA ATCT, and Airfield Operations. A NOTAM shall be issued per Paragraph 213.

(3) The Contractor shall not enter the TSA dimensions at any time without written approval from Airfield Operations and OAR.

(4) Excavations.

(i) The Contractor will not be permitted to have open trenches or excavations within the TSA while a taxiway is open. If necessary due to emergency operational conditions, the Contractor shall backfill trenches before the reopening of the temporarily closed taxiway. If the taxiway must be opened before excavations are backfilled, cover the excavations appropriately. Covering for open trenches must be designed to allow the safe operation of the heaviest aircraft operating on the taxiway across the trench without damage to the aircraft.

(ii) The Contractor shall prominently mark open trenches and excavations at the construction site with low profile barricades, as approved by the Airfield Operations and OAR, and light them with red lights during hours of restricted visibility or darkness.

(5) Erosion Control. Soil erosion must be controlled to maintain TSA standards, that is, the TSA must be cleared and graded and have no potentially hazardous ruts, humps, depressions, or other surface variations, and capable, under dry conditions, of supporting aircraft rescue and fire fighting equipment, and the occasional passage of aircraft without causing structural damage to the aircraft. The project grading plans issued to the Contractor for construction of the TSA are designed to conform to the gradients requirements mandated by FAA AC 150/5300-13B “Airport Design” (Latest Edition).

D. Taxiway Object Free Area (TOFA). Unlike the Runway Object Free Area, aircraft wings regularly penetrate the taxiway object free area during normal operations.

The restrictions for construction activities in the TOFA are more stringent. The "Phasing Plan" and "Safety and Security Notes and Details" Drawings provided in the Contract Documents for this project are designed to eliminate construction activities within the TOFA. No construction shall occur within the TOFA while the taxiway is open for aircraft operations. If the Contractor requests and is approved to conduct construction activities within an active TOFA, all guidelines identified in Paragraph 221.d of FAA AC 150/5370-2 "Operational Safety on Airports During Construction" (Latest Edition) shall be adhered to by the Contractor, OAR and Airfield Operations. The TOFA dimensions summary is provided in the table below:

Airplane Design Group	TOFA Dimension centered along centerline
Group I	89 feet
Group II	124 feet
Group III	171 feet
Group IV	243 feet
Group V	285 feet
Group VI	335 feet

E. Obstacle Free Zone (OFZ). In general Contractor 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. If applicable, the Contractor shall coordinate with the OAR, Airfield Operations, FAA ATCT and the Orlando Airport District Office. The "Phasing Plan" and "Safety and Security Notes and Details" Drawings provided in the Contract Documents for this project are designed to eliminate construction activities within the OFZ.

F. Runway Approach/Departure Areas and Clearways. All personnel, materials, and/or equipment must remain clear of the applicable threshold siting surfaces, as defined in Appendix 2, "Threshold Siting Requirements," of FAA AC 150/5300-13B "Airport Design" (Latest Edition). Objects that do not penetrate these surfaces may still be obstructions to air navigation and may affect standard instrument approach procedures. If applicable, the Contractor shall coordinate with the OAR, Airfield Operations, FAA ATCT and the Orlando Airport District Office.

(1) Construction activity in a runway approach/departure area. Construction activities within runway approach/departure areas are not anticipated or scheduled for this project.

(2) Caution regarding partial runway closures. Partial runway closures are not anticipated or scheduled for this project.

(3) Caution regarding displaced thresholds. Displaced thresholds are not anticipated or scheduled for this project

222. Other Limitations on Construction. The construction activities shall satisfy other limitations, including but not limited to:

a. Prohibitions.

(1) No use of tall equipment (cranes, concrete pumps, and so on) with heights exceeding 20 feet will be permitted during the construction of this project, unless a FAA Form 7460-1 "Notice of Proposed Construction or Alteration", determination letter is issued for such equipment.

(2) No use of open flame welding or torches will be permitted for this project.

(3) No use of electrical blasting caps on or within 1,000 feet (300 m) of the airport property. See FAA AC 150/5370-10 "Standards for Specifying Construction of Airports" (Latest Edition).

(4) No use of flare pots will be permitted within the AOA for the construction of this project.

(5) All variations to the "Phasing Plan" and "Safety and Security Notes and Details" Drawings provided in the Contract Documents of this project shall be approved by Airfield Operations and the FAA. Contractor is expected to utilize the "Phasing Plan" and "Safety and Security Notes and Details" Drawings provided within the Contract Documents and other items outlined in this CSPP during the construction of this project.

b. Restrictions.

(1) Construction suspension required during specific airport operations. If the Contractor is required to cease construction activities due to special airport operational restrictions the contractor shall be granted an extension of time in accordance with the provisions of General Conditions of these Contract Documents. See Paragraph 217 for additional information.

(2) Areas that cannot be worked on simultaneously. The "Phasing Plan" and "Safety and Security Notes and Details" Drawings provided in the Contract Documents outline construction work areas that can and cannot be worked on simultaneously.

(3) Day or night construction restrictions. Construction activities are anticipated to be constructed during daytime and night time hours.

(4) Seasonal construction restrictions. There are no seasonal construction restrictions. The project duration accounts for the rainy season typically experienced in Central Florida.

CHAPTER 3: SAFETY PLAN COMPLIANCE DOCUMENT

Section 1. Basic Considerations

This chapter shall be completed by the selected Contractor for the H-00370 Airside 3 Apron PCC Slab Rehabilitation project. It shall be submitted as a shop drawing submittal for the approval from the Design Team, OAR, FAA ATCT and Airfield Operations, at the onset of the Mobilization Phase of Construction. The Safety Plan Compliance Document (SPCD) will supplement the Construction Safety and Phasing Plan (CSPP) document written to comply with the FAA AC 150/5370-2 "Operational Safety at Airports During Construction" (Latest Edition). The CSPP and SPCD are organized by numbering sections which correspond to each subject listed in Chapter 2, Section 1, Paragraph 204, and described in detail in Chapter 2, Section 2 of FAA AC 150/5370-2 "Operational Safety on Airports During Construction" (Latest Edition). Each section number and title in the CSPP matches the corresponding subject outlined in Chapter 2, Paragraph 204 (for example, 1. Coordination, 2. Phasing, 3. Areas and Operations Affected by the Construction Activity, and so on.). The supplemental SPCD shall also follow similar numbering system as outlined in this chapter.

301. Overview. The SPCD is mandatory for airport construction projects receiving funds under the Airport Improvement Program (AIP) or the Passenger Facility Charge (PFC) Program. The SPCD should include a general statement by the construction Contractor that he/she has read and will abide by the Construction Safety and Phasing Plan (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 such as:

> **"I (Name of Contractor's Contract Signee/Construction Company Name), have read the "H-00370 Airside 3 Apron PCC Slab Rehabilitation" 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, per Chapter 2 of this Report. 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.**

302-304. Reserved for awarded Contractor to include other construction related items.

305. Coordination. Discuss details of proposed safety meetings with the airport operator and with Contractor employees and subcontractors.

306. 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.

307. 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.

308. Protection of NAVAIDs. Discuss specific methods proposed to protect operating NAVAIDs.

309. 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 FAA ATCT cannot reach the Contractor’s designated person by radio.
d) Details on how the Contractor will escort material delivery vehicles.

310. Wildlife management. Discuss the following:

a) Methods and procedures to prevent wildlife attraction.
b) Wildlife reporting procedures.

311. Foreign Object Debris (FOD) management. Discuss equipment and methods for control of FOD, including construction debris and dust.

312. Hazardous material (HAZMAT) management. Discuss equipment and methods for responding to hazardous spills.

313. 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 FAA Form 7460-1 “Notice of Proposed Construction or Alteration”, not previously submitted by the airport operator.
d) Batch plant details, including FAA Form 7460-1 “Notice of Proposed Construction or Alteration”, submittal.

314. Inspection requirements. Discuss daily (or more frequent) inspections and special inspection procedures.

315. Underground utilities. Discuss proposed methods of identifying and protecting underground utilities.

316. Penalties. Penalties should be identified in the CSPP and should not require an entry in the SPCD.

317. Special conditions. Discuss proposed actions for each special condition identified in the CSPP.

318. Runway and taxiway visual aids. Including marking, lighting, signs, and visual NAVAIDs. Discuss proposed visual aids including the following:

a) Equipment and methods for covering signage and airfield lights.
b) Equipment and methods for temporary closure markings (paint, fabric, other).
c) Types of temporary Visual Guidance Slope Indicators (VGSI).

319. Marking and signs for access routes. Discuss proposed methods of demarcating access routes for vehicle drivers.

320. Hazard marking and lighting. Discuss proposed equipment and methods for identifying excavation areas.

321. Protection of runway and taxiway safety areas. Including object free areas, obstacle free zones, and approach/departure surfaces. Discuss proposed methods of identifying, demarcating, and protecting airport surfaces including:

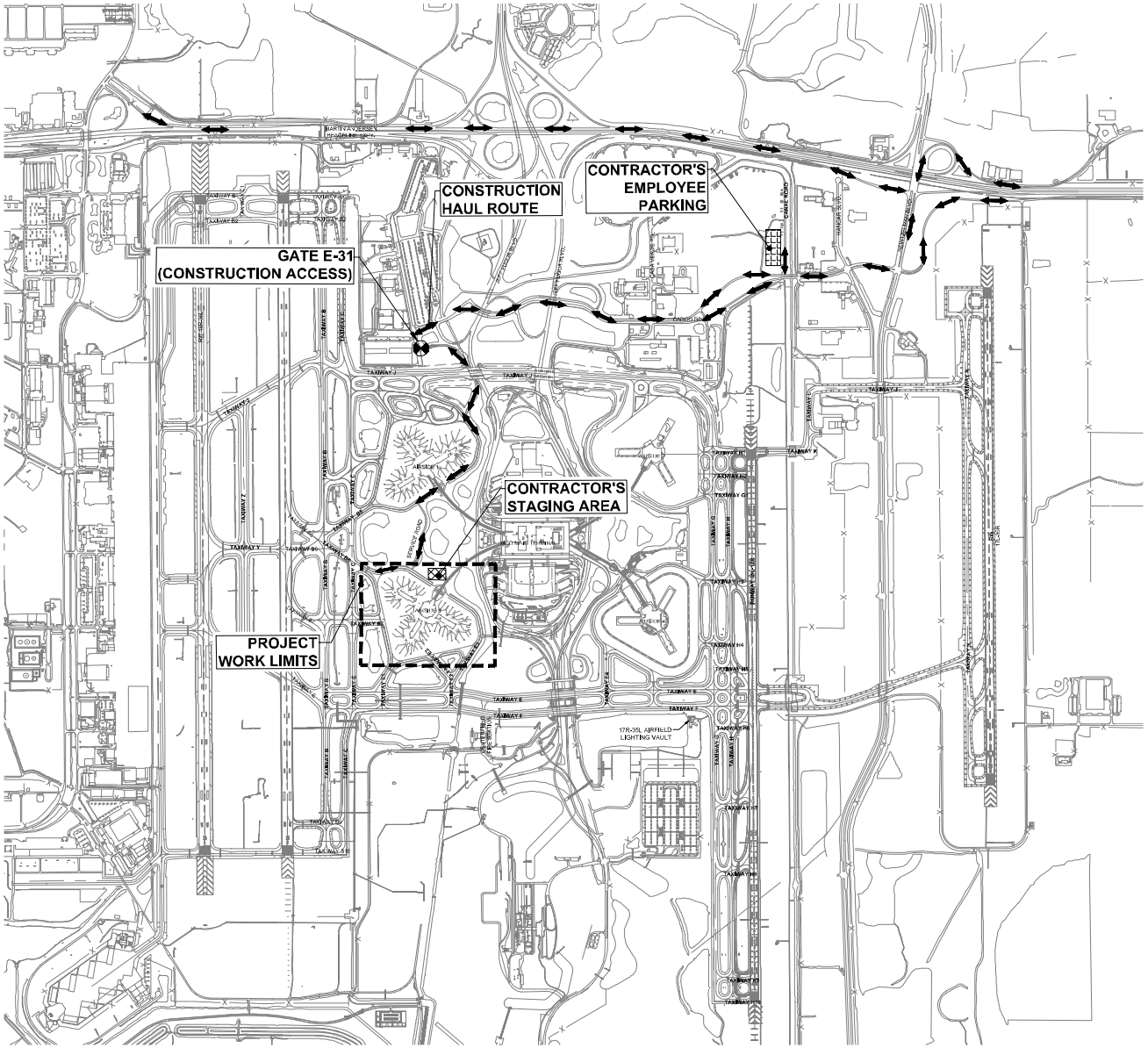
a) Equipment and methods for maintaining Taxiway Safety Area standards.
b) Equipment and methods for separation of construction operations from aircraft operations, including details of barricades.

322. Other limitations on construction should be identified in the CSPP and should not require an entry in the SPCD.

323. Safety and Phasing Plan Checklist. The Contractor shall acknowledge and populate Appendix 3. Safety and Phasing Plan Checklist provided in the appendix of the FAA AC 150/5370-2 “Operational Safety on Airports During Construction” (Latest Edition). This checklist should be submitted as part of the shop drawing submittal for review and approval of the Design Team, OAR, FAA ATCT and Airfield Operations.

324. Construction Project Daily Safety Inspection Checklist. The Contractor shall complete the Appendix 4. Construction Project Daily Safety Inspection Checklist provided in the appendix of the FAA AC 150/5370-2 “Operational Safety on Airports During

Construction" (Latest Edition). This daily inspection checklist should be submitted to the OAR, FAA ATCT and Airfield Operations. This checklist is one tool the Contractor may use to aid in identifying and correcting potentially hazardous conditions. It may be customized as appropriate for this project as approved by the OAR and Airfield Operations.



CONTRACTOR'S STAGING AREA NOTES:

1. THE ACTUAL SIZE AND EXACT LOCATION OF THE STAGING AREA SHALL BE ESTABLISHED PRIOR TO CONSTRUCTION WITH THE APPROVAL OF THE OAR. THE CONTRACTOR SHALL ERECT AND MAINTAIN SUITABLE MARKING, BARRICADES AND/OR WARNING DEVICES SUITABLE FOR BOTH DAY/NIGHT USE TO DELINEATE THE PERIMETER OF ALL SUCH AREAS.
2. THE CONTRACTOR SHALL BE RESPONSIBLE FOR TRANSPORTING ALL EMPLOYEES TO THE WORK AREAS.
3. THE CONTRACTOR IS RESPONSIBLE TO COORDINATE, THROUGH THE OAR, WITH OTHER CONTRACTORS WORKING IN THE VICINITY OF THE PROJECT OR USING THE SAME HAUL ROUTES.
4. CONTRACTOR WILL COORDINATE WITH UTILITY COMPANIES FOR TEMPORARY ELECTRIC AND/OR TELEPHONE SERVICE TO THE STAGING/STORAGE SITE, IF THESE SERVICES ARE AVAILABLE. SANITARY SERVICE IS NOT AVAILABLE, USE SEWER COLLECTION TANKS.
5. CONTRACTOR SHALL SUBMIT A STAGING/STORAGE AREA PLAN FOR APPROVAL TO OAR PRIOR TO STARTING WORK.
6. ALL PETROLEUM, SOLVENT PRODUCTS AND OTHER PRODUCTS SHALL BE STORED IN A CONTAINED AREA IN ACCORDANCE WITH GOAA, CITY, COUNTY, STATE, AND FEDERAL REGULATIONS.

GENERAL CONSTRUCTION AND HAUL ROUTE NOTES:

1. FOR SAFETY AND SECURITY REFER TO SHEET C61.0.1.
2. THE LOCATION OF HAUL ROUTES ON THE AIRPORT SITE SHALL BE AS SPECIFIED ON THIS SHEET UNLESS OTHERWISE AUTHORIZED BY THE OAR AND AIRFIELD OPERATIONS. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO COORDINATE OFF-SITE HAUL ROUTES WITH THE APPROPRIATE OWNERS WHO HAVE JURISDICTION OVER THE AFFECTED ROUTE. THE BEFORE AND AFTER CONDITION OF THE EXISTING ON-SITE HAUL ROUTES SHALL BE JOINTLY INSPECTED, AND CONDITIONS DOCUMENTED BY THE CONTRACTOR AND THE OAR. MISCELLANEOUS CONSTRUCTION AND RESTORATION REQUIRED TO CONSTRUCT AND MAINTAIN TEMPORARY HAUL ROUTES OR ACCESS POINTS TO THE CONTRACTOR'S STAGING AREA OR WORK AREAS ON THE AIRPORT SHALL BE THE CONTRACTOR'S RESPONSIBILITY AND SHALL BE APPROVED BY THE OAR PRIOR TO THE START OF WORK. CONTRACTOR SHALL RESTORE ALL AREAS TO ORIGINAL OR BETTER CONDITION PRIOR TO COMPLETION OF PROJECT.
3. THE CONTRACTOR'S USE OF THE HAUL ROUTE AND ACCESS ROAD SHALL IN NO WAY HINDER THE SAFE AND UNOBSTRUCTED FLOW OF AIRPORT OR HIGHWAY TRAFFIC.
4. LIMITS OF WORK SHALL BE VERIFIED BY AIRFIELD OPERATIONS, THE CONTRACTOR, AND THE OAR PRIOR TO BEGINNING WORK. THE CONTRACTOR'S VEHICLES AND EQUIPMENT SHALL BE RESTRICTED TO THE CONSTRUCTION AREA LIMITS AND CONTRACTOR'S STAGING AREA ONLY. NO VEHICLES ARE PERMITTED ON THE ACTIVE AIRCRAFT OPERATIONS AREA (AOA) UNLESS ESCORTED OR WITH PROPER AUTHORIZATION, IDENTIFICATION AND TRAINING. DESIGNATED PARKING FOR THE CONTRACTOR'S EMPLOYEE'S VEHICLES SHALL BE RESTRICTED TO THE CONTRACTOR'S EMPLOYEE PARKING OR ANOTHER LOCATION APPROVED BY THE OAR.
5. THE CONTRACTOR SHALL PAY PARTICULAR ATTENTION TO THE DUST CONTROL REQUIREMENTS OF THIS CONTRACT. THE OAR AND/OR AIRFIELD OPERATIONS RESERVES THE RIGHT TO STOP WORK UNTIL THE CONTRACTOR BRINGS THE DUST UNDER CONTROL. THE CONTRACTOR SHALL BE RESPONSIBLE FOR DUST CONTROL WITHIN THE CONSTRUCTION LIMITS AS WELL AS ALONG ANY ROADWAYS USED BY THEIR EQUIPMENT AND VEHICLES.
6. CONTRACTOR SHALL GIVE WAY TO AIRCRAFT, INCLUDING TAKING ACTION SUCH AS DRIVING ON GRASS WHEN ANY CONFLICT MIGHT ARISE. AIRCRAFT ALWAYS HAVE "RIGHT-OF-WAY".

LEGEND

- CONTRACTOR'S HAUL ROUTE
- CONSTRUCTION ACCESS GATE
- STAGING AREA (POSSIBLE LOCATION) (ACTUAL LOCATION TO BE DETERMINED BY THE OWNER/OAR)
- CONTRACTOR'S EMPLOYEE PARKING(ACTUAL LOCATION TO BE DETERMINED BY THE OWNER/OAR)
- WORK AREA LIMITS

800' 400' 0 800' 1600'

GRAPHIC SCALE

N

GREATER ORLANDO AVIATION AUTHORITY

H-00370

MCO
AIRSIDE 3 APRON PCC SLAB REHABILITATION

ORLANDO INTERNATIONAL AIRPORT

AECOM

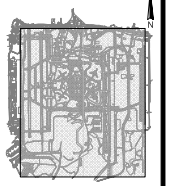
AECOM TECHNICAL SERVICES, INC.

7650 W. COURTNEY CAMPBELL CSWY
SUITE 700
TAMPA, FLORIDA 33607
PHONE: 813.286.1711
FOR THE FIRM: EB 7917

CLINT JAMES MARTIN
FL. P.E. NO. 82740
FIRM EB NO. 8115
AECOM TECHNICAL SERVICES, INC.

REVISIONS

No.	DATE	DESCRIPTION
A	07-08-2024	BID DOCUMENTS



KEY PLAN

PROJECT NO.:	60731531
DESIGNED BY:	JC
DRAWN BY:	JC
CHECKED BY:	AJR
ISSUE DATE:	07-08-2024
DRAWING SCALE:	AS NOTED

DRAWING TITLE:

PROJECT HAUL ROUTE & STAGING AREA

DRAWING NO.

C2.02

Date: Jan 08, 2024 - Time: 11:43 am - Plotted By: Jaja.Corvalka
Drawing File: N:\Documents and Settings\Jaja.Corvalka\Desktop\JUSTIN JUPITER\Data\Projects\Aviation\MCO\Cadd\xrefs\GEC 2023\FY 2024 Airside 3\PCC\AC2.02 SheetMCOAC2.02 PROJECT HAUL ROUTE & STAGING AREA.dwg



GENERAL NOTES:

1. FOR SAFETY AND SECURITY NOTES AND DETAILS REFER TO SHEET C61.0.1.
2. FOR PROJECT HAUL ROUTE AND STAGING AREA SEE SHEET C2.0.2.
3. THE CONTRACTOR SHALL SUBMIT A DETAILED PLAN/SCHEDULE, IN ACCORDANCE WITH THE C-106 SPECIFICATION, ON HOW THE CONTRACTOR INTENDS TO ACCOMPLISH THE CONSTRUCTION WITHIN EACH PHASE WITHIN THE TIME FRAMES AVAILABLE.
4. THE OWNER RESERVES THE RIGHT TO REVISE WITHOUT LIMIT, THE SEQUENCE OF CONSTRUCTION PHASES AND SUB-PHASES.
5. THE CONSTRUCTION OF ANY WORK THAT IS NOT CLEARLY IDENTIFIED AS BEING CONSTRUCTED WITHIN A SPECIFIC PHASE SHALL BE COORDINATED WITH THE OAR AND CONSTRUCTED IN ACCORDANCE WITH THE NEEDS OF THE OWNER AND AIRFIELD OPERATIONS. THE CONTRACTOR SHALL PROVIDE THE OAR 7 DAYS NOTICE PRIOR TO COMMENCING WORK IN THESE AREAS. THE CONTRACTOR'S ACCESS TO THESE PHASES MAY BE RESTRICTED DUE TO THE AIRPORT'S OPERATIONAL REQUIREMENTS. THE WORK WILL BE PERFORMED AT THE OWNER'S CONVENIENCE AT NO ADDITIONAL COST TO THE OWNER.
6. FOR PAVEMENT MARKING REMOVAL ON TEMPORARY CLOSED TAXIWAYS/TAXILANES, AS WELL AS COVERING OR DISCONNECTION OF LIGHT FIXTURES, SIGNS, AND OTHER ELECTRICAL ITEMS REFER TO SECTION 218 OF THE CONSTRUCTION SAFETY AND PHASING PLAN INCLUDED AS AN ATTACHMENT OF THE C-106 SPECIFICATION, IN THE PROJECT MANUAL.
7. ALL COSTS FOR TEMPORARY PAVEMENT MARKING INSTALLATION AND REMOVAL SHALL BE INCLUDED IN THE CONTRACTORS LUMP SUM PRICE FOR SAFETY, SECURITY AND MAINTENANCE OF TRAFFIC, ITEM C-106-1.

SCHEMATIC PROJECT SCHEDULE

	MOBILIZATION 30 DAYS	CONSTRUCTION 30 DAYS	FINAL COMPLETION 30 DAYS
MOBILIZATION (DURATION 30 CALENDAR DAYS)			
WORK AREA 1 (DURATION 30 CALENDAR DAYS)			
FINAL COMPLETION (DURATION 30 CALENDAR DAYS)			

LEGEND

PHASE 0: (MOBILIZATION 30 CALENDAR DAYS) (SEE PHASING NOTES)

WORK AREA 1: (DURATION 30 CALENDAR DAYS)

N

200' 100' 0 200' 400'

GRAPHIC SCALE

GREATER ORLANDO AVIATION AUTHORITY

H-00370

MCO
AIRSIDE 3 APRON PCC
SLAB REHABILITATION

ORLANDO INTERNATIONAL AIRPORT

AECOM

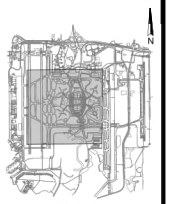
AECOM TECHNICAL SERVICES, INC.

7650 W. COURTNEY CAMPBELL CSWY
SUITE 700
TAMPA, FLORIDA 33607
PHONE: 813.286.1711
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FL. P.E. NO. 82740
FIRM EB NO. 8115
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REVISIONS

No.	DATE	DESCRIPTION
A	07-08-2024	BID DOCUMENTS



KEY PLAN

PROJECT NO.:	60731531
DESIGNED BY:	JC
DRAWN BY:	JC
CHECKED BY:	AJR
ISSUE DATE:	07-08-2024
DRAWING SCALE:	AS NOTED

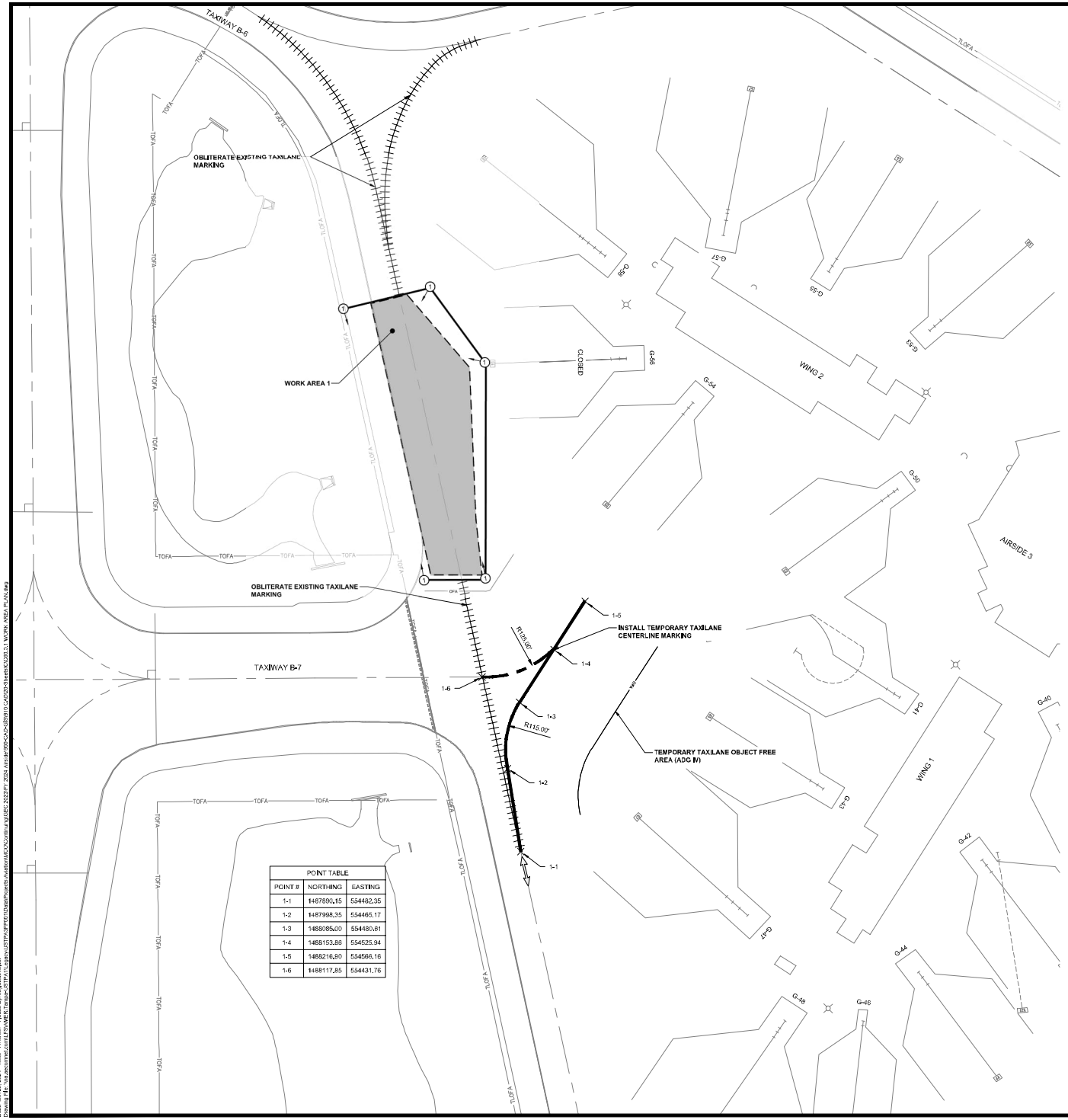
DRAWING TITLE:

OVERALL PHASING PLAN

DRAWING NO.

C60.0.0

Date: Jan 08, 2024 - Time: 11:41 am - Plotted By: JaiArCorrea
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POINT TABLE		
POINT #	NORTHING	EASTING
1-1	1487890.15	554482.35
1-2	1487998.35	554465.17
1-3	1488085.00	554480.81
1-4	1488153.88	554525.94
1-5	1488216.90	554566.16
1-6	1488117.85	554431.76

LEGEND

- WORK AREA LIMITS OF WORK
- BARRICADE LOCATION PER WORK AREA
- PAVEMENT MARKINGS TO BE OBLITERATED (TEMPORARY)
- OFA — TAXILANE OBJECT FREE AREA

WORK AREA 1 NOTES:
DURATION 30 CALENDAR DAYS

1. OBTAIN AUTHORIZATION FROM THE AIRPORT TO CLOSE WORK AREA 1 AS SHOWN.
2. PRIOR TO CLOSING WORK AREA 1 AS SHOWN, THE CONTRACTOR SHALL OBLITERATE THE TAXILANE PAVEMENT MARKINGS AS SHOWN.
3. COMPLETE WORK ITEMS WITHIN THE LIMITS OF WORK AREA 1 BEFORE MOVING ON TO THE NEXT PHASE, UNLESS PREVIOUSLY APPROVED BY THE OAR.
4. CLEAN UP, REMOVE BARRICADES AND REOPEN TO TRAFFIC UNDER THE DIRECTION OF THE OAR AND AIRFIELD OPERATIONS.
5. THE COMPLETION OF THIS WORK AREA SHALL INCLUDE ALL THE WORK REQUIRED TO BE CONSTRUCTED WITHIN THE WORK AREA.

WORK AREA 1 MAJOR WORK ITEMS:

1. FULL DEPTH PCC PAVEMENT REMOVAL
2. FULL STRENGTH PCC PAVEMENT
3. CRACK REPAIRS
4. SPALL REPAIRS

OPERATIONAL IMPACTS:

1. GATE 56 CLOSED
2. AIRSIDE 3 TAXILANE CLOSED AT GATE 56
3. TEMPORARY TAXILANE RESTRICTED TO ADG IV AIRCRAFT

NOTES:

1. FOR SAFETY AND SECURITY NOTES AND DETAILS REFER TO SHEET C61.0.1.
2. CONTRACTOR SHALL COORDINATE THE ACTUAL WORK LIMITS AND THE PLACEMENT AND LOCATION OF ALL TEMPORARY CONSTRUCTION BARRICADES FOR EACH PHASE WITH THE OAR/AIRFIELD OPERATIONS PRIOR TO THE START OF CONSTRUCTION FOR EACH PHASE.
3. FOR PROJECT HAUL ROUTE AND STAGING AREA SEE SHEET C2.0.2.
4. FOR PAVEMENT MARKING DETAILS AND INFORMATION REFER TO SHEET C9.0.2 AND SPECIFICATION ITEM P-620.

N

50' 25' 0 50' 100'

GRAPHIC SCALE

GREATER ORLANDO AVIATION AUTHORITY

H-00370
MCO
AIRSIDE 3 APRON PCC SLAB REHABILITATION

ORLANDO INTERNATIONAL AIRPORT

AECOM

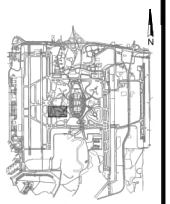
AECOM TECHNICAL SERVICES, INC.

7650 W. COURTNEY CAMPBELL CSWY
SUITE 700
TAMPA, FLORIDA 33607
PHONE: 813.286.1711
FOR THE FIRM: EB 7917

CLINT JAMES MARTIN
FL P.E. NO. 82740
FIRM EB NO. 8115
AECOM TECHNICAL SERVICES, INC.

REVISIONS

No.	DATE	DESCRIPTION
A	07-08-2024	BID DOCUMENTS



KEY PLAN

PROJECT NO.:	60731531
DESIGNED BY:	JC
DRAWN BY:	JC
CHECKED BY:	AJR
ISSUE DATE:	07-08-2024
DRAWING SCALE:	AS NOTED

DRAWING TITLE:

WORK AREA 1 PLAN

DRAWING NO.

C60.0.1

Date: Jan 08, 2024 - Time: 11:48 am - Plotted By: Jaja.Corvalan
Drawing File: N:\Accounts\ooi\ENG\Projects\MCO\Airside 3 APRON PCC SLAB REHAB\CAD\Sheets\C60\C60.0.1 WORK AREA PLAN.dwg

SAFETY & SECURITY NOTES:

1. GENERAL - THE CONTRACTOR SHALL COMPLY WITH ALL SAFETY AND SECURITY REQUIREMENTS SPECIFIED HEREIN. THE CONTRACTOR SHALL DESIGNATE IN WRITING TO THE OAR THE NAME OF THEIR "CONTRACTOR SECURITY OFFICER". THE CONTRACTOR SECURITY OFFICER SHALL REPRESENT THE CONTRACTOR ON THE SAFETY AND SECURITY REQUIREMENTS OF THE CONTRACT. THE CONTRACTOR SHALL ESTABLISH A 24-HOUR TELEPHONE NUMBER TO REACH THE CONTRACTOR SECURITY OFFICER DURING WORKING AND NON-WORKING PERIODS.

2. CONTRACTOR'S SECURITY OFFICER SHALL ACQUAINT THEIR SUPERVISORS AND EMPLOYEES AND ALL SUB CONTRACTORS WITH THE AIRPORT ACTIVITIES THAT ARE INHERENT AT THIS ACTIVE AIR CARRIER AIRPORT AND SHALL CONDUCT THEIR CONSTRUCTION ACTIVITIES TO CONFORM TO ALL ROUTINE AND EMERGENCY AIR TRAFFIC REQUIREMENTS AND GUIDELINES ON SAFETY AND SECURITY SPECIFIED IN THE CONTRACT DOCUMENTS AND AS SPECIFIED BY THE OAR AND THE FAA. CONTRACTOR SHALL ADHERE TO THE REQUIREMENTS OUTLINED IN THIS SECTION AND THE LATEST ADVISORY CIRCULARS INCLUDING, BUT NOT LIMITED TO:

   150/5370-2G "OPERATIONAL SAFETY ON AIRPORTS DURING CONSTRUCTION"

   150/5200-18D "AIRPORT SAFETY SELF-INSPECTION"

   150/5210-5D "PAINTING, MARKING AND LIGHTING OF VEHICLES USED ON AIRPORT"

3. ALL PERSONNEL AND EQUIPMENT MUST BE POSITIONED SO THAT PERSONNEL AND EQUIPMENT DO NOT INTERFERE WITH AIRCRAFT MOVEMENT. CONTRACTOR SHALL ATTEND WEEKLY MONDAY MORNING AIRFIELD MEETINGS AT GOAA ENGINEERING BUILDING TO COORDINATE ONGOING WORK ON AIRPORT PROPERTY.

4. CONSTRUCTION AREA MARKING - CONSTRUCTION ACTIVITIES WITH OPEN TRENCHES, EXCAVATIONS AND STOCKPILED MATERIALS LOCATED AT ANY CONSTRUCTION AREA WITHIN AOA SHALL BE PROMINENTLY MARKED (AT PERIMETER) AND LIGHTED WITH LOW PROFILE BARRICADES.

5. OPEN FLAME - OPEN FLAME, WELDING OR TORCH-CUTTING OPERATIONS ARE PROHIBITED UNLESS ADEQUATE FIRE AND SAFETY PRECAUTIONS HAVE BEEN TAKEN AND THE PROCEDURE APPROVED BY GOAA SAFETY AND THE GOAA FIRE DEPARTMENT. SMOKING IS PROHIBITED ON THE AIRFIELD.

6. DEBRIS CONTROL - DEBRIS, WASTE AND LOOSE MATERIAL SHALL NOT BE ALLOWED ON ACTIVE AIRCRAFT MOVEMENT AREAS OR ROADWAYS. IF OBSERVED, THE MATERIAL SHALL BE REMOVED IMMEDIATELY BY THE CONTRACTOR. THE OAR MAY DIRECT THAT DEBRIS PROBLEMS DURING CONSTRUCTION, NOT CORRECTED BY THE CONTRACTOR, BE CORRECTED BY OTHERS AT THE EXPENSE OF THE CONTRACTOR. THE CONTRACTOR SHALL HAVE POWER BROOMS AND AUTOMATIC MOTORIZED VACUUM EQUIPMENT WITH DRIVERS AVAILABLE ON SITE AT ALL TIMES. CLEANING EQUIPMENT SHALL BE SUITABLE FOR CLEANING CONSTRUCTION DEBRIS FROM THE PAVEMENT. ALL CLEANING EQUIPMENT SHALL NOT BE SUPPLIED WITH METAL BRISTLES.

7. INSPECTION BY AIRFIELD OPERATIONS - PRIOR TO OPENING ANY AREA FOR USE, THE OAR WILL ARRANGE FOR INSPECTION BY OAR AND AIRFIELD OPERATIONS. ALL AREAS WILL BE SUBJECT TO INSPECTION BY AIRFIELD OPERATIONS AT ANY TIME AND NOTED DEFICIENCIES SHALL BE CORRECTED BY CONTRACTOR IMMEDIATELY.

8. CONTRACTOR PERSONNEL SAFETY AND SECURITY ORIENTATION - THE CONTRACTOR SECURITY OFFICER SHALL BE RESPONSIBLE FOR BRIEFING ALL CONTRACTOR PERSONNEL ON REQUIREMENTS THAT APPLY TO WORKING AT ORLANDO INTERNATIONAL AIRPORT AND, FROM TIME TO TIME, OTHER SAFETY AND SECURITY PROVISIONS ADOPTED BY THE AIRPORT. ALL NEW CONTRACTOR EMPLOYEES SHALL BE BRIEFED ON THESE REQUIREMENTS PRIOR TO WORKING ON THIS H-00328 PROJECT.

9. IN CASE OF DISCREPANCIES BETWEEN ANY PORTION OF CONTRACT DOCUMENTS AND REFERENCED REQUIREMENTS, ENGINEER WILL DETERMINE WHICH REQUIREMENT GOVERNS.

10. GROUND CONTROL - ALL CONTRACTOR VEHICLES THAT ARE REQUIRED TO ACCESS OR CROSS ACTIVE TAXIWAYS SHALL DO SO UNDER THE DIRECT CONTROL OF A FLAGMEN IN RADIO CONTACT WITH THE AIRPORT GROUND CONTROL. FLAGMEN SHALL BE APPROVED IN WRITING, TRAINED AND INSTRUCTED BY AIRFIELD OPERATIONS IN THE REGULATIONS GOVERNING OPERATIONS ON THE AOA AND RADIO PROCEDURES AT THE AIRPORT. FLAGMEN SHALL REMAIN WITH THEIR VEHICLE AT ALL TIMES. FLAGMEN AND RADIOS SHALL BE FURNISHED BY THE CONTRACTOR. THE RADIOS SHALL OPERATE ON A COMMON FREQUENCY APPROVED BY AIRFIELD OPERATIONS AND THE OAR. IT SHALL BE UNDERSTOOD BY THE CONTRACTOR THAT AIRPORT TRAFFIC ON RUNWAYS, TAXIWAYS, TAXILANES AND APRONS SHALL HAVE PRIORITY OVER CONTRACTOR'S TRAFFIC. THE CONTRACTOR SHALL ESCORT VEHICLES ACROSS ACTIVE TAXIWAYS. ALL THIS WORK SHALL BE CONSIDERED INCIDENTAL TO PAY ITEM C-106-1.

11. THE CONTRACTOR SHALL NOT PERMIT ANY UNAUTHORIZED PERSONNEL OR TRAFFIC ON THE SITE. THE CONTRACTOR SHALL BE RESPONSIBLE FOR TRAFFIC CONTROL TO AND FROM THE VARIOUS CONSTRUCTION AREAS ON THE SITE IN ACCORDANCE WITH OAR AND AIRFIELD OPERATIONS APPROVAL.

12. VEHICLE IDENTIFICATION - THE CONTRACTOR, THROUGH THE CONTRACTOR SECURITY OFFICER, SHALL ESTABLISH AND MAINTAIN A LIST OF CONTRACTOR AND SUBCONTRACTOR VEHICLES AUTHORIZED TO OPERATE ON THE SITE. THE CONTRACTOR SECURITY OFFICER WILL ENSURE THAT EACH VEHICLE DISPLAY A LARGE COMPANY SIGN (WITH NOT LESS THAN 6" LETTERING) ON BOTH SIDES OF VEHICLE. VEHICLES SHALL ALSO DISPLAY FROM HIGHEST POINT, IN FULL VIEW ABOVE THE VEHICLE A 3' X 3' OR LARGER ORANGE AND WHITE CHECKERED FLAG, EACH CHECK BEING 1' SQUARE. ALL VEHICLES OPERATING IN THE ACTIVE AOA DURING THE HOURS OF DARKNESS SHALL BE EQUIPPED WITH A FLASHING AMBER (YELLOW) DOME-TYPE LIGHT MOUNTED ON TOP OF THE VEHICLE AND OF SUCH INTENSITY TO CONFORM TO LOCAL CODES FOR MAINTENANCE AND EMERGENCY VEHICLES.

13. IDENTIFICATION - EMPLOYEES - GOAA ISSUED IDENTIFICATION/ACCESS BADGES ARE REQUIRED FOR THIS PROJECT. THE AIRPORT ID PROGRAM IS UNDER CONSTANT REVIEW BY THE FAA AND TSA WHOSE AUTHORITY AND ALL CONTEMPORARY REQUIREMENTS WILL GOVERN. THE CONTRACTOR SHALL ASSIGN THE CONTRACTOR SAFETY OFFICER DESCRIBED ABOVE AS THE SINGLE POINT CONTACT FOR ALL IDENTIFICATION AND BADGING REQUIREMENTS.

14. BACKGROUND CHECKS - SINCE GOAA ISSUED ID BADGES WILL BE REQUIRED, IT IS THE RESPONSIBILITY OF GOAA TO CONDUCT ITS OWN SECURITY BACKGROUND CHECK OF CONTRACTORS WHO WILL BE WORKING ON ORLANDO INTERNATIONAL AIRPORT PROPERTY. A CRIMINAL HISTORY RECORDS CHECK (CHRC) AND FINGERPRINTING ARE REQUIREMENTS OF THIS BACKGROUND CHECK. THE CONTRACTOR SHALL CONTACT GOAA AIRPORT ACCESS CONTROL OFFICE IMMEDIATELY UPON AWARD OF THE CONTRACT TO OBTAIN PROPER BADGES AND VEHICLE AUTHORIZATIONS/PERMITS. DELAYS IN BADGING ARE NOT GROUNDS FOR DELAYS IN PERFORMANCE OF THE WORK.

15. CONTINUING REQUIREMENTS FOR BADGING - ALL OTHER REQUIREMENTS OF THE GOAA'S WRITTEN POLICY ON AIRPORT CONSTRUCTION IDENTIFICATION BADGING SHALL BE ADHERED TO INCLUDING ANY APPLICABLE UPDATES OR CHANGES WHICH BECOME EFFECTIVE DURING THE COURSE OF THE PROJECT.

16. THE CONTRACTOR MUST PROVIDE AIRFIELD OPERATIONS WITH A LIST OF ALL EMPLOYEES AND CORRESPONDING ID BADGE NUMBERS. THE LIST SHALL BE UPDATED AND PROVIDED TO AIRFIELD OPERATIONS UNTIL THE CONTRACT IS COMPLETE. THE LIST SHALL ALSO INCLUDE AN EMERGENCY CONTACT NUMBER.

17. SAFETY AND SECURITY - THE CONTRACTOR SHALL CONDUCT THEIR ACTIVITIES IN A SAFE AND SECURE MANNER AS SPECIFIED IN THE CONTRACTOR'S SAFETY AND SECURITY REQUIREMENTS ON THIS SHEET AND ALL GOAA REQUIREMENTS. THE CONTRACTOR AND THE CONTRACTOR'S PERSONNEL SHALL HOLD REGULAR SAFETY MEETINGS TO ENSURE THAT EACH EMPLOYEE IS PROPERLY TRAINED IN THE SAFETY PROCEDURES REQUIRED AT MCO.

18. THERE SHALL BE NO PERMANENT WASTE SITES ON AIRPORT PROPERTY. ANY TEMPORARY WASTE AREAS MADE MUST BE APPROVED BY THE OAR AND SHALL BE KEPT IN A NEAT CONDITION. GOAA WILL DIRECT THE CONTRACTOR TO REMOVE WASTE AREA IF NOT PROPERLY MAINTAINED.

20. THE CONTRACTOR SHALL EXERCISE EXTREME CAUTION WORKING AROUND POTENTIALLY ENERGIZED UNDERGROUND OR ABOVE GROUND ELECTRICAL UTILITIES. THE CONTRACTOR IS RESPONSIBLE FOR SITE SAFETY AT ALL TIMES AND SHALL CONFORM TO ALL OSHA, FAA, AND ALL OTHER FEDERAL, STATE, AND LOCAL SAFETY REGULATIONS.

21. DURING TIMES WHEN SAFETY OF FLIGHT OPERATIONS COULD BE IMPAIRED, OR WHEN EQUIPMENT IS IDLE, ALL CONTRACTOR'S BOOMS, TOWERS, AND OTHER MOVABLE APPENDAGES WILL BE LOWERED TO THE MINIMUM EXTENT AND PARKED IN THE DESIGNATED STAGING AREA.

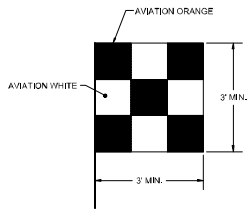
22. THE CONTRACTOR SHALL BE RESPONSIBLE FOR PAYMENT OF ANY FINES ASSESSED TO THE OWNER DUE TO THE CONTRACTOR'S VIOLATIONS OF FAA OPERATING, SAFETY, OR SECURITY REQUIREMENTS.

23. IF MORE THAN TWO SAFETY AND/OR SECURITY VIOLATIONS OCCUR, ADDITIONAL TRAINING WILL BE REQUIRED BY THE CONTRACTOR AND TO ALL EMPLOYEES.

24. AFTER EACH WORK AREA IS COMPLETED THE CONTRACTOR SHALL CONDUCT A SAFETY/SECURITY CLASS FOR ALL EMPLOYEES BEFORE PROCEEDING TO THE NEXT AREA. THIS MEETING SHALL ALSO BE HELD BEFORE COMMENCING WORK IN THE FIRST WORK AREA, AS A MINIMUM, CLASSES SHALL COVER HAUL ROUTES, FLAGMEN RESPONSIBILITIES AND QUALIFICATIONS, ESCORT REQUIREMENTS AND SAFETY ISSUES.

25. THE CONTRACTOR'S WORK WILL BE RESTRICTED WHEN THERE IS LESS THAN A 1000 FOOT CEILING AND/OR 3 MILES VISIBILITY. RESTRICTIONS DURING PERIODS OF LOW VISIBILITY WILL BE HANDLED ON A CASE BY CASE BASIS.

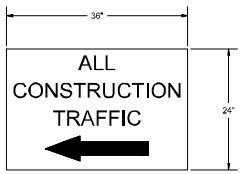
26. CONTRACTOR SHALL PARK ALL CONSTRUCTION VEHICLES AND EQUIPMENT WITHIN THE STAGING AREA WHEN THE EQUIPMENT IS NOT BEING UTILIZED, UNLESS APPROVED BY THE OAR.



NOTES:

1. SAFETY FLAG SHALL BE PROMINENTLY DISPLAYED ON ALL CONSTRUCTION EQUIPMENT.

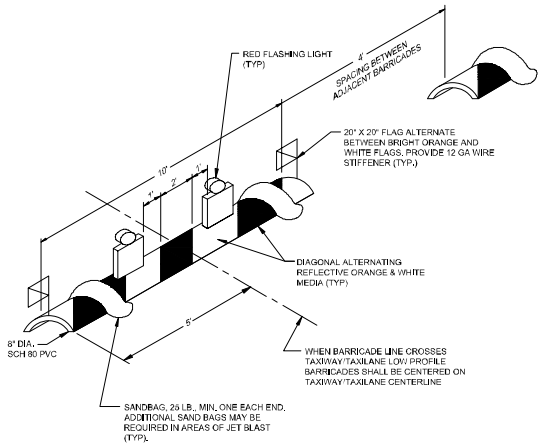
1 CONSTRUCTION SAFETY FLAG
N.T.S.



NOTES:

1. SIGN BACKGROUND IS TO BE WHITE. SIGN LETTERING IS TO BE BLACK, MINIMUM HEIGHT OF 3", AND BE A BOLD LETTERING STYLE SIMILAR TO DETAIL SHOWN ON THIS SHEET.
2. SIGN IS TO BE LOCATED HIGH ENOUGH TO ALLOW EASY VIEWING FROM ALL CONSTRUCTION VEHICLES ENTERING THE CONSTRUCTION SITE.

2 CONSTRUCTION TRAFFIC SIGN
N.T.S



NOTES:

1. THESE BARRICADES SHALL BE PLACED AT LOCATIONS DIRECTED BY AIRFIELD OPERATIONS.
2. CAUTION LIGHTS TO BE RED IN COLOR AND FLASHING DURING HOURS OF LOW VISIBILITY. UNITS TO BE PLACED NO MORE THAN 4' FROM EACH OTHER. THERE WILL BE NO DIRECT PAYMENT FOR FURNISHING, MAINTAINING, OR REMOVAL OF THIS BARRIER ASSEMBLY (FLAGS, BASE, LIGHTS, ETC.).
3. ALL BARRICADES SHALL BE MOVED AT LEAST ONCE A WEEK AND THE CONTRACTOR SHALL SWEEP ANY DEBRIS THAT HAS ACCUMULATED AND REMOVE THIS DEBRIS FROM SITE. THE BARRICADES SHALL THEN BE REPLACED AT THE APPROPRIATE LOCATION.
4. ALL BARRICADE LIGHTING SHALL BE VERIFIED FOR PROPER OPERATION BY THE CONTRACTOR AT THE BEGINNING AND END OF EACH DAY BEFORE CONTRACTOR BEGINS AND CEASES OPERATION.
5. ALL COSTS RELATED TO INSTALLING AND MAINTAINING BARRICADES SHALL BE CONSIDERED INCLUDED SHALL BE INCLUDED IN THE LUMP SUM BID PRICE FOR ITEM C-106-1, SAFETY, SECURITY AND MAINTENANCE OF TRAFFIC.
6. ALL BARRICADES SHALL BE SECURED IN PLACE AGAINST MOVEMENT BY JET BLAST. ADDITIONAL SANDBAGS MAY BE REQUIRED IN AREAS OF JET BLAST.
7. AT SELECT LOCATIONS AS APPROVED BY THE OAR, AIRFIELD OPERATIONS AND ARFF BARRICADES SPACING SHALL BE INCREASED TO PERMIT ACCESS OF CONSTRUCTION AND EMERGENCY VEHICLES.

3 LOW PROFILE BARRICADE
N.T.S.

GREATER ORLANDO AVIATION AUTHORITY

H-00370
MCO
AIRSIDE 3 APRON PCC
SLAB REHABILITATION

ORLANDO
INTERNATIONAL
AIRPORT

AECOM

AECOM TECHNICAL SERVICES, INC.

7650 W. COURTNEY CAMPBELL CSWY
SUITE 700
TAMPA, FLORIDA 33607
PHONE: 813.286.1711
FOR THE FIRM: EB 7537

CLINT JAMES MARTIN
FL. P.E. NO. 82740
FIRM EB NO. 8115
AECOM TECHNICAL SERVICES, INC.

REVISIONS

No.	DATE	DESCRIPTION
A	07-08-2024	BID DOCUMENTS

KEY PLAN

PROJECT NO.:	60731531
DESIGNED BY:	JC
DRAWN BY:	JC
CHECKED BY:	AJR
ISSUE DATE:	07-08-2024
DRAWING SCALE:	AS NOTED

DRAWING TITLE:

SAFETY AND SECURITY PLAN AND NOTES

DRAWING NO.

C61.0.1

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Drawing File: N:\Documents\60731531\MCO\Airside 3\CPP\01 Drawings\PSP\PSP01\Date\Projects Available\MCO\Civil\xx\xg\SEC 2023\FY 2024 Airside\3\PCC\AC\4\5\810 \ CAD\25\Sheet\MCO\C61.0.1 SAFETY AND SECURITY PLAN AND NOTES.dwg

ITEM C-110 METHOD OF ESTIMATING PERCENTAGE OF MATERIAL WITHIN SPECIFICATION LIMITS (PWL)

110-1 General. When the specifications provide for acceptance of material based on the method of estimating percentage of material within specification limits (PWL), the PWL will be determined in accordance with this section. All test results for a lot will be analyzed statistically to determine the total estimated percent of the lot that is within specification limits. The PWL is computed using the sample average (X) and sample standard deviation (S_n) of the specified number (n) of sublots 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, Q_L for Lower Quality Index and/or Q_U for Upper Quality Index, is computed and the PWL for the lot for the specified n is determined from Table 1. All specification limits specified in the technical sections shall be absolute values. Test results used in the calculations shall be to the significant figure given in the test procedure.

There is some degree of uncertainty (risk) in the measurement for acceptance because only a small fraction of production material (the population) is sampled and tested. This uncertainty exists because all portions of the production material have the same probability to be randomly sampled. The Contractor's risk is the probability that material produced at the acceptable quality level is rejected or subjected to a pay adjustment. The Owner's risk is the probability that material produced at the rejectable quality level is accepted.

It is the intent of this section to inform the Contractor that, in order to consistently offset the Contractor's risk for material evaluated, production quality (using population average and population standard deviation) must be maintained at the acceptable quality specified or higher. In all cases, it is the responsibility of the Contractor to produce at quality levels that will meet the specified acceptance criteria when sampled and tested at the frequencies specified.

110-2 Method for computing PWL. The computational sequence for computing PWL is as follows:

a. Divide the lot into n sublots in accordance with the acceptance requirements of the specification.

b. Locate the random sampling position within the sublot in accordance with the requirements of the specification.

c. Make a measurement at each location, or take a test portion and make the measurement on the test portion in accordance with the testing requirements of the specification.

d. Find the sample average (X) for all sublot test values within the lot by using the following formula:

$$\mathbf{X = (x_1 + x_2 + x_3 + \ldots x_n) / n}$$

Where: X = Sample average of all sublot test values within a lot

$x_1, x_2, \ldots x_n$ = Individual sublot test values

n = Number of sublot test values

e. Find the sample standard deviation (S_n) by use of the following formula:

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

Where: S_n = Sample standard deviation of the number of sublot test values in the set

$d_1, d_2, \ldots d_n$ = Deviations of the individual sublot test values $x_1, x_2, \ldots$ from the average value X

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

n = Number of sublot test values

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

$$\mathbf{Q_L = (X - L) / S_n}$$

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:

$$\mathbf{Q_L = (X - L) / S_n}$$

and

$$\mathbf{Q_U = (U - X) / S_n}$$

Where: L and U = specification lower and upper tolerance limits

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:

$$\mathbf{PWL = (P_U + P_L) - 100}$$

Where: P_L = percent within lower specification limit

P_U = percent within upper specification limit

EXAMPLE OF PWL CALCULATION

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.

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

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

X = 97.95% 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)

$Q_L = (X - L) / S_n$

$Q_L = (97.95 - 96.30) / 1.15$

$Q_L = 1.4348$

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.

$X = (x_1 + x_2 + x_3 \ldots n) / n$
$X = (5.00 + 3.74 + 2.30 + 3.25) / 4$
$X = 3.57\%$

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)

$Q_L = (X - L) / S_n$
$Q_L = (3.57 - 2.00) / 1.12$
$Q_L = 1.3992$

5. Determine P_L by entering Table 1 with Q_L = 1.41 and n = 4.

$P_L = 97$

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

$Q_U = (U - X) / S_n$
$Q_U = (5.00 - 3.57) / 1.12$
$Q_U = 1.2702$

7. Determine P_U by entering Table 1 with Q_U = 1.29 and n = 4.

$P_U = 93$

8. Calculate Air Voids PWL

$PWL = (P_L + P_U) - 100$

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

EXAMPLE OF OUTLIER CALCULATION (REFERENCE ASTM E178)

Project: Example Project

Test Item: Item P-401, Lot A.

A. Outlier Determination for Mat Density.

1. Density of four random cores taken from Lot A arranged in descending order.

A-3 = 99.30
A-4 = 98.35

A-2 = 97.55

A-1 = 96.60

2. From ASTM E178, Table 1, for n=4 an upper 5% significance level, the critical value for test criterion = 1.463.

3. Use average density, standard deviation, and test criterion value to evaluate density measurements.

a. For measurements greater than the average:

If (measurement - average)/(standard deviation) is less than test criterion, then the measurement is not considered an outlier.

For A-3, check if (99.30 - 97.95) / 1.15 is greater than 1.463.

Since 1.174 is less than 1.463, the value is not an outlier.

b. For measurements less than the average:

If (average - measurement)/(standard deviation) is less than test criterion, then the measurement is not considered an outlier.

For A-1, check if (97.95 - 96.60) / 1.15 is greater than 1.463.

Since 1.435 is less than 1.463, the value is not an outlier.

Note: In this example, a measurement would be considered an outlier if the density were:

Greater than (97.95 + 1.463 × 1.15) = 99.63%

OR

less than (97.95 - 1.463 × 1.15) = 96.27%.

Table 1. Table for Estimating Percent of Lot Within Limits (PWL)

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	n=9	n=10
99	1.1541	1.4700	1.6714	1.8008	1.8888	1.9520	1.9994	2.0362
98	1.1524	1.4400	1.6016	1.6982	1.7612	1.8053	1.8379	1.8630
97	1.1496	1.4100	1.5427	1.6181	1.6661	1.6993	1.7235	1.7420
96	1.1456	1.3800	1.4897	1.5497	1.5871	1.6127	1.6313	1.6454
95	1.1405	1.3500	1.4407	1.4887	1.5181	1.5381	1.5525	1.5635
94	1.1342	1.3200	1.3946	1.4329	1.4561	1.4717	1.4829	1.4914
93	1.1269	1.2900	1.3508	1.3810	1.3991	1.4112	1.4199	1.4265
92	1.1184	1.2600	1.3088	1.3323	1.3461	1.3554	1.3620	1.3670
91	1.1089	1.2300	1.2683	1.2860	1.2964	1.3032	1.3081	1.3118
90	1.0982	1.2000	1.2290	1.2419	1.2492	1.2541	1.2576	1.2602
89	1.0864	1.1700	1.1909	1.1995	1.2043	1.2075	1.2098	1.2115
88	1.0736	1.1400	1.1537	1.1587	1.1613	1.1630	1.1643	1.1653
87	1.0597	1.1100	1.1173	1.1192	1.1199	1.1204	1.1208	1.1212
86	1.0448	1.0800	1.0817	1.0808	1.0800	1.0794	1.0791	1.0789
85	1.0288	1.0500	1.0467	1.0435	1.0413	1.0399	1.0389	1.0382
84	1.0119	1.0200	1.0124	1.0071	1.0037	1.0015	1.0000	0.9990
83	0.9939	0.9900	0.9785	0.9715	0.9671	0.9643	0.9624	0.9610
82	0.9749	0.9600	0.9452	0.9367	0.9315	0.9281	0.9258	0.9241
81	0.9550	0.9300	0.9123	0.9025	0.8966	0.8928	0.8901	0.8882
80	0.9342	0.9000	0.8799	0.8690	0.8625	0.8583	0.8554	0.8533
79	0.9124	0.8700	0.8478	0.8360	0.8291	0.8245	0.8214	0.8192
78	0.8897	0.8400	0.8160	0.8036	0.7962	0.7915	0.7882	0.7858
77	0.8662	0.8100	0.7846	0.7716	0.7640	0.7590	0.7556	0.7531
76	0.8417	0.7800	0.7535	0.7401	0.7322	0.7271	0.7236	0.7211

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	n=9	n=10
75	0.8165	0.7500	0.7226	0.7089	0.7009	0.6958	0.6922	0.6896
74	0.7904	0.7200	0.6921	0.6781	0.6701	0.6649	0.6613	0.6587
73	0.7636	0.6900	0.6617	0.6477	0.6396	0.6344	0.6308	0.6282
72	0.7360	0.6600	0.6316	0.6176	0.6095	0.6044	0.6008	0.5982
71	0.7077	0.6300	0.6016	0.5878	0.5798	0.5747	0.5712	0.5686
70	0.6787	0.6000	0.5719	0.5582	0.5504	0.5454	0.5419	0.5394
69	0.6490	0.5700	0.5423	0.5290	0.5213	0.5164	0.5130	0.5105
68	0.6187	0.5400	0.5129	0.4999	0.4924	0.4877	0.4844	0.4820
67	0.5878	0.5100	0.4836	0.4710	0.4638	0.4592	0.4560	0.4537
66	0.5563	0.4800	0.4545	0.4424	0.4355	0.4310	0.4280	0.4257
65	0.5242	0.4500	0.4255	0.4139	0.4073	0.4030	0.4001	0.3980
64	0.4916	0.4200	0.3967	0.3856	0.3793	0.3753	0.3725	0.3705
63	0.4586	0.3900	0.3679	0.3575	0.3515	0.3477	0.3451	0.3432
62	0.4251	0.3600	0.3392	0.3295	0.3239	0.3203	0.3179	0.3161
61	0.3911	0.3300	0.3107	0.3016	0.2964	0.2931	0.2908	0.2892
60	0.3568	0.3000	0.2822	0.2738	0.2691	0.2660	0.2639	0.2624
59	0.3222	0.2700	0.2537	0.2461	0.2418	0.2391	0.2372	0.2358
58	0.2872	0.2400	0.2254	0.2186	0.2147	0.2122	0.2105	0.2093
57	0.2519	0.2100	0.1971	0.1911	0.1877	0.1855	0.1840	0.1829
56	0.2164	0.1800	0.1688	0.1636	0.1607	0.1588	0.1575	0.1566
55	0.1806	0.1500	0.1406	0.1363	0.1338	0.1322	0.1312	0.1304
54	0.1447	0.1200	0.1125	0.1090	0.1070	0.1057	0.1049	0.1042
53	0.1087	0.0900	0.0843	0.0817	0.0802	0.0793	0.0786	0.0781
52	0.0725	0.0600	0.0562	0.0544	0.0534	0.0528	0.0524	0.0521
51	0.0363	0.0300	0.0281	0.0272	0.0267	0.0264	0.0262	0.0260
50	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

Percent Within Limits (P_L and P_U)	Negative Values of Q (Q_L and Q_U)							
	n=3	n=4	n=5	n=6	n=7	n=8	n=9	n=10
49	-0.0363	-0.0300	-0.0281	-0.0272	-0.0267	-0.0264	-0.0262	-0.0260
48	-0.0725	-0.0600	-0.0562	-0.0544	-0.0534	-0.0528	-0.0524	-0.0521
47	-0.1087	-0.0900	-0.0843	-0.0817	-0.0802	-0.0793	-0.0786	-0.0781
46	-0.1447	-0.1200	-0.1125	-0.1090	-0.1070	-0.1057	-0.1049	-0.1042
45	-0.1806	-0.1500	-0.1406	-0.1363	-0.1338	-0.1322	-0.1312	-0.1304
44	-0.2164	-0.1800	-0.1688	-0.1636	-0.1607	-0.1588	-0.1575	-0.1566
43	-0.2519	-0.2100	-0.1971	-0.1911	-0.1877	-0.1855	-0.1840	-0.1829
42	-0.2872	-0.2400	-0.2254	-0.2186	-0.2147	-0.2122	-0.2105	-0.2093
41	-0.3222	-0.2700	-0.2537	-0.2461	-0.2418	-0.2391	-0.2372	-0.2358
40	-0.3568	-0.3000	-0.2822	-0.2738	-0.2691	-0.2660	-0.2639	-0.2624
39	-0.3911	-0.3300	-0.3107	-0.3016	-0.2964	-0.2931	-0.2908	-0.2892
38	-0.4251	-0.3600	-0.3392	-0.3295	-0.3239	-0.3203	-0.3179	-0.3161

Percent Within Limits (P_L and P_U)	Negative Values of Q (Q_L and Q_U)							
	n=3	n=4	n=5	n=6	n=7	n=8	n=9	n=10
37	-0.4586	-0.3900	-0.3679	-0.3575	-0.3515	-0.3477	-0.3451	-0.3432
36	-0.4916	-0.4200	-0.3967	-0.3856	-0.3793	-0.3753	-0.3725	-0.3705
35	-0.5242	-0.4500	-0.4255	-0.4139	-0.4073	-0.4030	-0.4001	-0.3980
34	-0.5563	-0.4800	-0.4545	-0.4424	-0.4355	-0.4310	-0.4280	-0.4257
33	-0.5878	-0.5100	-0.4836	-0.4710	-0.4638	-0.4592	-0.4560	-0.4537
32	-0.6187	-0.5400	-0.5129	-0.4999	-0.4924	-0.4877	-0.4844	-0.4820
31	-0.6490	-0.5700	-0.5423	-0.5290	-0.5213	-0.5164	-0.5130	-0.5105
30	-0.6787	-0.6000	-0.5719	-0.5582	-0.5504	-0.5454	-0.5419	-0.5394
29	-0.7077	-0.6300	-0.6016	-0.5878	-0.5798	-0.5747	-0.5712	-0.5686
28	-0.7360	-0.6600	-0.6316	-0.6176	-0.6095	-0.6044	-0.6008	-0.5982
27	-0.7636	-0.6900	-0.6617	-0.6477	-0.6396	-0.6344	-0.6308	-0.6282
26	-0.7904	-0.7200	-0.6921	-0.6781	-0.6701	-0.6649	-0.6613	-0.6587
25	-0.8165	-0.7500	-0.7226	-0.7089	-0.7009	-0.6958	-0.6922	-0.6896
24	-0.8417	-0.7800	-0.7535	-0.7401	-0.7322	-0.7271	-0.7236	-0.7211
23	-0.8662	-0.8100	-0.7846	-0.7716	-0.7640	-0.7590	-0.7556	-0.7531
22	-0.8897	-0.8400	-0.8160	-0.8036	-0.7962	-0.7915	-0.7882	-0.7858
21	-0.9124	-0.8700	-0.8478	-0.8360	-0.8291	-0.8245	-0.8214	-0.8192
20	-0.9342	-0.9000	-0.8799	-0.8690	-0.8625	-0.8583	-0.8554	-0.8533
19	-0.9550	-0.9300	-0.9123	-0.9025	-0.8966	-0.8928	-0.8901	-0.8882
18	-0.9749	-0.9600	-0.9452	-0.9367	-0.9315	-0.9281	-0.9258	-0.9241
17	-0.9939	-0.9900	-0.9785	-0.9715	-0.9671	-0.9643	-0.9624	-0.9610
16	-1.0119	-1.0200	-1.0124	-1.0071	-1.0037	-1.0015	-1.0000	-0.9990
15	-1.0288	-1.0500	-1.0467	-1.0435	-1.0413	-1.0399	-1.0389	-1.0382
14	-1.0448	-1.0800	-1.0817	-1.0808	-1.0800	-1.0794	-1.0791	-1.0789
13	-1.0597	-1.1100	-1.1173	-1.1192	-1.1199	-1.1204	-1.1208	-1.1212
12	-1.0736	-1.1400	-1.1537	-1.1587	-1.1613	-1.1630	-1.1643	-1.1653
11	-1.0864	-1.1700	-1.1909	-1.1995	-1.2043	-1.2075	-1.2098	-1.2115
10	-1.0982	-1.2000	-1.2290	-1.2419	-1.2492	-1.2541	-1.2576	-1.2602
9	-1.1089	-1.2300	-1.2683	-1.2860	-1.2964	-1.3032	-1.3081	-1.3118
8	-1.1184	-1.2600	-1.3088	-1.3323	-1.3461	-1.3554	-1.3620	-1.3670
7	-1.1269	-1.2900	-1.3508	-1.3810	-1.3991	-1.4112	-1.4199	-1.4265
6	-1.1342	-1.3200	-1.3946	-1.4329	-1.4561	-1.4717	-1.4829	-1.4914
5	-1.1405	-1.3500	-1.4407	-1.4887	-1.5181	-1.5381	-1.5525	-1.5635
4	-1.1456	-1.3800	-1.4897	-1.5497	-1.5871	-1.6127	-1.6313	-1.6454
3	-1.1496	-1.4100	-1.5427	-1.6181	-1.6661	-1.6993	-1.7235	-1.7420
2	-1.1524	-1.4400	-1.6016	-1.6982	-1.7612	-1.8053	-1.8379	-1.8630
1	-1.1541	-1.4700	-1.6714	-1.8008	-1.8888	-1.9520	-1.9994	-2.0362

REFERENCES

The publications listed below form a part of this specification to the extent referenced. The publications are referred to within the text by the basic designation only.

ASTM International (ASTM)

ASTM E178 Standard Practice for Dealing with Outlying Observations

END OF ITEM C-110

ITEM P-101 PREPARATION/REMOVAL OF EXISTING PAVEMENTS

DESCRIPTION

101-1 This item shall consist of preparation of existing pavement surfaces for overlay, surface treatments, removal of existing pavement, and other miscellaneous items. The work shall be accomplished in accordance with these specifications and the applicable plans.

EQUIPMENT AND MATERIALS

101-2 All equipment and materials shall be specified here and in the following paragraphs or approved by the ***Owner's Authorized Representative (OAR)*** ~~Resident Project Representative (RPR)~~. The equipment shall not cause damage to the pavement to remain in place.

CONSTRUCTION

101-3.1 Removal of existing pavement.

The Contractor's removal operation shall be controlled to not damage adjacent pavement structure, and base material, cables, utility ducts, pipelines, or drainage structures which are to remain under the pavement.

a. Concrete pavement removal. Full depth saw cuts shall be made perpendicular to the slab surface. The Contractor shall saw through the full depth of the slab including any dowels at the joint, removing the pavement and installing new dowels as shown on the plans and per the specifications. Where the perimeter of the removal limits is not located on the joint and there are no dowels present, the perimeter shall be saw cut the full depth of the pavement. The pavement inside the saw cut shall be removed by methods which will not cause distress in the pavement which is to remain in place. ~~If the material is to be wasted on the airport site, it shall be reduced to a maximum size of [___]~~. Concrete slabs that are damaged by under breaking shall be repaired or removed and replaced as directed by the ***OAR*** ~~RPR~~ ***at the contractor's expense***.

The edge of existing concrete pavement against which new pavement abuts shall be protected from damage at all times. Spall and underbreak repair shall be in accordance with the plans. Any underlaying material that is to remain in place, shall be recompacted and/or replaced as shown on the plans. Adjacent areas damaged during repair shall be repaired or replaced at the Contractor's expense.

Full depth Portland Cement Concrete (PCC) pavement slabs to be removed adjacent to concrete slabs to remain are shown on plans and shall be field verified by the Construction Manager/Engineer prior to beginning the work. All edges of the slab to be removed shall be cut full depth 36 inches away from the edge of the surrounding joints with a concrete saw. All saw cuts shall be perpendicular to the slab surface. There is steel reinforcement across each joint in the pavement. All saw cut pavement shall be carefully broken up and removed using hand-held jackhammers, 30 lb. (14 kg) or less, or the approved light-duty equipment which will not cause stress to propagate across the joint saw cut and cause distress in the pavement which is to remain in place.

Make a second full depth saw cut on all adjacent joint lines. Contractor shall saw the dowels flush with the joint. The joint face shall be sawed or otherwise trimmed so that there is no abrupt offset in any direction greater than 1/2-inch (12 mm) and no gradual offset greater than 1 inch (25 mm) when tested in a horizontal direction with a 12 ft. (3.6 m) straightedge. All exposed dowel/steel shall be painted with epoxy. The underlying material adjacent to the edge of and under the existing pavement which is to remain in place shall be protected from damage or disturbance during removal operations and until placement of new pavement or shaped as shown on the drawings or as directed by the Construction Manager/Engineer. The Contractor shall sawcut the base course no closer than 12 inches to the existing adjacent PCC slab. Sufficient material shall be kept in place outside the joint line to prevent disturbance (or sloughing) of material under the pavement that is to remain in place. Any material

under the portion of the concrete pavement to remain in place, which is disturbed or loses its compaction shall be carefully removed and replaced with P-306 Lean Concrete at no additional cost to the Owner. The Contractor's removal operation shall not cause damage to cables, utility ducts, pipelines, or drainage structures under the pavement. Concrete slabs that are damaged by under breaking shall be removed. Any damage shall be repaired at the Contractor's expense.

~~**b. Asphalt pavement removal.** Asphalt pavement to be removed shall be cut to the full depth of the asphalt pavement around the perimeter of the area to be removed. If the material is to be **[** wasted on the airport site **]** **[** incorporated into embankment **]**, it shall be **[** broken to a maximum size of **[___]** inches (mm). **]** **[** meet the following gradation: **[___]**.~~

c. Repair or removal of Base, Subbase, and/or Subgrade. All failed material including surface, base course, subbase course, and subgrade shall be removed and repaired as shown on the plans or as directed by the ***OAR*** ~~RPR~~. Materials and methods of construction shall comply with the applicable sections of these specifications. Any damage caused by Contractor's removal process shall be repaired at the Contractor's expense.

~~**101-3.2 Preparation of joints and cracks prior to overlay/surface treatment.** Remove all vegetation and debris from cracks to a minimum depth of 1 inch (25 mm). If extensive vegetation exists, treat the specific area with a concentrated solution of a water-based herbicide approved by the ***OAR*** RPR. Fill all cracks greater than 1/4 inch (6 mm) wide) with a crack sealant per ASTM D6690. The crack sealant, preparation, and application shall be compatible with the surface treatment/overlay to be used. To minimize contamination of the asphalt with the crack sealant, underfill the crack sealant a minimum of 1/8 inch (3 mm), not to exceed ¼ inch (6 mm). Any excess joint or crack sealer shall be removed from the pavement surface.~~

~~**101-3.3 Removal of Foreign Substances/contaminates prior to overlay or remarking.** Removal of foreign substances/contaminates from existing pavement that will affect the bond of the new treatment shall consist of removal of rubber, fuel spills, oil, crack sealer, at least 90% of paint, and other foreign substances from the surface of the pavement. Areas that require removal are designated on the plans and as directed by the ***OAR*** RPR in the field during construction.~~

~~high-pressure water or cold milling may be used. If chemicals are used, they shall comply with the state's environmental protection regulations. Removal methods used shall not cause major damage to the pavement, or to any structure or utility within or adjacent to the work area. Major damage is defined as changing the properties of the pavement, removal of asphalt causing the aggregate to ravel, or removing pavement over 1/8 inch (3 mm) deep. If it is deemed by the ***OAR*** RPR that damage to the existing pavement is caused by operational error, such as permitting the application method to dwell in one location for too long, the Contractor shall repair the damaged area without compensation and as directed by the ***OAR*** RPR.~~

~~Removal of foreign substances shall not proceed until approved by the ***OAR*** RPR. Water used for high-pressure water equipment shall be provided by the Contractor at the Contractor's expense. No material shall be deposited on the pavement shoulders. All wastes shall be disposed of ***off airport property by the contactor*** in areas indicated in this specification or shown on the plans.~~

101-3.4 Concrete spall or failed asphaltic concrete pavement repair.

a. Repair of concrete spalls ~~in areas to be overlaid with asphalt~~. The Contractor shall repair all spalled concrete as shown on the plans or as directed by the ***OAR*** ~~RPR~~ ***in accordance with P-501-4.19e***. ~~The perimeter of the repair shall be saw cut a minimum of 2 inches (50 mm) outside the affected area and 2 inches (50 mm) deep. The deteriorated material shall be removed to a depth where the existing material is firm or cannot be easily removed with a geologist pick. The removed area shall be filled with asphalt mixture with aggregate sized appropriately for the depth of the patch. The material shall be compacted with equipment approved by the ***OAR*** RPR until the material is dense and no movement or marks are visible. The material shall not be placed in lifts over 4 inches (100 mm) in depth. This method of repair applies only to pavement to be overlaid.~~

~~**b. Asphalt pavement repair.** The Contractor shall repair all spalled concrete as shown on the plans or as directed by the ***OAR*** RPR. The failed areas shall be removed as specified in paragraph 101-3.1b. All failed material including surface, base course, subbase course, and subgrade shall be removed. Materials and methods of construction shall comply with the applicable sections of these specifications.~~

~~**101-3.5 Cold milling.** Milling shall be performed with a power-operated milling machine or grinder, capable of producing a uniform finished surface. The milling machine or grinder shall operate without tearing or gouging the underlaying surface. The milling machine or grinder shall be equipped with grade and slope controls, and a positive means of dust control. All millings shall be removed and disposed off Airport property. If the Contractor mills or grinds deeper or wider than the plans specify, the Contractor shall replace the material removed with new material at the Contractor's Expense.~~

~~**a. Patching.** The milling machine shall be capable of cutting a vertical edge without chipping or spalling the edges of the remaining pavement and it shall have a positive method of controlling the depth of cut. The ***OAR*** RPR shall layout the area to be milled with a straightedge in increments of 1-foot (30 cm) widths. The area to be milled shall cover only the failed area. Any excessive area that is milled because the Contractor doesn't have the appropriate milling machine, or areas that are damaged because of his negligence, shall be repaired by the Contractor at the Contractor's Expense.~~

~~**b. Profiling, grade correction, or surface correction.** The milling machine shall have a minimum width of 7 feet and it shall be equipped with electronic grade control devices that will cut the surface to the grade specified. The tolerances shall be maintained within +0 inch and -1/4 inch (+0 mm and -6mm) of the specified grade. The machine must cut vertical edges and have a positive method of dust control. The machine must have the ability to remove the millings or cuttings from the pavement and load them into a truck. All millings shall be removed and disposed of off the airport.~~

~~**c. Clean-up.** The Contractor shall sweep the milled surface daily and immediately after the milling until all residual materials are removed from the pavement surface. Prior to paving, the Contractor shall wet down the milled pavement and thoroughly sweep and/or blow the surface to remove loose residual material. Waste materials shall be collected and removed from the pavement surface and adjacent areas by sweeping or vacuuming. Waste materials shall be removed and disposed off Airport property.~~

~~**101-3.6. Preparation of asphalt pavement surfaces prior to surface treatment.** Existing asphalt pavements to be treated with a surface treatment shall be prepared as follows:~~

~~**a.** Patch asphalt pavement surfaces that have been softened by petroleum derivatives or have failed due to any other cause. Remove damaged pavement to the full depth of the damage and replace with new asphalt pavement similar to that of the existing pavement in accordance with paragraph 101-3.4b.~~

~~**b.** Repair joints and cracks in accordance with paragraph 101-3.2.~~

~~**c.** Remove oil or grease that has not penetrated the asphalt pavement by scrubbing with a detergent and washing thoroughly with clean water. After cleaning, treat these areas with an oil spot primer. **[___]**~~

~~**d.** Clean pavement surface immediately prior to placing the surface treatment so that it is free of dust, dirt, grease, vegetation, oil or any type of objectionable surface film.~~

101-3.7 Maintenance. The Contractor shall perform all maintenance work necessary to keep the pavement in a satisfactory condition until the full section is complete and accepted by the ***OAR*** ~~RPR~~. The surface shall be kept clean and free from foreign material. The pavement shall be properly drained at all times. If cleaning is necessary or if the pavement becomes disturbed, any work repairs necessary shall be performed at the Contractor's expense.

101-3.8 Preparation of Joints in Rigid Pavement prior to resealing. Prior to application of sealant material, clean and dry the joints of all scale, dirt, dust, old sealant, curing compound, moisture and other foreign matter. The Contractor shall demonstrate, in the presence of the ***OAR*** ~~RPR~~, that the method used cleans the joint and does not damage the joint.

101-3.8.1 Removal of Existing Joint Sealant. All existing joint sealants will be removed by plowing or use of hand tools. Any remaining sealant and or debris will be removed by use of wire brushes or other tools as necessary. Resaw joints removing no more than 1/16 inch (2 mm) from each joint face. Immediately after sawing, flush out joint with water and other tools as necessary to completely remove the slurry.

101-3.8.2 Cleaning prior to sealing. Immediately before sealing, joints shall be cleaned by removing any remaining laitance and other foreign material. Allow sufficient time to dry out joints prior to sealing. Joint surfaces will be surface-dry prior to installation of sealant. ***This item is incidental to P-501 Portland Cement Concrete Pavement.***

101-3.8.3 Joint sealant. Joint material and installation will be in accordance with Item P-605 ~~and Item P-604~~.

~~**101-3.9 Preparation of Cracks in Flexible Pavement prior to sealing.** Prior to application of sealant material, clean and dry the joints of all scale, dirt, dust, old sealant, curing compound, moisture and other foreign matter. The Contractor shall demonstrate, in the presence of the ***OAR*** RPR, that the method used cleans the cracks and does not damage the pavement.~~

101-3.9.1 Preparation of Crack. Widen crack with router by removing a minimum of 1/16 inch (2 mm) from each side of crack. Immediately before sealing, cracks will be blown out with a hot air lance combined with oil and water-free compressed air.

101-3.9.2 Removal of Existing Crack Sealant. Existing sealants will be removed by routing . Following routing any remaining debris will be removed by use of a hot lance combined with oil and water-free compressed air.

101-3.9.3 Crack Sealant. Crack sealant material and installation will be in accordance with Item P-605.

~~**101-3.9.4 Removal of Pipe and other Buried Structures.**~~

~~**a. Removal of Existing Pipe Material.** Remove the types of pipe as indicated on the plans. The pipe material shall be legally disposed of off-site in a timely manner following removal. Trenches shall be backfilled with material equal to or better in quality than adjacent embankment. Trenches under paved areas must be compacted to 95% of ASTM D1557.~~

~~**b. Removal of Inlets/Manholes.** Where indicated on the plans or as directed by the ***OAR*** RPR, inlets and/or manholes shall be removed and legally disposed of off-site in a timely fashion after removal. Excavations after removal shall be backfilled with material equal or better in quality than adjacent embankment. When under paved areas must be compacted to 95% of ASTM D1557, when outside of paved areas must be compacted to 95% of ASTM D698.~~

~~**c.** Removal of all other items as indicated on the plans.~~

METHOD OF MEASUREMENT

~~**101-4.1 Lump sum**. No separate measurement for payment will be made. The work covered by this section shall be considered as a subsidiary obligation of the Contractor and covered under the other contract items.~~

101-4.1 Pavement Removal. The unit of measurement for ***PCC*** ~~concrete~~ pavement removal ***(concrete pavement, including reinforced concrete,*** shall be the number of square yards (square meters) removed by the Contractor, ***regardless of the thickness encountered***. ***The unit of measurement for soil cement or lean concrete base removal shall be the number of square yards (square meters) removed by the Contractor, regardless of the thickness encountered***. Any pavement removed outside the limits of removal because the pavement was damaged by negligence on the part of the Contractor shall not be included in the measurement for payment. No direct measurement or payment shall be made for saw cutting. Saw cutting shall be incidental to pavement removal. Dowel bar installation shall be incidental to pavement removal.

101-4.2 Crack repair. The unit of measurement for ~~joint~~ and crack repair shall be the linear foot (~~meter~~) of ***crack*** ~~joint~~.

~~**101-4.3 Removal of Foreign Substances/contaminates**. The unit of measurement for foreign Substances/contaminates removal shall be the square foot (meter).~~

~~**101-4.4 Spalled and failed asphalt pavement repair.** The unit of measure for failed asphalt pavement repair shall be square foot (square meter).~~

101-4.3 Concrete Spall Repair. The unit of measure for concrete spall repair shall be the number of square feet ~~(square meter)~~. The location and average depth of the patch shall be determined and agreed upon by the ***OAR*** ~~RPR~~ and the Contractor.

~~**101-4.6 Cold milling.** The unit of measure for cold milling shall be 2+/- inches of milling per square yard (square meter). The location and average depth of the cold milling shall be as shown on the plans. If the initial cut does not correct the condition, the Contractor shall re-mill the area and will be paid for the total depth of milling.~~

~~**101-4.7 Removal of Pipe and other Buried Structures.** The unit of measurement for removal of pipe and other buried structures will be made at the contract unit price for each completed and accepted item. This price shall be full compensation for all labor, equipment, tools, and incidentals necessary to complete this item in accordance with paragraph 101-3.9.4.~~

BASIS OF PAYMENT

101-5.1 Payment. Payment shall be made at contract unit price for the unit of measurement as specified above. This price shall be full compensation for furnishing all materials and for all preparation, hauling, and placing of the material and for all labor, equipment, tools, and incidentals necessary to complete this item.

Item P 101-5.1	PCC Pavement Removal - **per square yard**
Item P 101-5.2	**Soil Cement / Lean Concrete Base Removal – per square yard**
Item P 101-5.**3**	Crack Repair - **per lineal foot**
Item P 101-5.**4**	Concrete Spall Repair - **per square feet**

REFERENCES

The publications listed below form a part of this specification to the extent referenced. The publications are referred to within the text by the basic designation only.

Advisory Circulars (AC)

AC 150/5380-6	Guidelines and Procedures for Maintenance of Airport Pavements.

ASTM International (ASTM)

ASTM D6690	Standard Specification for Joint and Crack Sealants, Hot Applied, for Concrete and Asphalt Pavements

END OF ITEM P-101

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ITEM P-152 EXCAVATION, SUBGRADE, AND EMBANKMENT

DESCRIPTION

152-1.1 This item covers excavation, disposal, placement, and compaction of all materials within the limits of the work required to construct safety areas, runways, taxiways, aprons, and intermediate areas as well as other areas for drainage, building construction, parking, or other purposes in accordance with these specifications and in conformity to the dimensions and typical sections shown on the plans.

152-1.2 Classification. All material excavated shall be classified as defined below:

a. Unclassified excavation. Unclassified excavation shall consist of the excavation and disposal of all material, regardless of its nature which is not otherwise classified and paid for under one of the following items.

~~**b. Muck excavation**. Muck excavation shall consist of the removal and disposal of deposits or mixtures of soils and organic matter not suitable for foundation material. Muck shall include materials that will decay or produce subsidence in the embankment. It may consist of decaying stumps, roots, logs, humus, or other material not satisfactory for incorporation in the embankment.~~

~~**c. Borrow excavation**. Borrow excavation shall consist of approved material required for the construction of embankments or for other portions of the work in excess of the quantity of usable material available from required excavations. Borrow material shall be obtained from areas outside the airport boundaries.~~

~~**152-1.3 Unsuitable excavation.** Unsuitable material shall be disposed ***off site by the contractor.*** in designated waste areas as shown on the plans. Materials containing vegetable or organic matter, such as muck, peat, organic silt, or sod shall be considered unsuitable for use in embankment construction. Material suitable for topsoil may be used on the embankment slope when approved by the ***OAR*** RPR.~~

CONSTRUCTION METHODS

152-2.1 General. ~~Before beginning excavation, grading, and embankment operations in any area, the area shall be cleared or cleared and grubbed in accordance with Item P-151.~~

The suitability of material to be placed in embankments shall be subject to approval by the ***OAR*** ~~RPR~~. All unsuitable material shall be disposed of in waste areas as shown on the plans. All waste areas shall be graded to allow positive drainage of the area and adjacent areas. The surface elevation of waste areas shall be specified on the plans or approved by the ***OAR*** ~~RPR~~.

When the Contractor's excavating operations encounter artifacts of historical or archaeological significance, the operations shall be temporarily discontinued and the ***OAR*** ~~RPR~~ notified per Section 70, paragraph 70-20. At the direction of the ***OAR*** ~~RPR~~, the Contractor shall excavate the site in such a manner as to preserve the artifacts encountered and allow for their removal. Such excavation will be paid for as extra work.

~~Areas outside the limits of the pavement areas where the top layer of soil has become compacted by hauling or other Contractor activities shall be scarified and disked to a depth of 4 inches (100 mm), to loosen and pulverize the soil. Stones or rock fragments larger than 4 inches (100 mm) in their greatest dimension will not be permitted in the top 6 inches (150 mm) of the subgrade.~~

If it is necessary to interrupt existing surface drainage, sewers or under-drainage, conduits, utilities, or similar underground structures, the Contractor shall be responsible for and shall take all necessary precautions to preserve them or provide temporary services. When such facilities are encountered, the Contractor shall notify the ***OAR*** ~~RPR~~, who shall arrange for their removal if necessary. The Contractor, at their own expense, shall satisfactorily repair or pay the cost of all damage to such facilities or structures that may result from any of the Contractor's operations during the period of the contract.

a. Blasting. Blasting shall not be allowed.

152-2.2 Excavation. No excavation shall be started until the work has been staked out by the Contractor and the ***OAR*** ~~RPR~~ has obtained from the Contractor, the survey notes of the elevations and measurements of the ground surface. The Contractor and ***OAR*** ~~RPR~~ shall agree that the original ground lines shown on the original topographic mapping are accurate, or agree to any adjustments made to the original ground lines.

~~Volumetric quantities were calculated using design cross sections which were created for this project using the DTM files of the applicable design surfaces and generating End Area Volume Reports. Paper copies of design cross sections and a paper copy of the original topographic map will be issued to the successful bidder.~~

~~Existing grades on the design cross sections or DTM's, where they do not match the locations of actual spot elevations shown on the topographic map, were developed by computer interpolation from those spot elevations. Prior to disturbing original grade, Contractor shall verify the accuracy of the existing ground surface by verifying spot elevations at the same locations where original field survey data was obtained as indicated on the topographic map. Contractor shall recognize that, due to the interpolation process, the actual ground surface at any particular location may differ somewhat from the interpolated surface shown on the design cross sections or obtained from the DTM's. Contractor's verification of original ground surface, however, shall be limited to verification of spot elevations as indicated herein, and no adjustments will be made to the original ground surface unless the Contractor demonstrates that spot elevations shown are incorrect. For this purpose, spot elevations which are within 0.1 foot of the stated elevations for ground surfaces, or within 0.04 foot for hard surfaces (pavements, buildings, foundations, structures, etc.) shall be considered "no change". Only deviations in excess of these will be considered for adjustment of the original ground surface. If Contractor's verification identifies discrepancies in the topographic map, Contractor shall notify the ***OAR*** RPR in writing at least two weeks before disturbance of existing grade to allow sufficient time to verify the submitted information and make adjustments to the design cross sections or DTM's. Disturbance of existing grade in any area shall constitute acceptance by the Contractor of the accuracy of the original elevations shown on the topographic map for that area.~~

~~All areas to be excavated shall be stripped of vegetation and topsoil. Topsoil shall be stockpiled for future use in areas designated on the plans or by the ***OAR*** RPR. All suitable excavated material shall be used in the formation of embankment, subgrade, or other purposes **as** shown on the plans. All unsuitable material shall be disposed of as shown on the plans.~~

~~The grade shall be maintained so that the surface is well drained at all times.~~

~~When the volume of the excavation exceeds that required to construct the embankments to the grades as indicated on the plans, the excess shall be used to grade the areas of ultimate development or disposed as directed by the ***OAR*** RPR. When the volume of excavation is not sufficient for constructing the embankments to the grades indicated, the deficiency shall be obtained from borrow areas.~~

~~**a. Selective grading.** When selective grading is indicated on the plans, the more suitable material designated by the ***OAR*** RPR shall be used in constructing the embankment or in capping the pavement subgrade. If, at the time of excavation, it is not possible to place this material in its final location, it shall be stockpiled in approved areas until it can be placed. The more suitable material shall then be placed and compacted as specified. Selective grading shall be considered incidental to the work involved. The cost of stockpiling and placing the material shall be included in the various pay items of work involved.~~

~~**b. Undercutting.** Rock, shale, hardpan, loose rock, boulders, or other material unsatisfactory for safety areas, subgrades, roads, shoulders, or any areas intended for turf shall be excavated to a minimum depth of 12 inches (300 mm) below the subgrade or to the depth specified by the ***OAR*** RPR. Muck, peat, matted roots, or other yielding material, unsatisfactory for subgrade foundation, shall be removed to the depth specified. Unsuitable materials shall be disposed off the airport. The cost is incidental to this item. This excavated material shall be paid for at the contract unit price per cubic yard (per cubic meter) for . The excavated area shall be backfilled with suitable material obtained from the grading operations or borrow areas and compacted to specified densities. The necessary backfill will constitute a part of the embankment. Where rock cuts are made, backfill with select material. Any pockets created in the rock surface shall be drained in accordance with the details shown on the plans. Undercutting will be paid as unclassified excavation.~~

~~**c. Over-break.** Over-break, including slides, is that portion of any material displaced or loosened beyond the finished work as planned or authorized by the ***OAR*** RPR. All over-break shall be graded or removed by the Contractor and disposed of as directed by the ***OAR*** RPR. The ***OAR*** RPR shall determine if the displacement of such material was unavoidable and their own decision shall be final. Payment will not be made for the removal and~~

disposal of over-break that the ***OAR*** RPR determines as avoidable. Unavoidable over-break will be classified as "Unclassified Excavation."

d. Removal of utilities. The removal of existing structures and utilities required to permit the orderly progress of work will be accomplished by the Contractor as indicated on the plans. All existing foundations shall be excavated at least 2 feet (60 cm) below the top of subgrade or as indicated on the plans, and the material disposed of as directed by the ***OAR*** RPR. All foundations thus excavated shall be backfilled with suitable material and compacted as specified for embankment or as shown on the plans.

152-2.3 Borrow excavation. Borrow areas within the airport property are indicated on the plans. Borrow excavation shall be made only at these designated locations and within the horizontal and vertical limits as staked or as directed by the ***OAR*** RPR. All unsuitable material shall be disposed of by the Contractor as shown on the plans. All borrow pits shall be opened to expose the various strata of acceptable material to allow obtaining a uniform product. Borrow areas shall be drained and left in a neat, presentable condition with all slopes dressed uniformly. Borrow areas shall not create a hazardous wildlife attractant. ***A small amount of on-site borrow is available and estimated in the bid schedule.***

There are no***t sufficient*** borrow sources within the boundaries of the airport property. The Contractor shall locate and obtain borrow sources, subject to the approval of the ***OAR*** RPR. The Contractor shall notify the ***OAR*** RPR at least 15 days prior to beginning the excavation so necessary measurements and tests can be made by the ***OAR*** RPR. All borrow pits shall be opened to expose the various strata of acceptable material to allow obtaining a uniform product. Borrow areas shall be drained and left in a neat, presentable condition with all slopes dressed uniformly. Borrow areas shall not create a hazardous wildlife attractant.

152-2.4 Drainage excavation. Drainage excavation shall consist of excavating drainage ditches including intercepting, inlet, or outlet ditches; or other types as shown on the plans. The work shall be performed in sequence with the other construction. Ditches shall be constructed prior to starting adjacent excavation operations. All satisfactory material shall be placed in embankment fills; unsuitable material shall be placed in designated waste areas or as directed by the ***OAR*** RPR. All necessary work shall be performed true to final line, elevation, and cross-section. The Contractor shall maintain ditches constructed on the project to the required cross-section and shall keep them free of debris or obstructions until the project is accepted. ***Drainage excavation shall be incidental to the drainage item being constructed.***

152-2.5 Preparation of cut areas or areas where existing pavement has been removed. In those areas on which a subbase or base course is to be placed, the top 12 inches of subgrade shall be compacted to not less than 100 % of maximum density for non-cohesive soils, and 95% of maximum density for cohesive soils as determined by ASTM D1557. As used in this specification, "non-cohesive" shall mean those soils having a plasticity index (PI) of less than 3 as determined by ASTM D4318.

152-2.6 Preparation of embankment area. All sod and vegetative matter shall be removed from the surface upon which the embankment is to be placed. The cleared surface shall be broken up by plowing or scarifying to a minimum depth of 6 inches (150 mm) and shall then be compacted per paragraph 152-2.10.

Sloped surfaces steeper than one (1) vertical to four (4) horizontal shall be plowed, stepped, benched, or broken up so that the fill material will bond with the existing material. When the subgrade is part fill and part excavation or natural ground, the excavated or natural ground portion shall be scarified to a depth of 12 inches (300 mm) and compacted as specified for the adjacent fill.

No direct payment shall be made for the work performed under this section. The necessary clearing and grubbing and the quantity of excavation removed will be paid for under the respective items of work.

152-2.7 Control Strip. The first half-day of construction of subgrade and/or embankment shall be considered as a control strip for the Contractor to demonstrate, in the presence of the ***OAR*** RPR, that the materials, equipment, and construction processes meet the requirements of this specification. The sequence and manner of rolling necessary to obtain specified density requirements shall be determined. The maximum compacted thickness may be increased to a maximum of 12 inches (300 mm) upon the Contractor's demonstration that approved equipment and operations will uniformly compact the lift to the specified density. The ***OAR*** RPR must witness this demonstration and approve the lift thickness prior to full production.

Control strips that do not meet specification requirements shall be reworked, re-compacted, or removed and replaced at the Contractor's expense. Full operations shall not begin until the control strip has been accepted by the ***OAR*** RPR. The Contractor shall use the same equipment, materials, and construction methods for the remainder of construction, unless adjustments made by the Contractor are approved in advance by the ***OAR*** RPR.

152-2.8 Formation of embankments. The material shall be constructed in lifts as established in the control strip, but not less than 6 inches (150 mm) nor more than 12 inches (300 mm) of compacted thickness.

When more than one lift is required to establish the layer thickness shown on the plans, the construction procedure described here shall apply to each lift. No lift shall be covered by subsequent lifts until tests verify that compaction requirements have been met. The Contractor shall rework, re-compact and retest any material placed which does not meet the specifications.

The lifts shall be placed, to produce a soil structure as shown on the typical cross-section or as directed by the ***OAR*** RPR. Materials such as brush, hedge, roots, stumps, grass and other organic matter, shall not be incorporated or buried in the embankment.

Earthwork operations shall be suspended at any time when satisfactory results cannot be obtained due to rain, freezing, or other unsatisfactory weather conditions in the field. Frozen material shall not be placed in the embankment nor shall embankment be placed upon frozen material. Material shall not be placed on surfaces that are muddy, frozen, or contain frost. The Contractor shall drag, blade, or slope the embankment to provide surface drainage at all times.

The material in each lift shall be within ±2% of optimum moisture content before rolling to obtain the prescribed compaction. The material shall be moistened or aerated as necessary to achieve a uniform moisture content throughout the lift. Natural drying may be accelerated by blending in dry material or manipulation alone to increase the rate of evaporation.

The Contractor shall make the necessary corrections and adjustments in methods, materials or moisture content to achieve the specified embankment density.

The ***OAR*** RPR will take samples of excavated materials which will be used in embankment for testing to obtain a Moisture-Density Relations of Soils Report (Proctor) in accordance with D 1557. A new Proctor shall be obtained for each soil type based on visual classification.

Density tests will be taken by the ***OAR*** RPR for every 3,000 square yards of compacted embankment for each lift which is required to be compacted, or other appropriate frequencies as determined by the ***OAR*** RPR.

If the material has greater than 30% retained on the 3/4 inch (19.0 mm) sieve, follow AASHTO T-180 Annex Correction of maximum dry density and optimum moisture for oversized particles.

Rolling operations shall be continued until the embankment is compacted to not less than 100% of maximum density for non-cohesive soils, and 95% of maximum density for cohesive soils as determined by ASTM D1557. Under all areas to be paved, the embankments shall be compacted to a depth of 48" and to a density of not less than 100 percent of the maximum density as determined by ASTM D1557. ***Depths more than 48" below subgrade shall be compacted to a density of not less than 95 percent of the maximum density as determined by ASTM D1557.*** As used in this specification, "non-cohesive" shall mean those soils having a plasticity index (PI) of less than 3 as determined by ASTM D4318.

On all areas outside of the pavement areas, no compaction will be required on the top 4 inches which shall be prepared for a seedbed in accordance with T-906.

The in-place field density shall be determined in accordance with ASTM 6938 using Procedure A, the direct transmission method, and ASTM D6938 shall be used to determine the moisture content of the material. The machine shall be calibrated in accordance with ASTM D6938. The Contractor's laboratory shall perform all density tests in the **OAR's** RPR presence and provide the test results upon completion to the ***OAR*** RPR for acceptance. If the specified density is not attained, the area represented by the test or as designated by the ***OAR*** RPR shall be reworked and/or re-compacted and additional random tests made. This procedure shall be followed until the specified density is reached.

Compaction areas shall be kept separate, and no lift shall be covered by another lift until the proper density is obtained.

~~During construction of the embankment, the Contractor shall route all construction equipment evenly over the entire width of the embankment as each lift is placed. Lift placement shall begin in the deepest portion of the embankment fill. As placement progresses, the lifts shall be constructed approximately parallel to the finished pavement grade line.~~

~~When rock, concrete pavement, asphalt pavement, and other embankment material are excavated at approximately the same time as the subgrade, the material shall be incorporated into the outer portion of the embankment and the subgrade material shall be incorporated under the future paved areas. Stones, fragmentary rock, and recycled pavement larger than 4 inches (100 mm) in their greatest dimensions will not be allowed in the top 12 inches (300 mm) of the subgrade. Rockfill shall be brought up in lifts as specified or as directed by the ***OAR*** RPR and the finer material shall be used to fill the voids forming a dense, compact mass. Rock, cement concrete pavement, asphalt pavement, and other embankment material shall not be disposed of except at places and in the manner designated on the plans or by the ***OAR*** RPR.~~

~~When the excavated material consists predominantly of rock fragments of such size that the material cannot be placed in lifts of the prescribed thickness without crushing, pulverizing or further breaking down the pieces, such material may be placed in the embankment as directed in lifts not exceeding 2 feet (60 cm) in thickness. Each lift shall be leveled and smoothed with suitable equipment by distribution of spalls and finer fragments of rock. The lift shall not be constructed above an elevation 4 feet (1.2 m) below the finished subgrade.~~

~~There will be no separate measurement of payment for compacted embankment. All costs incidental to placing in lifts, compacting, discing, watering, mixing, sloping, and other operations necessary for construction of embankments will be included in the contract price for excavation, borrow, or other items.~~

~~**152-2.9 Proof rolling.** The purpose of proof rolling the subgrade is to identify any weak areas in the subgrade and not for compaction of the subgrade. Before start of embankment, the subgrade area shall be proof rolled with a 20 ton Tandem axle Dual Wheel Dump Truck loaded to the legal limit with tires inflated to 150 psi in the presence of the ***OAR*** RPR. Apply a minimum of 50% coverage, or as specified by the ***OAR*** RPR, under pavement areas. A coverage is defined as the application of one tire print over the designated area. Soft areas of subgrade that deflect more than 1 inch (25 mm) or show permanent deformation greater than 1 inch (25 mm) shall be removed and replaced with suitable material or reworked to conform to the moisture content and compaction requirements in accordance with these specifications. Removal and replacement of soft areas is incidental to this item.~~

152-2.10 Compaction requirements. The subgrade under areas to be paved shall be compacted to a depth of 12 inches and to a density of not less than 100 percent of the maximum dry density as determined by ASTM D1557. The subgrade in areas outside the limits of the pavement areas shall be compacted to a depth of 12 inches and to a density of not less than 95 percent of the maximum density as determined by ASTM D698.

The material to be compacted shall be within ±2% of optimum moisture content before being rolled to obtain the prescribed compaction (except for expansive soils). ~~When the material has greater than 30 percent retained on the ¾ inch (19.0 mm) sieve, follow the procedures in AASHTO T180 Annex for correction of maximum dry density and optimum moisture for oversized particles.~~ Tests for moisture content and compaction will be taken at a minimum of 3,000 S.Y. of subgrade. All quality assurance testing shall be done by the Contractor's laboratory in the presence of the ***OAR*** ~~RPR~~, and density test results shall be furnished upon completion to the ***OAR*** ~~RPR~~ for acceptance determination.

The in-place field density shall be determined in accordance with ASTM D6938 using Procedure A, the direct transmission method, and ASTM D6938 shall be used to determine the moisture content of the material. The machine shall be calibrated in accordance with ASTM D6938 within 12 months prior to its use on this contract. The gage shall be field standardized daily.

Density tests will be taken by the ***OAR*** ~~RPR~~ for every 3,000 square yards) (meters) of completed subgrade. If a nuclear gage is used for density determination, two random readings shall be made for each **3,000** square yards (meters).

Maximum density refers to maximum dry density at optimum moisture content unless otherwise specified.

If the specified density is not attained, the entire lot shall be reworked and/or re-compacted and additional random tests made. This procedure shall be followed until the specified density is reached.

All cut-and-fill slopes shall be uniformly dressed to the slope, cross-section, and alignment shown on the plans or as directed by the ***OAR*** ~~RPR~~ and the finished subgrade shall be maintained.

152-2.11 Finishing and protection of subgrade. Finishing and protection of the subgrade is incidental to this item. Grading and compacting of the subgrade shall be performed so that it will drain readily. All low areas, holes or depressions in the subgrade shall be brought to grade. Scarifying, blading, rolling and other methods shall be performed to provide a thoroughly compacted subgrade shaped to the lines and grades shown on the plans. All ruts or rough places that develop in the completed subgrade shall be graded, re-compacted, and retested. The Contractor shall protect the subgrade from damage and limit hauling over the finished subgrade to only traffic essential for construction purposes.

The Contractor shall maintain the completed course in satisfactory condition throughout placement of subsequent layers. No subbase, base, or surface course shall be placed on the subgrade until the subgrade has been accepted by the ***OAR*** ~~RPR~~.

152-2.12 Haul. All hauling will be considered a necessary and incidental part of the work. The Contractor shall include the cost in the contract unit price for the pay of items of work involved. No payment will be made separately or directly for hauling on any part of the work.

The Contractor's equipment shall not cause damage to any excavated surface, compacted lift or to the subgrade as a result of hauling operations. Any damage caused as a result of the Contractor's hauling operations shall be repaired at the Contractor's expense.

The Contractor shall be responsible for providing, maintaining and removing any haul roads or routes within or outside of the work area, and shall return the affected areas to their former condition, unless otherwise authorized in writing by the Owner. No separate payment will be made for any work or materials associated with providing, maintaining and removing haul roads or routes.

152-2.13 Surface Tolerances. In those areas on which a subbase or base course is to be placed, the surface shall be tested for smoothness and accuracy of grade and crown. Any portion lacking the required smoothness or failing in accuracy of grade or crown shall be scarified to a depth of at least 3 inches (75 mm), reshaped and re-compacted to grade until the required smoothness and accuracy are obtained and approved by the ***OAR*** ~~RPR~~. The Contractor shall perform all final smoothness and grade checks in the presence of the ***OAR*** ~~RPR~~. Any deviation in surface tolerances shall be corrected by the Contractor at the Contractor's expense.

a. Smoothness. The finished surface shall not vary more than +/- ½ inch (12 mm) when tested with a 12-foot (3.7-m) straightedge applied parallel with and at right angles to the centerline. The straightedge shall be moved continuously forward at half the length of the 12-foot (3.7-m) straightedge for the full length of each line on a 50-foot (15-m) grid.

b. Grade. The grade ~~and crown shall be measured on a 50-foot (15-m) grid and~~ shall be within +/-0.05 feet (15 mm) of the specified grade.

~~On safety areas, turfed areas and other designated areas within the grading limits where no subbase or base is to placed, grade shall not vary more than 0.10 feet (30 mm) from specified grade. Any deviation in excess of this amount shall be corrected by loosening, adding or removing materials, and reshaping.~~

~~**152-2.14 Topsoil.** When topsoil is specified or required as shown on the plans or under Item T-905, it shall be salvaged from stripping or other grading operations. The topsoil shall meet the requirements of Item T-905. If, at the time of excavation or stripping, the topsoil cannot be placed in its final section of finished construction, the material shall be stockpiled at approved locations. Stockpiles shall be located as shown on the plans and the approved CSPP, and shall not be placed on areas that subsequently will require any excavation or embankment fill. If, in the judgment of the ***OAR*** RPR, it is practical to place the salvaged topsoil at the time of excavation or stripping, the material shall be placed in its final position without stockpiling or further re-handling.~~

~~Upon completion of grading operations, stockpiled topsoil shall be handled and placed as shown on the plans and as required in Item T-905. Topsoil shall be paid for as provided in Item T-905. No direct payment will be made for topsoil under Item P-152.~~

METHOD OF MEASUREMENT

152-3.1 ***No measurement shall be made for work covered under this Item. All work required under this Item shall be considered incidental to the nearest applicable pay item.*** ~~Measurement for payment specified by the cubic yard (cubic meter) shall be computed by the average end areas of design cross sections for computation of neat line design quantities. The end area is that bound by the original ground line established by field cross-sections and the final theoretical pay line established by cross-sections shown on the plans, subject to verification by the~~ ***OAR*** ~~RPR.~~

~~**152-3.1** The quantity of unclassified excavation to be paid for shall be the number of cubic yards (cubic meters) measured in its original position. Measurement shall not include the quantity of materials excavated without authorization beyond normal slope lines, or the quantity of material used for purposes other than those directed.~~

BASIS OF PAYMENT

152-4.1 ***No payment shall be made for work covered under this Item. All work required under this Item shall be considered incidental to the nearest applicable pay item.*** ~~Unclassified Excavation, Muck Excavation, Borrow Excavation Off-Site, Borrow Excavation On-Site, and Unsuitable Excavation payment shall be made at the contract unit price per cubic yard (cubic meter). This price shall be full compensation for furnishing all materials, labor, equipment, tools, and incidentals necessary to complete the item.~~

~~Payment will be made under:~~

~~Item P-152-4.1 Unclassified Excavation **per cubic yard**~~

~~Item P-152-4.2 Borrow Excavation Off-Site **per cubic yard**~~

~~Item P-152-4.3 Borrow Excavation On-Site **per cubic yard**~~

~~Item P-152-4.4 Muck Excavation **per cubic yard**~~

~~Item P-152-4.5 Unsuitable Excavation **per cubic yard**~~

REFERENCES

The publications listed below form a part of this specification to the extent referenced. The publications are referred to within the text by the basic designation only.

American Association of State Highway and Transportation Officials (AASHTO)

AASHTO T-180	Standard Method of Test for Moisture-Density Relations of Soils Using a 4.54-kg (10-lb) Rammer and a 457-mm (18-in.) Drop

ASTM International (ASTM)

ASTM D698	Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Standard Effort (12,400 ft-lbf/ft^3 (600 kN-m/m^3))
ASTM D1556	Standard Test Method for Density and Unit Weight of Soil in Place by the Sand-Cone Method
ASTM D1557	Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Modified Effort (56,000 ft-lbf/ft^3 (2700 kN-m/m^3))
ASTM D6938	Standard Test Methods for In-Place Density and Water Content of Soil and Soil-Aggregate by Nuclear Methods (Shallow Depth)

Advisory Circulars (AC)

AC 150/5370-2	Operational Safety on Airports During Construction Software

Software

FAARFIELD – FAA Rigid and Flexible Iterative Elastic Layered Design

U.S. Department of Transportation

FAA RD-76-66 Design and Construction of Airport Pavements on Expansive Soils

END OF ITEM P-152

ITEM P-306 LEAN CONCRETE BASE COURSE

DESCRIPTION

306-1.1 This item shall consist of a lean concrete subbase material that is composed of aggregate and cement uniformly blended together and mixed with water. The mixture may also include approved cementitious additives, in the form of fly ash or slag, and chemical admixtures. The mixed material shall be spread, shaped, and consolidated using concrete paving equipment in accordance with these specifications and in conformity to the lines, grades, dimensions, and typical cross-sections shown on the plans.

MATERIALS

306-2.1 Aggregate. The coarse aggregate fraction shall be crushed stone, crushed or uncrushed gravel, crushed and adequately seasoned, air-cooled, iron blast furnace slag, crushed recycled concrete, or a combination thereof. The fine aggregate fraction may be part of the natural aggregate blend as obtained from the borrow source or it may be natural sand that is added at the time of mixing. The aggregate shall meet the gradation and material requirements in the tables below.

Aggregate Material Requirements

Material Test	Requirement	Standard
Coarse Aggregate Portion (retained on the No. 4 (4.75 mm) sieve)		
Resistance to Degradation	Loss: 40% maximum	ASTM C131
Soundness of Aggregates by Use of Sodium Sulfate **or** Magnesium Sulfate	Loss after 5 cycles: 10% maximum using Sodium sulfate - or - 15% maximum using magnesium sulfate	ASTM C88
Flat Particles, Elongated Particles, or Flat and Elongated Particles[1]	10% maximum, by weight, for fraction retained on the ½ inch (12.5mm) sieve and 20% maximum, by weight, for the fraction passing the 1/2-inch (12.5 mm) sieve	ASTM D4791
Clay lumps and friable particles	Less than or equal to 3 percent	ASTM C142
Fine Aggregate Portion (passing the No. 40 (425µm) sieve)		
Clay lumps and friable particles	Less than or equal to 3 percent	ASTM C142
Soundness of Aggregates by Use of Sodium Sulfate **or** Magnesium Sulfate	Loss after 5 cycles: 10% maximum using Sodium sulfate - or - 15% maximum using magnesium sulfate	ASTM C88

[1] A flat particle is one having a ratio of width to thickness greater than three (3); an elongated particle is one having a ratio of length to width greater than three (3).

Aggregate Gradation for Lean Concrete

Sieve Size (square openings)	Percentage by Weight Passing Sieves
	Gradation A
1-1/2 inch (37.5 mm)	**100**
1 inch (25.0 mm)	**70 - 95**
3/4 inch (19.0 mm)	**55 - 85**
No. 4 (4.75 mm)	**30 - 60**
No. 40 (425 µm)	**10 - 30**
No. 200 (75 µm)	**0 - 15**

306-2.2 Sampling and testing.

a. Aggregate base materials. The Contractor shall take samples of the aggregate base in accordance with ASTM D75 to verify initial aggregate base requirements and gradation. Material shall meet the requirements in paragraphs 306-2.1 and 306-2.2. This sampling and testing will be the basis for approval of the aggregate base quality requirements.

b. Gradation requirements. The Contractor shall take at least two aggregate base samples per day in the presence of the ***Owner's Authorized Representative (OAR)*** ~~Resident Project Representative (RPR)~~ to check the final gradation. Sampling shall be per ASTM D75. Material shall meet the requirements in paragraph 306-2.2. The lot will be consistent with the lot size used for density. The samples shall be taken from the in-place, un-compacted material at sampling points and intervals designated by the ***OAR*** ~~RPR~~.

306-2.3 Cement. Cement shall conform to the requirements of ASTM C150 Type I or II.

306-2.4 Cementitious additives. Pozzolanic and slag cement may be added to the lean concrete mix. If used, each material must meet the following requirements:

a. Pozzolan. Pozzolanic materials must meet the requirements of ASTM C618, Class F, or N with the exception of loss of ignition, where the maximum shall be less than 6%.

b. Slag cement (ground granulated blast furnace (GGBF) slag). Slag shall conform to ASTM C989, Grade 100 or 120.

306-2.5 Chemical admixtures. The Contractor shall submit certificates indicating that the material to be furnished meets all the requirements listed below. In addition, the ***OAR*** ~~RPR~~ may require the Contractor to submit complete test data showing that the material to be furnished meets all the requirements of the cited specification.

a. Air-entraining admixtures. Air-entraining admixtures shall meet the requirements of ASTM C260.

b. Water-reducing admixtures. Water-reducing, set-controlling admixtures shall meet the requirements of ASTM C494, Type A, D, E, F, or G. Water-reducing admixtures shall be added at the mixer separately from air-entraining admixtures in accordance with the manufacturer's printed instructions. The air entrainment agent and the water-reducing admixture shall be compatible.

c. Retarding admixtures. Retarding admixtures shall meet the requirements of ASTM C494, Type B or D.

d. Accelerating admixtures. Accelerating admixtures shall meet the requirements of ASTM C494, Type C.

306-2.6 Water. Water used in mixing or curing shall be from potable water sources. Other sources shall be tested in accordance with ASTM C1602 prior to use.

306-2.7 Curing materials. For curing lean concrete, use white-pigmented, liquid membrane-forming compound conforming to ASTM C309, Type 2, Class B, or clear or translucent Type 1-D, Class B with white fugitive dye.

306-2.8 Bond Breaker. Liquid membrane forming compound shall be in accordance with paragraph 306-2.7.

COMPOSITION OF MIXTURE

306-3.1 Mix design. The lean concrete mix design shall be based on trial batch results conducted in the laboratory. The lean concrete shall be designed to meet the criteria in this section.

Compressive strength shall not be less than 500 pounds per square inch (3,445 kPa) nor greater than 800 pounds per square inch (5,516 kPa) at seven (7) days. Compressive strengths shall be taken as the average of two compressive strength test results. All compressive strength specimens shall be prepared and tested in accordance with ASTM C192 and ASTM C39, respectively.

The percentage of air entrainment shall be 6%, ±1/2%. Air content shall be determined by testing in accordance with ASTM C231 for gravel and stone coarse aggregate and ASTM C173 for slag and other highly porous coarse aggregate.

If there is a change in aggregate sources, type of cement used, or pozzolanic materials, a new mix design must be submitted

306-3.2 Submittals. At least 30 days prior to the placement of the lean concrete, the Contractor shall submit certified test reports to the ***OAR*** ~~RPR~~ for those materials proposed for use during construction, as well as the mix design information for the lean concrete material. The certification shall identify the specifications and test standard, the name of the testing laboratory, the date of the tests, and a statement that the materials comply with the applicable specifications. Tests older than six (6) months shall not be used. The submittal package shall include the following:

a. Sources of materials, including aggregate, cement, admixtures, and curing and bond breaking materials.

b. Physical properties of the aggregates, cement, admixtures, curing and bond breaking materials.

c. Mix design:

- Mix identification number
- Weight of saturated surface-dry aggregates (fine and coarse)
- Combined aggregate gradation
- Cement factor
- Water content
- Water-cementitious material ratio (by weight)
- Volume of admixtures and yield for one cubic yard (cubic meter) of lean concrete
- Laboratory test results:
- Slump
- Unit weight
- Air content
- Compressive strength at 3, 7, and 28 days (average values)

Where applicable, the Contractor shall submit a jointing plan for transverse joints in the lean concrete layer for approval by the ***OAR*** ~~RPR~~.

During production, the Contractor shall submit batch tickets for each delivered load.

EQUIPMENT

306-4.1 All equipment necessary to mix, transport, place, compact, and finish the lean concrete material shall be furnished by the Contractor and is subject to inspection and approval by the ***OAR*** ~~RPR~~. The Contractor shall provide certification that all equipment conforms to the requirements of ASTM C94.

306-4.2 Forms. Straight side forms shall be made of steel and shall be furnished in sections not less than 10 feet (3 m) in length. Forms shall have a depth equal to the pavement thickness at the edge. Flexible or curved forms of proper radius shall be used for curves of 100 feet (30 m) radius or less. Forms shall be provided with adequate devices for secure settings so that when in place they will withstand, without visible spring or settlement, the impact

and vibration of the consolidating and finishing equipment. Forms with battered top surfaces and bent, twisted or broken forms shall not be used. Built-up forms shall not be used, except as approved by the ***OAR*** ~~RPR~~. The forms shall contain provisions for locking the ends of abutting sections together tightly for secure setting. Wood forms may be used under special conditions, when accepted by the ***OAR*** ~~RPR~~.

306-4.3 Concrete pavers. A fixed form or slip-form concrete paver may be used to place lean concrete. The paver shall be fully energized, self-propelled and capable of spreading, consolidating, and finishing the lean concrete material, true to grade, tolerances, and cross-sections. The paver shall be of sufficient weight and power to construct the maximum specified concrete paving lane width, at adequate forward speed, without transverse, longitudinal or vertical instability or without displacement. Slip-form pavers shall be equipped with electronic or hydraulic horizontal and vertical control devises. Bridge deck pavers are approved as paver-finishing machines for lean concrete, provided they are capable of handling the amount of lean concrete required for the full-lane width specified, and capable of spreading, consolidating, and finishing the lean concrete material, true to grade, tolerances, and cross-sections.

306-4.4 Vibrators. For fixed-form construction, vibrators may be either the surface pan type or internal type with either immersed tube or multiple spuds for the full width of the slab. They may be attached to the spreader, the finishing machine, or mounted on a separate carriage. They shall not come in contact with the subgrade or forms.

For slip-form construction, the paver shall be accomplished by internal vibrators for the full width and depth of the pavement being placed. The number, spacing, frequency, and eccentric weights of vibrators shall be provided to achieve acceptable consolidation without segregation and finishing quality. Internal vibrators may be supplemented by vibrating screeds operating on the surface of the lean concrete. Vibrators and screeds shall automatically stop operation when forward motion ceases. An override switch shall be provided.

Hand held vibrators may be used in irregular areas.

306-4.5 Joint saws. The Contractor shall provide a sufficient number of saws with adequate power to cut contraction or construction joints to the required dimensions as shown on the plans. The Contractor shall provide at least one standby saw in good working order.

CONSTRUCTION METHODS

~~**306-5.1 Control Strip.** The first half-day of construction shall be considered the control strip. The Contractor shall demonstrate, in the presence of the ***OAR*** RPR, that the materials, equipment, and construction processes meet the requirements of the specification. Control strips that do not meet specification requirements shall be removed and replaced at the Contractor's expense. Full operations shall not continue until the control strip has been accepted by the ***OAR*** RPR. Upon acceptance of the control strip by the ***OAR*** RPR, the Contractor shall use the same equipment, materials, and construction methods for the remainder of construction, unless adjustments made by the Contractor are approved in advance by the ***OAR*** RPR.~~

306-5.2 Weather limitations. The Contractor shall follow the recommended practices in American Concrete Institute (ACI) 306R, Guide to Cold Weather Concreting**.** The temperature of the mixed lean concrete shall not be less than 50°F (10°C) at the time of placement. The lean concrete shall not be placed when the ambient temperature is below 40°F (4°C) or when conditions indicate that the temperature may fall below 35°F (2°C) within 24 hours. The lean concrete shall not be placed on frozen underlying courses.

The Contractor shall follow the recommended practices in ACI 305R, Guide to Hot Weather Concreting. The lean concrete temperature from initial mixing through final cure shall not exceed 90°F (32°C). When the maximum daily air temperature exceeds 85°F (30°C), the forms and/or the underlying material shall be sprinkled with water before placing the lean concrete.

The Contractor should stop operations prior to and during rain allowing time to cover and protect any plastic lean concrete. Areas damaged by rain shall be refinished or replaced at the Contractor's expense.

306-5.3 Maintenance. The Contractor shall protect the lean concrete from environmental or mechanical damage. Traffic shall not be allowed on the pavement until test specimens made per ASTM C31 have attained a compressive strength of 500 psi (3445 kPa) when tested per ASTM C39. The Contractor shall maintain continuity of the applied curing method for the entire curing period.

306-5.4 Form setting. Form sections shall be tightly locked and shall be free from play or movement in any direction. The forms shall not deviate from true line by more than 1/4 inch (6 mm) at any joint. The top face of the form shall not vary from a true plane more than 1/8 inch (3 mm) in 10 feet (3 m), and the upstanding leg shall not vary more than 1/4 inch (6 mm). Forms shall be cleaned and oiled prior to the placing of lean concrete.

306-5.5 Preparation of underlying course. The underlying course shall be checked and accepted by the ***OAR*** ~~RPR~~ before placing operations begin. Prior to placing the material, the final grade should be firm, moist and free of frost. Use of chemicals to eliminate frost will not be permitted. The underlying course shall be wetted in advance of placing the lean concrete base course.

306-5.6 Grade control. Grade control shall be as necessary to construct the layer to the profile and cross-sections as shown on the plans.

306-5.7 Mixing. The batch plant site, layout, equipment, and provisions for transporting material shall assure a continuous supply of material to the work. Stockpiles shall be constructed in a manner that prevents segregation and intermixing of deleterious materials.

All lean concrete shall be mixed and delivered to the site per the requirements of ASTM C94. The mixing time should be adequate to produce lean concrete that is uniform in appearance, with all ingredients evenly distributed. Mixing time shall be measured from the time all materials are emptied into the drum (provided all the water is added before one-fourth the preset mixing time has elapsed) and continues until the time the discharge chute is opened to deliver the lean concrete.

If mixing in a batch plant, the mixing time shall not be less than 50 or greater than 90 seconds. If mixing in a truck mixer, the mixing time shall not be less than 70 or more than 125 truck-drum revolutions at a mixing speed of not less than six (6) or more than 18 truck-drum revolutions per minute.

The elapsed time from the addition of cementitious material to the mix until the lean concrete is deposited in place at the work site shall not exceed 45 minutes when the concrete is hauled in non-agitating trucks, or 90 minutes when it is hauled in truck mixers or truck agitators.

Re-tempering lean concrete will not be permitted, except when delivered in truck mixers. With truck mixers, additional water may be added to the batch materials if the addition of water is added within 45 minutes after the initial mixing operations and the water/cement ratio specified in the mix design is not exceeded.

306-5.8 Placing. The lean concrete material shall be placed continuously at a uniform rate on the underlying course minimizing segregation and handling of the mix. Rakes shall not be allowed for spreading the lean concrete.

306-5.9 Finishing. Shape the finished surface of the lean concrete base layer to the specified lines, grades, and cross-section. Hand finishing will not be permitted except in areas where the mechanical finisher cannot operate.

The surface of the lean concrete shall not be textured.

306-5.10 Construction limitations. All placement and finishing operations shall be completed within two (2) hours from the start of mixing. Material not completed within the 2-hour time limit shall be removed and replaced at the Contractor's expense.

At the end of each day's construction and/or when operations are interrupted for more than 30 minutes, a straight transverse construction joint shall be formed by a header or by cutting back into the compacted material to form a true vertical face.

Completed portions may be opened to light traffic when it has achieved its 7-day strength and the curing is not damaged.

306-5.11 Joints. Locate all ***planned P-501 Concrete Pavement*** longitudinal and transverse construction joints as shown on the plans. Longitudinal joints shall be within 6 inches (150 mm) of planned joints in the overlaying concrete pavement and transverse joints shall be within 3 inches (75 mm) the planned joints of the overlying concrete surface. Joints shall be sawn as soon as the base can support the saws without damage to the lean concrete base. Joints shall be constructed by sawing the hardened lean concrete to a depth of at least one-third the thickness of the lean concrete base, or 1/5th the depth of the lean concrete base when constructed using early entry saws.

306-5.12 Curing. Immediately after the finishing operations are complete and within two (2) hours of placement of the lean concrete, the entire surface and edges of the newly placed lean concrete shall be sprayed uniformly

with white pigmented, liquid membrane forming curing compound conforming to ASTM C309, Type 2, Class B or clear or translucent Type 1-D, Class B with white fugitive dye in accordance with paragraph 306-2.7. The layer should be kept moist using a moisture-retaining cover or a light application of water until the curing material is applied. The curing compound shall not be applied during rainfall.

The curing material shall be applied at a maximum coverage of 200 square feet per gallon (5.0 m^2/l) using pressurized mechanical sprayers. The spraying equipment shall be a fully atomizing type equipped with a tank agitator. At the time of use, the curing compound in the tank shall be thoroughly and uniformly mixed with the pigment. During application, the curing compound shall be continuously stirred by mechanical means. Edges of the lean concrete layer shall be sprayed with curing compound immediately following placement with slip-form pavers or when side-forms are removed. Hand spraying of odd widths or shapes and lean concrete surfaces exposed by the removal of forms is permitted.

The lean concrete temperature during curing shall be in accordance with paragraph 306-5.2.

If the curing material becomes damaged from any cause, including sawing operations, within the required 7-day curing period or until the overlying course is constructed, the Contractor shall immediately repair the damaged areas by application of additional curing compound or other means approved by the ***OAR*** ~~RPR~~.

306-5.13 Surface tolerance. The Contractor shall perform smoothness and grade checks daily. Any area not meeting smoothness and grade shall be corrected by the Contractor at the Contractor's expense. The Contractor shall provide smoothness and grade data to the ***OAR*** ~~RPR~~ on a daily basis.

a. Smoothness. The finished surface shall not vary more than ±3/8-inch (9 mm) when tested with a 12-foot (3.7-m) straightedge applied parallel with and at right angles to the centerline, and. moved continuously forward at half the length of the 12-foot (3.7-m) straightedge for the full length of each line on a 50-foot grid. The Contractor shall correct any high spots more than 3/8 inch (9 mm) in 12-foot (3.7-m) with a grinding machine or remove and replace the material at the Contractor's expense. Any areas that have been ground shall have curing compound reapplied.

b. Grade. The grade shall be measured on a 50-foot grid and shall be within +/-0.05 feet (15 mm) of the specified grade. When the surface is more than 1/2 inch (12 mm) above the grade shown in the plans, the surface shall be corrected at the Contractor's expense to an elevation that falls within a tolerance of 1/4 inch (6 mm).

306-5.14 Bond-breaker. Liquid membrane forming compound per paragraph 306-2.8 shall be placed on the surface of the lean concrete to prevent bonding. The liquid membrane forming compound when used as a bond breaker shall be applied at least eight (8) hours and not more than 24 hours before placement of the concrete pavement. The curing material shall be applied at a maximum coverage rate of 200 square feet per gallon (5.0 m^2/l) using pressurized mechanical sprayers.

MATERIAL ACCEPTANCE

306-6.1 Sampling and testing. Acceptance sampling and testing to determine conformance with the requirements specified in this section will be performed by the ***OAR*** ~~RPR~~ for each 1200 square yards. Sampling locations will be determined by the ***OAR*** ~~RPR~~ on a random basis per ASTM D3665.

a. Compressive Strength. One sample of freshly delivered lean concrete will be taken for compressive strength for each 1200 square yards in accordance with ASTM C172 and air content tests in accordance with ASTM C231. Two test cylinders will be made and cured from the sample per ASTM C31 and the 7-day compressive strength of each cylinder determined per ASTM C39. The compressive strength will be computed by averaging the two 7-day compressive strengths.

The Contractor shall make all cylinders, cure cylinders, and deliver cylinders to the Owner's Q/A testing organization lab cure room within 48 hours of casting the cylinders. All cylinders shall be transported per ASTM/ACI methods as approved by the Construction Manager/Engineer. The Contractor shall observe all tests. All broken test specimens and cylinders shall become the property of the Contractor.

The Contractor shall provide for the initial curing of cylinders in accordance with ASTM C31 during the 24 hours after molding.

b. Thickness. Cores shall be drilled by the Contractor at two different sampling locations for thickness determination for each 1200 square yards. Thickness will be determined by measuring the depth of core holes and computed by averaging the thickness determination of the two locations.

Core holes shall be filled by the Contractor with lean concrete base or non-shrink grout.

306-6.2 Acceptance.

a. Strength. If the lean concrete fails to meet the minimum compressive strength requirements, the Contractor shall remove and replaced the material at the Contractor's expense.

b. Thickness. If the average thickness is not deficient by more than 1/2 inch (12 mm) from the plan thickness, full payment shall be made. When such measurement is deficient by more than 1/2 inch (12 mm) but less than one inch (25 mm) from the plan thickness, the area **represented by the test** shall be removed and replaced at the Contractor's expense or shall be permitted to remain in-place at an adjusted payment of 75% of the contract unit price.

METHOD OF MEASUREMENT

306-7.1 The quantity of lean concrete base course will be determined by the number of square yard of lean concrete actually constructed and accepted by the ***OAR*** ~~RPR~~ as complying with the plans and specifications.

BASIS OF PAYMENT

306-8.1 The accepted quantities of lean concrete will be paid for at the contract unit price per square yard for lean concrete base. The price and payment shall be full compensation for furnishing and placing all materials, provided; however, for any pavement found deficient in thickness as specified in paragraph 306-6.2b, the reduced unit price shall be paid.

Item P-306-8.1	Lean Concrete Base Course (6") - **per square yard**

REFERENCES

The publications listed below form a part of this specification to the extent referenced. The publications are referred to within the text by the basic designation only.

ASTM International (ASTM)

ASTM C31	Standard Practice for Making and Curing Concrete Test Specimens in the Field
ASTM C33	Standard Specification for Concrete Aggregates
ASTM C39	Standard Test Method for Compressive Strength of Cylindrical Concrete Specimens
ASTM C94	Standard Specification for Ready-Mixed Concrete
ASTM C136	Standard Test Method for Sieve or Screen Analysis of Fine and Coarse Aggregates
ASTM C150	Standard Specification for Portland Cement
ASTM C172	Standard Practice for Sampling Freshly Mixed Concrete
ASTM C173	Standard Test Method for Air Content of Freshly Mixed Concrete by the Volumetric Method
ASTM C174	Standard Test Method for Measuring Thickness of Concrete Elements Using Drilled Concrete Cores

ASTM C192	Standard Practice for Making and Curing Concrete Test Specimens in the Laboratory
ASTM C231	Standard Test Method for Air Content of Freshly Mixed Concrete by the Pressure Method
ASTM C260	Standard Specification for Air-Entraining Admixtures for Concrete
ASTM C1260	Standard Test Method for Potential Alkali Reactivity of Aggregates (Mortar-Bar Method)
ASTM C309	Standard Specification for Liquid Membrane-Forming Compounds for Curing Concrete
ASTM C494	Standard Specification for Chemical Admixtures for Concrete
ASTM C595	Standard Specification for Blended Hydraulic Cements
ASTM C618	Specification for Coal Fly Ash and Raw and Calcined Natural Pozzolans for Use in Concrete
ASTM C989	Standard Specification for Slag Cement for Use in Concrete and Mortars
ASTM C1567	Standard Test Method for Determining the Potential Alkali-Silica Reactivity of Combinations of Cementitious Materials and Aggregates (Accelerated Mortar-Bar Method)
ASTM C1602	Standard Specification for Mixing Water Used in the Production of Hydraulic Cement Concrete

American Association of State Highway and Transportation Officials (AASHTO)

AASHTO T136	Standard Method of Test for Freezing-and-Thawing Tests of Compacted Soil-Cement Mixtures
ASTM D3665	Standard Practice for Random Sampling of Construction Materials

American Concrete Institute (ACI)

ACI 305R	Guide to Hot Weather Concreting
ACI 306R	Guide to Cold Weather Concreting

END OF ITEM P-306

ITEM P-501 CEMENT CONCRETE PAVEMENT

DESCRIPTION

501-1.1 This work shall consist of pavement composed of cement concrete ~~with reinforcement and~~ without reinforcement constructed on a prepared underlying surface in accordance with these specifications and shall conform to the lines, grades, thickness, and typical cross-sections shown on the plans. The terms cement concrete, hydraulic cement concrete, and concrete are interchangeable in this specification.

MATERIALS

501-2.1 Aggregates.

a. Reactivity. Fine and Coarse aggregates to be used in PCC on this project shall be tested and evaluated by the Contractor for alkali-aggregate reactivity in accordance with both ASTM C1260 and ASTM C1567. Tests must be representative of aggregate sources which will be providing material for production. ASTM C1260 and ASTM C1567 tests may be run concurrently.

(1) Coarse aggregate and fine aggregate shall be tested separately in accordance with ASTM C1260, however, the length of test shall be extended to 28 days (30 days from casting). Tests must have been completed within 6 months of the date of the concrete mix submittal.

(2) The combined coarse and fine aggregate shall be tested in accordance with ASTM C1567, modified for combined aggregates, using the proposed mixture design proportions of aggregates, cementitious materials, and/or specific reactivity reducing chemicals. If the expansion does not exceed 0.10% at 28 days, the proposed combined materials will be accepted. If the expansion is greater than 0.10% at 28 days, the aggregates will not be accepted unless adjustments to the combined materials mixture can reduce the expansion to less than 0.10% at 28 days, or new aggregates shall be evaluated and tested.

(3) If lithium nitrate is proposed for use with or without supplementary cementitious materials, the aggregates shall be tested in accordance with Corps of Engineers (COE) Concrete Research Division (CRD) C662 in lieu of ASTM C1567. If lithium nitrate admixture is used, it shall be nominal 30% ±0.5% weight lithium nitrate in water. If the expansion does not exceed 0.10% at 28 days, the proposed combined materials will be accepted. If the expansion is greater than 0.10% at 28 days, the aggregates will not be accepted unless adjustments to the combined materials mixture can reduce the expansion to less than 0.10% at 28 days, or new aggregates shall be evaluated and tested.

b. Fine aggregate. Grading of the fine aggregate, as delivered to the mixer, shall conform to the requirements of ASTM C33 and the parameters identified in the fine aggregate material requirements below. Fine aggregate material requirements and deleterious limits are shown in the table below. ***Fineness Modulus (FM) for fine aggregates lower than specified target range must meet all other material requirements and be certified by FDOT for use in concrete pavement.***

Fine Aggregate Material Requirements		
Soundness of Aggregates by Use of Sodium Sulfate **or** Magnesium Sulfate	Loss after 5 cycles: 10% maximum using Sodium sulfate - or - 15% maximum using magnesium sulfate	ASTM C88
Sand Equivalent	45 minimum	ASTM D2419
Fineness Modulus (FM)	$2.50 \leq FM \leq 3.40$	ASTM C136
Limits for Deleterious Substances in Fine Aggregate for Concrete		
Clay lumps and friable particles	1.0% maximum	ASTM C142
Coal and lignite	0.5% using a medium with a density of Sp. Gr. of 2.0	ASTM C123
Total Deleterious Material	1.0% maximum	

c. Coarse aggregate. The maximum size coarse aggregate shall be 1 inch.

Aggregates delivered to the mixer shall be clean, hard, uncoated aggregates consisting of crushed stone, crushed or uncrushed gravel, ~~air-cooled iron blast furnace slag~~, crushed recycled concrete pavement, or a combination. The aggregates shall have no known history of detrimental pavement staining. Steel blast furnace slag shall not be permitted. Coarse aggregate material requirements and deleterious limits are shown in the table below; washing may be required to meet aggregate requirements.

Coarse Aggregate Material Requirements

Material Test	**Requirement**	**Standard**
Resistance to Degradation	Loss: 40% maximum	ASTM C131
Soundness of Aggregates by Use of Sodium Sulfate **or** Magnesium Sulfate	Loss after 5 cycles: 12% maximum using Sodium sulfate - or - 18% maximum using magnesium sulfate	ASTM C88
Flat, Elongated, or Flat and Elongated Particles	8% maximum, by weight, of flat, elongated, or flat and elongated particles at 5:1 for any size group coarser than 3/8 (9.5 mm) sieve [1]	ASTM D4791
Bulk density of slag [2]	Weigh not less than 70 pounds per cubic foot (1.12 Mg/cubic meter)	ASTM C29

[1] A flat particle is one having a ratio of width to thickness greater than five (5); an elongated particle is one having a ratio of length to width greater than five (5).

[2] Only required if slag is specified.

The amount of deleterious material in the coarse aggregate shall not exceed the following limits:

Limits for Deleterious Substances in Coarse Aggregate

Deleterious material	ASTM	Percentage by Mass
Clay Lumps and friable particles	ASTM C142	1.0
Material finer than No. 200 sieve (75 µm)	ASTM C117	1.0[1]
Lightweight particles	ASTM C123 using a medium with a density of Sp. Gr. of 2.0	0.5
Chert[2] (less than 2.40 Sp Gr.)	ASTM C123 using a medium with a density of Sp. Gr. of 2.40)	1.0
Total of all deleterious Material		3.0[1]

[1] The limit for material finer than 75-µm is allowed to be increased to 1.5% for crushed aggregates consisting of dust of fracture that is essentially free from clay or shale. Test results supporting acceptance of increasing limit to 1.5% with statement indicating material is dust of fracture must be submitted with Concrete mix. Acceptable techniques to characterizing these fines include methylene blue adsorption or X-ray diffraction analysis. The total of all deleterious materials increases up to 3.5%.

[2] Chert and aggregates with less than 2.4 specific gravity.

[3] The limit for chert may be limited to 0.1 percent by mass in areas subject to severe freeze and thaw.

d. Combined aggregate gradation. This specification is targeted for a combined aggregate gradation developed following the guidance presented in United States Air Force Engineering Technical Letter (ETL) 97-5: Proportioning Concrete Mixtures with Graded Aggregates for Rigid Airfield Pavements. Base the aggregate grading upon a combination of all the aggregates (coarse and fine) to be used for the mixture proportioning. Three aggregate sizes may be required to achieve an optimized combined gradation that will produce a workable concrete mixture for its intended use. Use aggregate gradations that produce concrete mixtures with well-graded or optimized aggregate combinations. The Contractor shall submit complete mixture information necessary to calculate the volumetric components of the mixture. The combined aggregate grading shall meet the following requirements:

(1) The materials selected and the proportions used shall be such that when the Coarseness Factor (CF) and the Workability Factor (WF) are plotted on a diagram as described in paragraph 501-2.1d(4) below, the point thus determined shall fall within the parallelogram described therein.

(2) The CF shall be determined from the following equation:

CF = (cumulative percent retained on the 3/8 in. (9.5 mm) sieve)(100) / (cumulative percent retained on the No. 8 (2.36 mm) sieve)

(3) The WF is defined as the percent passing the No. 8 (2.36 mm) sieve based on the combined gradation. However, WF shall be adjusted, upwards only, by 2.5 percentage points for each 94 pounds (42 kg) of cementitious material per cubic meter yard greater than 564 pounds per cubic yard (335 kg per cubic meter).

(4) A diagram shall be plotted using a rectangular scale with WF on the Y-axis with units from 20 (bottom) to 45 (top), and with CF on the X-axis with units from 80 (left side) to 30 (right side). On this diagram a parallelogram shall be plotted with corners at the following coordinates (CF-75, WF-28), (CF-75, WF-40), (CF-45, WF-32.5), and (CF-45, WF-44.5). If the point determined by the intersection of the computed CF and WF does not fall within the above parallelogram, the grading of each size of aggregate used and the proportions selected shall be changed as necessary. The point determined by the plotting of the CF and WF may be adjusted during production ±3 WF and ±5 CF. Adjustments to gradation may not take the point outside of the parallelogram.

e. Contractors combined aggregate gradation. The Contractor shall submit their combined aggregate gradation using the following format:

Contractor's Combined Aggregate Gradation

Sieve Size	Contractor's Concrete mix Gradation (Percent passing by weight)
2 inch (50 mm)	*
1-1/2 inch (37.5 mm)	*
1 inch (25.0 mm)	*
3/4 inch (19.0 mm)	*
1/2 inch (12.5 mm)	*
3/8 inch (9.5 mm)	*
No. 4 (4.75 mm)	*
No. 8 (2.36 mm)	*
No. 16 (1.18 mm)	*
No. 30 (600 µm)	*
No. 50 (300 µm)	*
No. 100 (150 µm)	*

501-2.2 Cement. Cement shall conform to the requirements of ASTM C150 Type I or II or ***ASTM C595 Type IL with approval from the OAR/Engineer***.

501-2.3 Cementitious materials.

a. Fly ash. Fly ash shall meet the requirements of ASTM C618, with the exception of loss of ignition, where the maximum shall be less than 6%. Fly ash shall have a Calcium Oxide (CaO) content of less than 15% and a total alkali content less than 3% per ASTM C311. The Contractor shall furnish the previous three most recent, consecutive ASTM C618 reports for each source of fly ash proposed in the concrete mix, and shall furnish each additional report as they become available during the project. The reports can be used for acceptance or the material may be tested independently by the ***Owner's Authorized Representative (OAR)*** ~~Resident Project Representative (RPR).~~

b. Slag cement (ground granulated blast furnace (GGBF)). Slag cement shall conform to ASTM C989, Grade 100 or Grade 120. Slag cement shall be used only at a rate between 25% and 55% of the total cementitious material by mass.

c. Raw or calcined natural pozzolan. Natural pozzolan shall be raw or calcined and conform to ASTM C618, Class N, including the optional requirements for uniformity and effectiveness in controlling Alkali-Silica reaction and shall have a loss on ignition not exceeding 6%. Class N pozzolan for use in mitigating Alkali-Silica Reactivity shall have a total available alkali content less than 3%.

501-2.4 Joint seal. The joint seal for the joints in the concrete pavement shall meet the requirements of Item P-604 and Item P-605 and shall be of the type specified in the plans.

501-2.5 Isolation joint filler. Premolded joint filler for isolation joints shall conform to the requirements of ASTM D1751 or ASTM D1752 and shall be where shown on the plans. The filler for each joint shall be furnished in a single piece for the full depth and width required for the joint, unless otherwise specified by the ***OAR*** ~~RPR~~. When the use of more than one piece is required for a joint, the abutting ends shall be fastened securely and held accurately to shape by stapling or other positive fastening means satisfactory to the ***OAR*** ~~RPR~~.

501-2.6 Steel reinforcement. Reinforcing shall consist of steel conforming to the requirements of ASTM A615.

501-2.7 Dowel and tie bars. Dowel bars shall be plain steel bars conforming to ASTM A615 and shall be free from burring or other deformation restricting slippage in the concrete.

a. Dowel Bars. Before delivery to the construction site each dowel bar shall be epoxy coated per ASTM A1078, Type 1, with a coating thickness after curing greater than 10 mils. Patched ends are not required for Type 1

coated dowels. The dowels shall be coated with a bond-breaker recommended by the manufacturer. Dowel sleeves or inserts are not permitted. Grout retention rings shall be fully circular metal or plastic devices capable of supporting the dowel until the grout hardens.

b. Tie Bars. Tie bars shall be deformed steel bars and conform to the requirements of ASTM A615. Tie bars designated as Grade 60 in ASTM A615 or ASTM A706 shall be used for construction requiring bent bars.

501-2.8 Water. Water used in mixing or curing shall be potable. If water is taken from other sources considered non-potable, it shall meet the requirements of ASTM C1602.

501-2.9 Material for curing concrete. Curing materials shall conform to one of the following specifications:

a. Liquid membrane-forming compounds for curing concrete shall conform to the requirements of ASTM C309, Type 2, Class A, or Class B.

b. White polyethylene film for curing concrete shall conform to the requirements of ASTM C171.

c. ~~White burlap-polyethylene sheeting for curing concrete shall conform to the requirements of ASTM C171.~~

d. ~~Waterproof paper for curing concrete shall conform to the requirements of ASTM C171.~~

501-2.10 Admixtures. Admixtures shall conform to the following specifications:

a. Air-entraining admixtures. Air-entraining admixtures shall meet the requirements of ASTM C260 and shall consistently entrain the air content in the specified ranges under field conditions. The air-entraining agent and any water reducer admixture shall be compatible.

b. Water-reducing admixtures. Water-reducing admixture shall meet the requirements of ASTM C494, Type A, B, or D.

c. Other admixtures. The use of set retarding and set-accelerating admixtures shall be approved by the ***OAR*** ~~RPR~~ prior to developing the concrete mix. Retarding admixtures shall meet the requirements of ASTM C494, Type A, B, or D and set-accelerating admixtures shall meet the requirements of ASTM C494, Type C. Calcium chloride and admixtures containing calcium chloride shall not be used.

d. Lithium Nitrate. The lithium admixture shall be a nominal 30% aqueous solution of Lithium Nitrate, with a density of 10 pounds/gallon (1.2 kg/L), and shall have the approximate chemical form as shown below:

Lithium Admixture

Constituent	**Limit (Percent by Mass)**
LiNO3 (Lithium Nitrate)	30 ±0.5
SO4 (Sulfate Ion)	0.1 (max)
Cl (Chloride Ion)	0.2 (max)
Na (Sodium Ion)	0.1 (max)
K (Potassium Ion)	0.1 (max)

The lithium nitrate admixture dispensing and mixing operations shall be verified and certified by the lithium manufacturer's representative.

501-2.11 Epoxy-resin. All epoxy-resin materials shall be two-component materials conforming to the requirements of ASTM C881, Class as appropriate for each application temperature to be encountered, except that in addition, the materials shall meet the following requirements:

a. Material for use for embedding dowels and anchor bolts shall be Type IV, Grade 3.

b. Material for use as patching materials for complete filling of spalls and other voids and for use in preparing epoxy resin mortar shall be Type III, Grade as approved.

c. Material for use for injecting cracks shall be Type IV, Grade 1.

d. Material for bonding freshly mixed Portland cement concrete or mortar or freshly mixed epoxy resin concrete or mortar to hardened concrete shall be Type V, Grade as approved.

501-2.12 Bond Breaker. Liquid membrane forming compound shall be in accordance with paragraph 501-2.9.

CONCRETE MIX

501-3.1. General. No concrete shall be placed until an acceptable concrete mix has been submitted to the ***OAR*** ~~RPR~~ for review and the ***OAR*** ~~RPR~~ has taken appropriate action. The ***OAR's*** ~~RPR~~ review shall not relieve the Contractor of the responsibility to select and proportion the materials to comply with this section.

501-3.2 Concrete Mix Laboratory. The laboratory used to develop the concrete mix shall be accredited in accordance with ASTM C1077. The laboratory accreditation must be current and listed on the accrediting authority's website. All test methods required for developing the concrete mix must be included in the lab accreditation. A copy of the laboratory's current accreditation and accredited test methods shall be submitted to the ***OAR*** ~~RPR~~ prior to start of construction.

501-3.3 Concrete Mix Proportions. Develop the mix using the procedures contained in Portland Cement Association (PCA) publication, "Design and Control of Concrete Mixtures." Concrete shall be proportioned to achieve a 28-day flexural strength that meets or exceeds the acceptance criteria contained in paragraph 501-6.6 for a flexural strength of **650** psi per ASTM C78.

The minimum cementitious material shall be adequate to ensure a workable, durable mix. The minimum cementitious material (cement plus fly ash, or slag cement) shall be 470 pounds per cubic yard. The ratio of water to cementitious material, including free surface moisture on the aggregates but not including moisture absorbed by the aggregates shall be between 0.38 – 0.45 by weight.

Flexural strength test specimens shall be prepared in accordance with ASTM C192 and tested in accordance with ASTM C78. At the start of the project, the Contractor shall determine an allowable slump as determined by ASTM C143 not to exceed 2 inches (50 mm) for slip-form placement. For fixed-form placement, the slump shall not exceed 3 inches (75 mm). For hand placement, the slump shall not exceed 4 inches (100 mm).

The results of the concrete mix shall include a statement giving the maximum nominal coarse aggregate size and the weights and volumes of each ingredient proportioned on a one cubic yard (meter) basis. Aggregate quantities shall be based on the mass in a saturated surface dry condition.

If a change in source(s) is made, or admixtures added or deleted from the mix, a new concrete mix must be submitted to the ***OAR*** ~~RPR~~ for approval.

The ***OAR*** ~~RPR~~ may request samples at any time for testing, prior to and during production, to verify the quality of the materials and to ensure conformance with the applicable specifications.

501-3.4 Concrete Mix submittal. The concrete mix shall be submitted to the ***OAR*** ~~RPR~~ at least 30 days prior to the start of operations. The submitted concrete mix shall not be more than 180 days old and must use the materials to be used for production for the project. Production shall not begin until the concrete mix is approved in writing by the ***OAR*** ~~RPR~~.

Each of the submitted concrete mixes (i.e, slip form, side form machine finish and side form hand finish) shall be stamped or sealed by the responsible professional Engineer of the laboratory and shall include the following items and quantities as a minimum:

- Certified material test reports for aggregate in accordance with paragraph 501-2.1. Certified reports must include all tests required; reporting each test, test method, test result, and requirement specified (criteria).
- Combined aggregate gradations and analysis; and including plots of the fine aggregate fineness modulus.
- Reactivity Test Results.
- Coarse aggregate quality test results, including deleterious materials.

- Fine aggregate quality test results, including deleterious materials.
- Mill certificates for cement and supplemental cementitious materials.
- Certified test results for all admixtures, including Lithium Nitrate if applicable.
- Specified flexural strength, slump, and air content.
- Recommended proportions/volumes for proposed mixture and trial water-cementitious materials ratio, including actual slump and air content.
- Flexural and compressive strength summaries and plots, including all individual beam and cylinder breaks.
- Correlation ratios for acceptance testing and Contractor QC testing, when applicable.
- Historical record of test results documenting production standard deviation, when applicable.

501-3.5 Cementitious materials.

a. Fly ash. When fly ash is used as a partial replacement for cement, the replacement rate shall be determined from laboratory trial mixes, and shall be between 20 and 30% by weight of the total cementitious material. If fly ash is used in conjunction with slag cement the maximum replacement rate shall not exceed 10% by weight of total cementitious material.

b. Slag cement (ground granulated blast furnace (GGBF)). Slag cement may be used. The slag cement, or slag cement plus fly ash if both are used, may constitute between 25 to 55% of the total cementitious material by weight.

c. Raw or calcined natural pozzolan. Natural pozzolan may be used in the concrete mix. When pozzolan is used as a partial replacement for cement, the replacement rate shall be determined from laboratory trial mixes, and shall be between 20 and 30% by weight of the total cementitious material. If pozzolan is used in conjunction with slag cement the maximum replacement rate shall not exceed 10% by weight of total cementitious material.

501-3.6 Admixtures.

a. Air-entraining admixtures. Air-entraining admixture are to be added in such a manner that will ensure uniform distribution of the agent throughout the batch. The air content of freshly mixed air-entrained concrete shall be based upon trial mixes with the materials to be used in the work adjusted to produce concrete of the required plasticity and workability. The percentage of air in the mix shall be ***3.0%***. Air content shall be determined by testing in accordance with ASTM C231 for gravel and stone coarse aggregate and ASTM C173 for slag and other highly porous coarse aggregate.

b. Water-reducing admixtures. Water-reducing admixtures shall be added to the mix in the manner recommended by the manufacturer and in the amount necessary to comply with the specification requirements. Tests shall be conducted with the materials to be used in the work, in accordance with ASTM C494.

c. Other admixtures. Set controlling, and other approved admixtures shall be added to the mix in the manner recommended by the manufacturer and in the amount necessary to comply with the specification requirements. Tests shall be conducted with the materials to be used in the work, in accordance with ASTM C494.

d. Lithium nitrate. Lithium nitrate shall be added to the mix in the manner recommended by the manufacturer and in the amount necessary to comply with the specification requirements in accordance with paragraph 501-2.10d.

CONSTRUCTION METHODS

501-4.1 Control Strip. The control strip(s) shall be to the next planned joint after the initial 250 feet (75 m) of each type of pavement construction (slip-form pilot lane, slip-form fill-in lane, or fixed form). The Contractor shall demonstrate, in the presence of the ***OAR*** ~~RPR~~, that the materials, concrete mix, equipment, construction processes, and quality control processes meet the requirements of the specifications. The concrete mixture shall be extruded from the paver meeting the edge slump tolerance and with little or no finishing. Pilot, fill-in, and fixed-form control strips will be accepted separately. Minor adjustments to the mix design may be required to place an acceptable

control strip. The production mix will be the adjusted mix design used to place the acceptable control strip. Upon acceptance of the control strip by the ***OAR*** ~~RPR~~, the Contractor must use the same equipment, materials, and construction methods for the remainder of concrete paving. Any adjustments to processes or materials must be approved in advance by the ***OAR*** ~~RPR~~. The acceptable control strip shall be paid for in accordance with paragraph 501-6.6.

501-4.2 Equipment. The Contractor is responsible for the proper operation and maintenance of all equipment necessary for handling materials and performing all parts of the work to meet this specification.

a. Plant and equipment. The plant and mixing equipment shall conform to the requirements of ASTM C94 and/or ASTM C685. Each truck mixer shall have attached in a prominent place a manufacturer's nameplate showing the capacity of the drum in terms of volume of mixed concrete and the speed of rotation of the mixing drum or blades. The truck mixers shall be examined daily for changes in condition due to accumulation of hard concrete or mortar or wear of blades. The pickup and throwover blades shall be replaced when they have worn down 3/4 inch (19 mm) or more. The Contractor shall have a copy of the manufacturer's design on hand showing dimensions and arrangement of blades in reference to original height and depth.

Equipment for transferring and spreading concrete from the transporting equipment to the paving lane in front of the finishing equipment shall be provided. The equipment shall be specially manufactured, self-propelled transfer equipment which will accept the concrete outside the paving lane and will spread it evenly across the paving lane in front of the paver and strike off the surface evenly to a depth which permits the paver to operate efficiently.

b. Finishing equipment.

(1) Slip-form. The standard method of constructing concrete pavements shall be with an approved slip-form paving equipment designed and operated to spread, consolidate, screed, and finish the freshly placed concrete in one complete pass of the machine so that the end result is a dense and homogeneous pavement which is achieved with a minimum of hand finishing. The paver-finisher shall be a heavy duty, self-propelled machine designed specifically for paving and finishing high quality concrete pavements.

(2) Fixed-form. On projects requiring less than 10,000 cubic yards of concrete pavement or irregular areas at locations inaccessible to slip-form paving equipment, concrete pavement may be placed with equipment specifically designed for placement and finishing using stationary side forms. Methods and equipment shall be reviewed and accepted by the ***OAR*** ~~RPR~~. Hand screeding and float finishing may only be used on small irregular areas as allowed by the ***OAR*** ~~RPR~~.

c. Vibrators. Vibrator shall be the internal type. The rate of vibration of each vibrating unit shall be sufficient to consolidate the pavement without segregation or voids. The number, spacing, and frequency shall be as necessary to provide a dense and homogeneous pavement and meet the recommendations of American Concrete Institute (ACI) 309R, Guide for Consolidation of Concrete. Adequate power to operate all vibrators shall be available on the paver. The vibrators shall be automatically controlled so that they shall be stopped as forward motion ceases. The Contractor shall provide an electronic or mechanical means to monitor vibrator status. The checks on vibrator status shall occur a minimum of two times per day or when requested by the ***OAR*** ~~RPR~~.

Hand held vibrators may only be used in irregular areas and shall meet the recommendations of ACI 309R, Guide for Consolidation of Concrete.

d. Concrete saws. The Contractor shall provide sawing equipment adequate in number of units and power to complete the sawing to the required dimensions. The Contractor shall provide at least one standby saw in good working order and a supply of saw blades at the site of the work at all times during sawing operations.

e. Fixed forms. Straight side fixed forms shall be made of steel and shall be furnished in sections not less than 10 feet (3 m) in length. Forms shall be provided with adequate devices for secure settings so that when in place they will withstand, without visible spring or settlement, the impact and vibration of the consolidating and finishing equipment. Forms with battered top surfaces and bent, twisted or broken forms shall not be used. Built-up forms shall not be used, except as approved by the ***OAR*** ~~RPR~~. The top face of the form shall not vary from a true plane more than 1/8 inch (3 mm) in 10 feet (3 m), and the upstanding leg shall not vary more than 1/4 inch (6 mm). The forms shall contain provisions for locking the ends of abutting sections together tightly for secure setting. Wood forms may be used under special conditions, when approved by the ***OAR*** ~~RPR~~. The forms shall extend the full depth of the pavement section.

501-4.3 Form setting. Forms shall be set to line and grade as shown on the plans, sufficiently in advance of the concrete placement, to ensure continuous paving operation. Forms shall be set to withstand, without visible spring or settlement, the impact and vibration of the consolidating and finishing equipment. Forms shall be cleaned and oiled prior to the concrete placement.

501-4.4 Base surface preparation prior to placement. Any damage to the prepared base, subbase, and subgrade shall be corrected full depth by the Contractor prior to concrete placement. The underlying surface shall be entirely free of frost when concrete is placed. The prepared grade shall be moistened with water, without saturating, immediately ahead of concrete placement to prevent rapid loss of moisture from concrete. Bond breaker shall be applied in accordance with 501-2.12.

501-4.5 Handling, measuring, and batching material. Aggregate stockpiles shall be constructed and managed in such a manner that prevents segregation and intermixing of deleterious materials. Aggregates from different sources shall be stockpiled, weighed and batched separately at the concrete batch plant. Aggregates that have become segregated or mixed with earth or foreign material shall not be used. All aggregates produced or handled by hydraulic methods, and washed aggregates, shall be stockpiled or binned for draining at least 12 hours before being batched. Store and maintain all aggregates at a uniform moisture content prior to use. A continuous supply of materials shall be provided to the work to ensure continuous placement.

501-4.6 Mixing concrete. The concrete may be mixed at the work site, in a central mix plant or in truck mixers. The mixer shall be of an approved type and capacity. Mixing time shall be measured from the time all materials are placed into the drum until the drum is emptied into the truck. All concrete shall be mixed and delivered to the site in accordance with the requirements of ASTM C94 or ASTM C685.

Mixed concrete from the central mixing plant shall be transported in truck mixers, truck agitators, or non-agitating trucks. The elapsed time from the addition of cementitious material to the mix until the concrete is discharged from the truck should not exceed 30 minutes when the concrete is hauled in non-agitating trucks, nor 90 minutes when the concrete is hauled in truck mixers or truck agitators. In no case shall the temperature of the concrete when placed exceed 90°F (32°C). Retempering concrete by adding water or by other means will not be permitted. With transit mixers additional water may be added to the batch materials and additional mixing performed to increase the slump to meet the specified requirements provided the addition of water is performed within 45 minutes after the initial mixing operations and provided the water/cementitious ratio specified is not exceeded.

501-4.7 Weather Limitations on mixing and placing. No concrete shall be mixed, placed, or finished when the natural light is insufficient, unless an adequate and approved artificial lighting system is operated.

a. Cold weather. Unless authorized in writing by the ***OAR*** ~~RPR~~, mixing and concreting operations shall be discontinued when a descending air temperature in the shade and away from artificial heat reaches 40°F (4°C) and shall not be resumed until an ascending air temperature in the shade and away from artificial heat reaches 35°F (2°C).

The aggregate shall be free of ice, snow, and frozen lumps before entering the mixer. The temperature of the mixed concrete shall not be less than 50°F (10°C) at the time of placement. Concrete shall not be placed on frozen material nor shall frozen aggregates be used in the concrete.

When concreting is authorized during cold weather, water and/or the aggregates may be heated to not more than 150°F (66°C). The apparatus used shall heat the mass uniformly and shall be arranged to preclude the possible occurrence of overheated areas which might be detrimental to the materials.

Curing during cold weather shall be in accordance with paragraph 501-4.13d.

b. Hot weather. During periods of hot weather when the maximum daily air temperature exceeds 85°F (30°C), the following precautions shall be taken.

The forms and/or the underlying surface shall be sprinkled with water immediately before placing the concrete. The concrete shall be placed at the coolest temperature practicable, and in no case shall the temperature of the concrete when placed exceed 90°F (32°C). The aggregates and/or mixing water shall be cooled as necessary to maintain the concrete temperature at or not more than the specified maximum.

The concrete placement shall be protected from exceeding an evaporation rate of 0.2 psf (0.98 kg/m^2 per hour) per hour. When conditions are such that problems with plastic cracking can be expected, and particularly if any plastic cracking begins to occur, the Contractor shall immediately take such additional measures as necessary to

protect the concrete surface. If the Contractor's measures are not effective in preventing plastic cracking, paving operations shall be immediately stopped.

Curing during hot weather shall be in accordance with paragraph 501-4.13e.

c. Temperature management program. Prior to the start of paving operation for each day of paving, the Contractor shall provide the ***OAR*** ~~RPR~~ with a Temperature Management Program for the concrete to be placed to assure that uncontrolled cracking is avoided. (Federal Highway Administration HIPERPAV 3 is one example of a temperature management program.) As a minimum, the program shall address the following items:

(1) Anticipated tensile strains in the fresh concrete as related to heating and cooling of the concrete material.

(2) Anticipated weather conditions such as ambient temperatures, wind velocity, and relative humidity; and anticipated evaporation rate using Figure 19-9, PCA, Design and Control of Concrete Mixtures.

(3) Anticipated timing of initial sawing of joint.

(4) Anticipated number and type of saws to be used.

d. **Rain.** The Contractor shall have available materials for the protection of the concrete during inclement weather. Such protective materials shall consist of rolled polyethylene sheeting at least 4 mils (0.1 mm) thick of sufficient length and width to cover the plastic concrete slab and any edges. The sheeting may be mounted on either the paver or a separate movable bridge from which it can be unrolled without dragging over the plastic concrete surface. When rain appears imminent, all paving operations shall stop and all available personnel shall begin covering the surface of the unhardened concrete with the protective covering.

501-4.8 Concrete Placement. At any point in concrete conveyance, the free vertical drop of the concrete from one point to another or to the underlying surface shall not exceed 3 feet (1 m). The finished concrete product must be dense and homogeneous, without segregation and conforming to the standards in this specification. Backhoes and grading equipment shall not be used to distribute the concrete in front of the paver. Front end loaders will not be used. All concrete shall be consolidated without voids or segregation, including under and around all load-transfer devices, joint assembly units, and other features embedded in the pavement. Hauling equipment or other mechanical equipment can be permitted on adjoining previously constructed pavement when the concrete strength reaches a flexural strength of 550 psi, based on the average of four field cured specimens per 2,000 cubic yards (1,530 cubic meters) of concrete placed. The Contractor must determine that the above minimum strengths are adequate to protection the pavement from overloads due to the construction equipment proposed for the project.

The Contractor shall have available materials for the protection of the concrete during cold, hot and/or inclement weather in accordance with paragraph 501-4.7.

a. Slip-form construction. The concrete shall be distributed uniformly into final position by a self-propelled slip-form paver without delay. The alignment and elevation of the paver shall be regulated from outside reference lines established for this purpose. The paver shall vibrate the concrete for the full width and depth of the strip of pavement being placed and the vibration shall be adequate to provide a consistency of concrete that will stand normal to the surface with sharp well-defined edges. The sliding forms shall be rigidly held together laterally to prevent spreading of the forms. The plastic concrete shall be effectively consolidated by internal vibration with transverse vibrating units for the full width of the pavement and/or a series of equally placed longitudinal vibrating units. The space from the outer edge of the pavement to longitudinal unit shall not exceed 9 inches (23 cm) for slipform and at the end of the dowels for the fill-in lanes. The spacing of internal units shall be uniform and shall not exceed 18 inches (0.5 m).

The term internal vibration means vibrating units located within the specified thickness of pavement section.

The rate of vibration of each vibrating unit shall be sufficient to consolidate the pavement without, segregation, voids, or vibrator trails and the amplitude of vibration shall be sufficient to be perceptible on the surface of the concrete along the entire length of the vibrating unit and for a distance of at least one foot (30 cm). The frequency of vibration or amplitude should be adjusted proportionately with the rate of travel to result in a uniform density and air content. The paving machine shall be equipped with a tachometer or other suitable device for measuring and indicating the actual frequency of vibrations.

The concrete shall be held at a uniform consistency. The slip-form paver shall be operated with as nearly a continuous forward movement as possible and all operations of mixing, delivering, and spreading concrete shall be coordinated to provide uniform progress with stopping and starting of the paver held to a minimum. If for any reason, it is necessary to stop the forward movement of the paver, the vibratory and tamping elements shall also be stopped immediately. No tractive force shall be applied to the machine, except that which is controlled from the machine.

When concrete is being placed adjacent to an existing pavement, that part of the equipment which is supported on the existing pavement shall be equipped with protective pads on crawler tracks or rubber-tired wheels on which the bearing surface is offset to run a sufficient distance from the edge of the pavement to avoid breaking the pavement edge.

Not more than 15% of the total free edge of each 500-foot (150 m) segment of pavement, or fraction thereof, shall have an edge slump exceeding 1/4 inch (6 mm), and none of the free edge of the pavement shall have an edge slump exceeding 3/8 inch (9 mm). (The total free edge of 500 feet (150 m) of pavement will be considered the cumulative total linear measurement of pavement edge originally constructed as nonadjacent to any existing pavement; that is, 500 feet (150 m) of paving lane originally constructed as a separate lane will have 1,000 feet (300 m) of free edge, 500 feet (150 m) of fill-in lane will have no free edge, etc.). The area affected by the downward movement of the concrete along the pavement edge shall be limited to not more than 18 inches (0.5 m) from the edge.

When excessive edge slump cannot be corrected before the concrete has hardened, the area with excessive edge slump will be removed the full width of the slip form lane and replaced at the expense of the Contractor as directed by the ***OAR*** ~~RPR~~ .

b. Fixed-form construction. Forms shall be drilled in advance of being placed to line and grade to accommodate tie bars / dowel bars where these are specified.

Immediately in advance of placing concrete and after all subbase operations are completed, side forms shall be trued and maintained to the required line and grade for a distance sufficient to prevent delay in placing.

Side forms shall remain in place at least 12 hours after the concrete has been placed, and in all cases until the edge of the pavement no longer requires the protection of the forms. Curing compound shall be applied to the concrete immediately after the forms have been removed.

Side forms shall be thoroughly cleaned and coated with a release agent each time they are used and before concrete is placed against them.

Concrete shall be spread, screed, shaped and consolidated by one or more self-propelled machines. These machines shall uniformly distribute and consolidate concrete without segregation so that the completed pavement will conform to the required cross-section with a minimum of handwork.

The number and capacity of machines furnished shall be adequate to perform the work required at a rate equal to that of concrete delivery. The equipment must be specifically designed for placement and finishing using stationary side forms. Methods and equipment shall be reviewed and accepted by the ***CM*** ~~RPR~~.

Concrete for the full paving width shall be effectively consolidated by internal vibrators. The rate of vibration of each vibrating unit shall be sufficient to consolidate the pavement without segregation, voids, or leaving vibrator trails.

Power to vibrators shall be connected so that vibration ceases when forward or backward motion of the machine is stopped.

c. Consolidation. Concrete shall be consolidated with the specified type of lane-spanning, gang-mounted, mechanical, immersion type vibrating equipment mounted in front of the paver, supplemented, in rare instances as specified, by hand-operated vibrators. The vibrators shall be inserted into the concrete to a depth that will provide the best full-depth consolidation but not closer to the underlying material than 2 inches (50 mm). Vibrators shall not be used to transport or spread the concrete. For each paving train, at least one additional vibrator spud, or sufficient parts for rapid replacement and repair of vibrators shall be maintained at the paving site at all times. Any evidence of inadequate consolidation (honeycomb along the edges, large air pockets, or any other evidence) or over-consolidation (vibrator trails, segregation, or any other evidence) shall require the immediate stopping of the paving operation and adjustment of the equipment or procedures as approved by the ***OAR*** ~~RPR~~.

If a lack of consolidation of the hardened concrete is suspected by the ***OAR*** ~~RPR~~, referee testing may be required. Referee testing of hardened concrete will be performed by the ***OAR*** ~~RPR~~ by cutting cores from the finished pavement after a minimum of 24 hours curing. The ***OAR*** ~~RPR~~ shall visually examine the cores for evidence of lack of consolidation. Density determinations will be made by the ***OAR*** ~~RPR~~ based on the water content of the core as taken. ASTM C642 shall be used for the determination of core density in the saturated-surface dry condition. When required, referee cores will be taken at the minimum rate of one for each 500 cubic yards (382 m^2) of pavement, or fraction. The Contractor shall be responsible for all referee testing cost if they fail to meet the required density.

The average density of the cores shall be at least 97% of the original concrete mix density, with no cores having a density of less than 96% of the original concrete mix density. Failure to meet the referee tests will be considered evidence that the minimum requirements for vibration are inadequate for the job conditions. Additional vibrating units or other means of increasing the effect of vibration shall be employed so that the density of the hardened concrete conforms to the above requirements.

501-4.9 Strike-off of concrete and placement of reinforcement. Following the placing of the concrete, it shall be struck off to conform to the cross-section shown on the plans and to an elevation that when the concrete is properly consolidated and finished, the surface of the pavement shall be at the elevation shown on the plans. When reinforced concrete pavement is placed in two layers, the bottom layer shall be struck off to such length and depth that the sheet of reinforcing steel fabric or bar mat may be laid full length on the concrete in its final position without further manipulation. The reinforcement shall then be placed directly upon the concrete, after which the top layer of the concrete shall be placed, struck off, and screed. If any portion of the bottom layer of concrete has been placed more than 30 minutes without being covered with the top layer or if initial set has taken place, it shall be removed and replaced with freshly mixed concrete at the Contractor's expense. When reinforced concrete is placed in one layer, the reinforcement may be positioned in advance of concrete placement or it may be placed in plastic concrete by mechanical or vibratory means after spreading.

Reinforcing steel, at the time concrete is placed, shall be free of mud, oil, or other organic matter that may adversely affect or reduce bond. Reinforcing steel with rust, mill scale or a combination of both will be considered satisfactory, provided the minimum dimensions, weight, and tensile properties of a hand wire-brushed test specimen are not less than the applicable ASTM specification requirements.

501-4.10 Joints. Joints shall be constructed as shown on the plans and in accordance with these requirements. All joints shall be constructed with their faces perpendicular to the surface of the pavement and finished or edged as shown on the plans. Joints shall not vary more than 1/2-inch (12 mm) from their designated position and shall be true to line with not more than 1/4-inch (6 mm) variation in 10 feet (3 m). The surface across the joints shall be tested with a 12-foot (3 m) straightedge as the joints are finished and any irregularities in excess of 1/4 inch (6 mm) shall be corrected before the concrete has hardened. All joints shall be so prepared, finished, or cut to provide a groove of uniform width and depth as shown on the plans.

a. Construction. Longitudinal construction joints shall be slip-formed or formed against side forms as shown in the plans.

Transverse construction joints shall be installed at the end of each day's placing operations and at any other points within a paving lane when concrete placement is interrupted for more than 30 minutes or it appears that the concrete will obtain its initial set before fresh concrete arrives. The installation of the joint shall be located at a planned contraction or expansion joint. If placing of the concrete is stopped, the Contractor shall remove the excess concrete back to the previous planned joint.

b. Contraction. Contraction joints shall be installed at the locations and spacing as shown on the plans. Contraction joints shall be installed to the dimensions required by forming a groove or cleft in the top of the slab while the concrete is still plastic or by sawing a groove into the concrete surface after the concrete has hardened. When the groove is formed in plastic concrete the sides of the grooves shall be finished even and smooth with an edging tool. If an insert material is used, the installation and edge finish shall be according to the manufacturer's instructions. The groove shall be finished or cut clean so that spalling will be avoided at intersections with other joints. Grooving or sawing shall produce a slot at least 1/8 inch (3 mm) wide and to the depth shown on the plans.

c. Isolation (expansion). Isolation joints shall be installed as shown on the plans. The premolded filler of the thickness as shown on the plans, shall extend for the full depth and width of the slab at the joint. The filler shall be fastened uniformly along the hardened joint face with no buckling or debris between the filler and the concrete

interface, including a temporary filler for the sealant reservoir at the top of the slab. The edges of the joint shall be finished and tooled while the concrete is still plastic

d. Dowels and Tie Bars for Joints

(1) Tie bars. Tie bars shall consist of deformed bars installed in joints as shown on the plans. Tie bars shall be placed at right angles to the centerline of the concrete slab and shall be spaced at intervals shown on the plans. They shall be held in position parallel to the pavement surface and in the middle of the slab depth and within the tolerances in paragraph 501-4.10(f.). When tie bars extend into an unpaved lane, they may be bent against the form at longitudinal construction joints, unless threaded bolt or other assembled tie bars are specified. Tie bars shall not be painted, greased, or enclosed in sleeves. When slip-form operations call for tie bars, two-piece hook bolts can be installed.

(2) Dowel bars. Dowel bars shall be placed across joints in the proper horizontal and vertical alignment as shown on the plans. The dowels shall be coated with a bond-breaker or other lubricant recommended by the manufacturer and approved by the ***OAR*** ~~RPR~~. Dowels bars at longitudinal construction joints shall be bonded in drilled holes.

(3) Placing dowels and tie bars. Horizontal spacing of dowels shall be within a tolerance of ±3/4 inch (19 mm). The vertical location on the face of the slab shall be within a tolerance of ±1/2 inch (12 mm). The method used to install dowels shall ensure that the horizontal and vertical alignment will not be greater than 1/4 inch per feet (6 mm per 0.3 m), except for those across the crown or other grade change joints. Dowels across crowns and other joints at grade changes shall be measured to a level surface. Horizontal alignment shall be checked perpendicular to the joint edge. The portion of each dowel intended to move within the concrete or expansion cap shall be wiped clean and coated with a thin, even film of lubricating oil or light grease before the concrete is placed. Dowels shall be installed as specified in the following subparagraphs.

Dowels and tie bars shall not be placed closer than 0.6 times the dowel bar or tie bar length to the planned joint line. If the last regularly spaced longitudinal dowel and/or tie bar is closer than that dimension, it shall be moved away from the joint to a location 0.6 times the dowel bar and/or tie bar length, but not closer than 6 inches (150 mm) to its nearest neighbor.

(a) Contraction joints. Dowels and tie bars in longitudinal and transverse contraction joints within the paving lane shall be held securely in place by means of rigid metal frames or basket assemblies of an approved type. The basket assemblies shall be held securely in the proper location by means of suitable pins or anchors. Do not cut or crimp the dowel basket tie wires.

~~At the Contractor's option, dowels and tie bars in contraction joints may be installed by insertion into the plastic concrete using approved equipment and procedures per the paver manufacturer's design. Approval of installation methods will be based on the results of the control strip showing that the dowels and tie bars are installed within specified tolerances as verified by cores or non-destructive rebar location devices approved by the ***OAR*** RPR~~.

(b) Construction joints. Install dowels and tie bars by the cast-in- place or the drill-and-dowel method. Installation by removing and replacing in preformed holes will not be permitted. Dowels and tie bars shall be prepared and placed across joints where indicated, correctly aligned, and securely held in the proper horizontal and vertical position during placing and finishing operations, by means of devices fastened to the forms.

(c) Joints in hardened concrete. Install dowels in hardened concrete by bonding the dowels into holes drilled into the concrete. The concrete shall have cured for seven (7) days or reached a minimum flexural strength of 450 psi before drilling begins. Holes 1/8 inch (3 mm) greater in diameter than the dowels shall be drilled into the hardened concrete using rotary-core drills. Rotary-percussion drills may be used, provided that excessive spalling does not occur. Spalling beyond the limits of the grout retention ring will require modification of the equipment and operation. Depth of dowel hole shall be within a tolerance of ±1/2 inch (12 mm) of the dimension shown on the drawings. On completion of the drilling operation, the dowel hole shall be blown out with oil-free, compressed air. Dowels shall be bonded in the drilled holes using epoxy resin. Epoxy resin shall be injected at the back of the hole before installing the dowel and extruded to the collar during insertion of the dowel so as to completely fill the void around the dowel. Application by buttering the dowel will not be permitted. The dowels shall be held in alignment at the collar of the hole by means of a suitable metal or plastic grout retention ring fitted around the dowel.

e. Sawing of joints. Sawing shall commence, without regard to day or night, as soon as the concrete has hardened sufficiently to permit cutting without chipping, spalling, or tearing and before uncontrolled shrinkage cracking of the pavement occurs and shall continue without interruption until all joints have been sawn. All slurry and debris produced in the sawing of joints shall be removed by vacuuming and washing. Curing compound or system shall be reapplied in the initial saw-cut and maintained for the remaining cure period.

Joints shall be cut in locations as shown on the plans. The initial joint cut shall be a minimum 1/8 inch (3 mm) wide and to the depth shown on the plans. Prior to placement of joint sealant or seals, the top of the joint shall be widened by sawing as shown on the plans.

501-4.11 Finishing. Finishing operations shall be a continuing part of placing operations starting immediately behind the strike-off of the paver. Initial finishing shall be provided by the transverse screed or extrusion plate. The sequence of operations shall be transverse finishing, longitudinal machine floating if used, straightedge finishing, edging of joints, and then texturing. Finishing shall be by the machine method. The hand method shall be used only on isolated areas of odd slab widths or shapes and in the event of a breakdown of the mechanical finishing equipment. Supplemental hand finishing for machine finished pavement shall be kept to an absolute minimum. Any machine finishing operation which requires appreciable hand finishing, other than a moderate amount of straightedge finishing, shall be immediately stopped and proper adjustments made or the equipment replaced. Equipment, mixture, and/or procedures which produce more than 1/4 inch (6 mm) of mortar-rich surface shall be immediately modified as necessary to eliminate this condition or operations shall cease. Compensation shall be made for surging behind the screeds or extrusion plate and settlement during hardening and care shall be taken to ensure that paving and finishing machines are properly adjusted so that the finished surface of the concrete (not just the cutting edges of the screeds) will be at the required line and grade. Finishing equipment and tools shall be maintained clean and in an approved condition. At no time shall water be added to the surface of the slab with the finishing equipment or tools, or in any other way. Fog (mist) sprays or other surface applied finishing aids specified to prevent plastic shrinkage cracking, approved by the ***OAR*** ~~RPR~~, may be used in accordance with the manufacturers requirements.

a. Machine finishing with slipform pavers. The slipform paver shall be operated so that only a very minimum of additional finishing work is required to produce pavement surfaces and edges meeting the specified tolerances. Any equipment or procedure that fails to meet these specified requirements shall immediately be replaced or modified as necessary. A self-propelled non-rotating pipe float may be used while the concrete is still plastic, to remove minor irregularities and score marks. Only one pass of the pipe float shall be allowed. Equipment, mixture, and/or procedures which produce more than 1/4 inch (6 mm) of mortar-rich surface shall be immediately modified as necessary to eliminate this condition or operations shall cease. Remove excessive slurry from the surface with a cutting straightedge and wipe off the edge. Any slurry which does run down the vertical edges shall be immediately removed by hand, using stiff brushes or scrapers. No slurry, concrete or concrete mortar shall be used to build up along the edges of the pavement to compensate for excessive edge slump, either while the concrete is plastic or after it hardens.

b. Machine finishing with fixed forms. The machine shall be designed to straddle the forms and shall be operated to screed and consolidate the concrete. Machines that cause displacement of the forms shall be replaced. The machine shall make only one pass over each area of pavement. If the equipment and procedures do not produce a surface of uniform texture, true to grade, in one pass, the operation shall be immediately stopped and the equipment, mixture, and procedures adjusted as necessary.

c. Other types of finishing equipment. Clary screeds, other rotating tube floats, or bridge deck finishers are not allowed on mainline paving, but may be allowed on irregular or odd-shaped slabs, and near buildings or trench drains, subject to the ***OAR***'s ~~RPR's~~ approval.

Bridge deck finishers shall have a minimum operating weight of 7500 pounds (3400 kg) and shall have a transversely operating carriage containing a knock-down auger and a minimum of two immersion vibrators. Vibrating screeds or pans shall be used only for isolated slabs where hand finishing is permitted as specified, and only where specifically approved.

d. Hand finishing. Hand finishing methods will not be permitted, except under the following conditions: (1) in the event of breakdown of the mechanical equipment, hand methods may be used to finish the concrete already deposited on the grade and (2) in areas of narrow widths or of irregular dimensions where operation of the mechanical equipment is impractical.

e. Straightedge testing and surface correction. After the pavement has been struck off and while the concrete is still plastic, it shall be tested for trueness with a 12-foot (3.7-m) finishing straightedge swung from handles capable of spanning at least one-half the width of the slab. The straightedge shall be held in contact with the surface in successive positions parallel to the centerline and the whole area gone over from one side of the slab to the other, as necessary. Advancing shall be in successive stages of not more than one-half the length of the straightedge. Any excess water and laitance in excess of 1/8 inch (3 mm) thick shall be removed from the surface of the pavement and wasted. Any depressions shall be immediately filled with freshly mixed concrete, struck off, consolidated, and refinished. High areas shall be cut down and refinished. Special attention shall be given to assure that the surface across joints meets the smoothness requirements. Straightedge testing and surface corrections shall continue until the entire surface is found to be free from observable departures from the straightedge and until the slab conforms to the required grade and cross-section. The use of long-handled wood floats shall be confined to a minimum; they may be used only in emergencies and in areas not accessible to finishing equipment.

501-4.12 Surface texture. The surface of the pavement shall be finished as designated below for all newly constructed concrete pavements. It is important that the texturing equipment not tear or unduly roughen the pavement surface during the operation. The texture shall be uniform in appearance and approximately 1/16 inch (2 mm) in depth. Any imperfections resulting from the texturing operation shall be corrected to the satisfaction of the ***OAR*** ~~RPR~~.

a. Brush or broom finish. Shall be applied when the water sheen has practically disappeared. The equipment shall operate transversely across the pavement surface.

b. Burlap drag finish. Burlap, at least 15 ounces per square yard (555 grams per square meter), will typically produce acceptable texture. To obtain a textured surface, the transverse threads of the burlap shall be removed approximately one foot (30 cm) from the trailing edge. A heavy buildup of grout on the burlap threads produces the desired wide sweeping longitudinal striations on the pavement surface.

c. Artificial turf finish. Shall be applied by dragging the surface of the pavement in the direction of concrete placement with an approved full-width drag made with artificial turf. The leading transverse edge of the artificial turf drag will be securely fastened to a lightweight pole on a traveling bridge. At least 2 feet (60 cm) of the artificial turf shall be in contact with the concrete surface during dragging operations. Approval of the artificial turf will be done only after it has been demonstrated by the Contractor to provide a satisfactory texture. One type that has provided satisfactory texture consists of 7,200 approximately 0.85-inch-long polyethylene turf blades per square foot.

501-4.13 Curing. Immediately after finishing operations are completed and bleed water is gone from the surface, all exposed surfaces of the newly placed concrete shall be cured for a 7-day cure period in accordance with one of the methods below. Failure to provide sufficient cover material of whatever kind the Contractor may elect to use, or lack of water to adequately take care of both curing and other requirements, shall be cause for immediate suspension of concreting operations. The concrete shall not be left exposed for more than 1/2 hour during the curing period.

When a two-saw-cut method is used to construct the contraction joint, the curing compound shall be applied to the saw-cut immediately after the initial cut has been made. The sealant reservoir shall not be sawed until after the curing period has been completed. When the one cut method is used to construct the contraction joint, the joint shall be cured with wet rope, wet rags, or wet blankets. The rags, ropes, or blankets shall be kept moist for the duration of the curing period.

a. Impervious membrane method. Curing with liquid membrane compounds should not occur until bleed and surface moisture has evaporated. All exposed surfaces of the pavement shall be sprayed uniformly with white pigmented curing compound immediately after the finishing of the surface and before the set of the concrete has taken place. The curing compound shall not be applied during rainfall. Curing compound shall be applied by mechanical sprayers under pressure at the rate of one gallon (4 liters) to not more than 150 square feet (14 sq m). The spraying equipment shall be of the fully atomizing type equipped with a tank agitator. At the time of use, the compound shall be in a thoroughly mixed condition with the pigment uniformly dispersed throughout the vehicle. During application, the compound shall be stirred continuously by mechanical means. Hand spraying of odd widths or shapes and concrete surfaces exposed by the removal of forms will be permitted. When hand spraying is approved by the ***OAR*** ~~RPR~~ , a double application rate shall be used to ensure coverage. Should the film become damaged from any cause, including sawing operations, within the required curing period, the damaged portions shall be

repaired immediately with additional compound or other approved means. Upon removal of side forms, the sides of the exposed slabs shall be protected immediately to provide a curing treatment equal to that provided for the surface.

b. White burlap-polyethylene sheets. The surface of the pavement shall be entirely covered with the sheeting. The sheeting used shall be such length (or width) that it will extend at least twice the thickness of the pavement beyond the edges of the slab. The sheeting shall be placed so that the entire surface and both edges of the slab are completely covered. The sheeting shall be placed and weighted to remain in contact with the surface covered, and the covering shall be maintained fully saturated and in position for seven (7) days after the concrete has been placed. ***This sheeting will be on site to protect fresh pavement from unanticipated rain events that could mar the surface finish.***

~~**c. Water method.** The entire area shall be covered with burlap or other water absorbing material. The material shall be of sufficient thickness to retain water for adequate curing without excessive runoff. The material shall be kept wet at all times and maintained for seven (7) days. When the forms are stripped, the vertical walls shall also be kept moist. It shall be the responsibility of the Contractor to prevent ponding of the curing water on the subbase.~~

d. Concrete protection for cold weather. Maintain the concrete at a temperature of at least 50°F (10°C) for a period of 72 hours after placing and at a temperature above freezing for the remainder of the 7-day curing period. The Contractor shall be responsible for the quality and strength of the concrete placed during cold weather; and any concrete damaged shall be removed and replaced at the Contractor's expense.

e. Concrete protection for hot weather. Concrete should be continuous moisture cured for the entire curing period and shall commence as soon as the surfaces are finished and continue for at least 24 hours. However, if moisture curing is not practical beyond 24 hours, the concrete surface shall be protected from drying with application of a liquid membrane-forming curing compound while the surfaces are still damp. Other curing methods may be approved by the ***OAR*** ~~RPR~~.

501-4.14 Removing forms. Unless otherwise specified, forms shall not be removed from freshly placed concrete until it has hardened sufficiently to permit removal without chipping, spalling, or tearing. After the forms have been removed, the sides of the slab shall be cured in accordance with paragraph 501-4.13.

If honeycombed areas are evident when the forms are removed, materials, placement, and consolidation methods must be reviewed and appropriate adjustments made to assure adequate consolidation at the edges of future concrete placements. Honeycombed areas that extend into the slab less than approximately 1 inch (25 mm), shall be repaired with an approved grout, as directed by the ***OAR*** ~~RPR~~. Honeycombed areas that extend into the slab greater than a depth of 1 inch (25 mm) shall be considered as defective work and shall be removed and replaced in accordance with paragraph 501-4.19.

~~**501-4.15 Saw-cut grooving.** If shown on the plans, grooved surfaces shall be provided in accordance with the requirements of Item P-621.~~

501-4.16 Sealing joints. The joints in the pavement shall be sealed in accordance with ~~Item P-604 and~~ P-605.

501-4.17 Protection of pavement. The Contractor shall protect the pavement and its appurtenances against both public traffic and traffic caused by the Contractor's employees and agents until accepted by the ***OAR*** ~~RPR~~. This shall include watchmen to direct traffic and the erection and maintenance of warning signs, lights, pavement bridges, crossovers, and protection of unsealed joints from intrusion of foreign material, etc. Any damage to the pavement occurring prior to final acceptance shall be repaired or the pavement replaced at the Contractor's expense.

Aggregates, rubble, or other similar construction materials shall not be placed on airfield pavements. Traffic shall be excluded from the new pavement by erecting and maintaining barricades and signs until the concrete is at least seven (7) days old, or for a longer period if directed by the ***OAR*** ~~RPR~~.

In paving intermediate lanes between newly paved pilot lanes, operation of the hauling and paving equipment will be permitted on the new pavement after the pavement has been cured for seven (7) days, the joints are protected, the concrete has attained a minimum field cured flexural strength of 450 psi (3100 kPa), and the slab edge is protected.

All new and existing pavement carrying construction traffic or equipment shall be kept clean and spillage of concrete and other materials shall be cleaned up immediately.

Damaged pavements shall be removed and replaced at the Contractor's expense. Slabs shall be removed to the full depth, width, and length of the slab.

501-4.18 Opening to construction traffic. The pavement shall not be opened to traffic until test specimens molded and cured in accordance with ASTM C31 have attained a flexural strength of 450 pounds per square inch (3100 kPa) when tested in accordance with ASTM C78. If such tests are not conducted, the pavement shall not be opened to traffic until 14 days after the concrete was placed. Prior to opening the pavement to construction traffic, all joints shall either be sealed or protected from damage to the joint edge and intrusion of foreign materials into the joint. As a minimum, backer rod or tape may be used to protect the joints from foreign matter intrusion.

501-4.19 Repair, removal, or replacement of slabs. New pavement slabs that are broken or contain cracks or are otherwise defective or unacceptable as defined by acceptance criteria in paragraph 501-6.6 shall be removed and replaced or repaired, as directed by the ***OAR*** ~~RPR~~, at the Contractor's expense. Spalls along joints shall be repaired as specified. Removal of partial slabs is not permitted. Removal and replacement shall be full depth, shall be full width of the slab, and the limit of removal shall be normal to the paving lane and to each original transverse joint. The ***OAR*** ~~RPR~~ will determine whether cracks extend full depth of the pavement and may require cores to be drilled on the crack to determine depth of cracking. Such cores shall be have a diameter of 2 inches (50 mm) to 4 inches (100 mm), shall be drilled by the Contractor and shall be filled by the Contractor with a well consolidated concrete mixture bonded to the walls of the hole with a bonding agent, using approved procedures. Drilling of cores and refilling holes shall be at no expense to the Owner. Repair of cracks as described in this section shall not be allowed if in the opinion of the ***OAR*** ~~RPR~~ the overall condition of the pavement indicates that such repair is unlikely to achieve an acceptable and durable finished pavement. No repair of cracks shall be allowed in any panel that demonstrates segregated aggregate with an absence of coarse aggregate in the upper 1/8 inch (3 mm) of the pavement surface.

a. Shrinkage cracks. Shrinkage cracks which do not exceed one-third of the pavement depth shall be cleaned and either high molecular weight methacrylate (HMWM) applied; or epoxy resin (Type IV, Grade 1) pressure injected using procedures recommended by the manufacturer and approved by the ***OAR*** ~~RPR~~. Sandblasting of the surface may be required following the application of HMWM to restore skid resistance. Care shall be taken to ensure that the crack is not widened during epoxy resin injection. All epoxy resin injection shall take place in the presence of the ***OAR*** ~~RPR~~. Shrinkage cracks which exceed one-third the pavement depth shall be treated as full depth cracks in accordance with paragraphs 501-4.19b and 501-19c.

b. Slabs with cracks through interior areas. Interior area is defined as that area more than 6 inches (150 mm) from either adjacent original transverse joint. The full slab shall be removed and replaced at no cost to the Owner, when there are any full depth cracks, or cracks greater than one-third the pavement depth, that extend into the interior area.

c. Cracks close to and parallel to joints. All full-depth cracks within 6 inches (150 mm) either side of the joint and essentially parallel to the original joints, shall be treated as follows.

(1) Full depth cracks and original joint not cracked. The full-depth crack shall be treated as the new joint and the original joint filled with an epoxy resin.

i. Full-depth crack. The joint sealant reservoir for the crack shall be formed by sawing to a depth of 3/4 inches (19 mm), ±1/16 inch (2 mm), and to a width of 5/8 inch (16 mm), ±1/8 inch (3 mm). The crack shall be sawed with equipment specially designed to follow random cracks. Any equipment or procedure which causes raveling or spalling along the crack shall be modified or replaced to prevent raveling or spalling. The joint shall be sealed with sealant in accordance with P-605 or as directed by the ***OAR*** ~~RPR~~.

ii. Original joint. If the original joint sealant reservoir has been sawed out, the reservoir and as much of the lower saw cut as possible shall be filled with epoxy resin, Type IV, Grade 2, thoroughly tooled into the void using approved procedures.

If only the original narrow saw cut has been made, it shall be cleaned and pressure injected with epoxy resin, Type IV, Grade 1, using approved procedures.

Where a parallel crack goes part way across paving lane and then intersects and follows the original joint which is cracked only for the remained of the width, it shall be treated as specified above for a parallel crack, and the cracked original joint shall be prepared and sealed as originally designed.

(2) Full depth cracks and original joint cracked. If there is any place in the lane width where a parallel crack and a cracked portion of the original joint overlap, the entire slab containing the crack shall be removed and replaced.

d. Removal and replacement of full slabs. Make a full depth cut perpendicular to the slab surface along all edges of the slab with a concrete saw cutting any dowels or tie-bars. Remove damaged slab protecting adjacent pavement from damage. Damage to adjacent slabs may result in removal of additional slabs as directed by the ***OAR*** ~~RPR~~ at the Contractor's expense.

The underlying material shall be repaired, re-compacted and shaped to grade.

Dowels of the size and spacing specified for other joints in similar pavement on the project shall be installed along all four (4) edges of the new slab in accordance with paragraph 501-4.10d.

Placement of concrete shall be as specified for original construction. The joints around the new slab shall be prepared and sealed as specified for original construction.

e. Spalls along joints.

(1) Spalls less than one inch wide and less than the depth of the joint sealant reservoir, shall be filled with joint sealant material.

(2) Spalls larger than one inch and/or deeper than the joint reservoir, but less than ½ the slab depth, and less than 25% of the length of the adjacent joint shall be repaired as follows:

i. Make a vertical saw cut at least one inch (25 mm) outside the spalled area and to a depth of at least 2 inches (50 mm). Saw cuts shall be straight lines forming rectangular areas surrounding the spalled area.

ii. Remove unsound concrete and at least 1/2 inch (12 mm) of visually sound concrete between the saw cut and the joint or crack with a light chipping hammer.

iii. Clean cavity with high-pressure water jets supplemented with compressed air as needed to remove all loose material.

iv. Apply a prime coat of epoxy resin, Type III, Grade I, ***or as recommended by the patching material manufacturer and approved by the OAR*** to the dry, cleaned surface of all sides and bottom of the cavity, except any joint face.

v. Fill the cavity with ***Silspec Flexpatch Patching Material or approved equal*** ~~low slump concrete or mortar or with epoxy resin concrete or mortar~~.

vi. An insert or other bond-breaking medium shall be used to prevent bond at all joint faces.

vii. A reservoir for the joint sealant shall be sawed to the dimensions required for other joints, or as required to be routed for cracks. The reservoir shall be thoroughly cleaned and sealed with the sealer specified for the joints.

(3) Spalls deeper than 1/2 of the slab depth or spalls longer than 25% of the adjacent joint require replacement of the entire slab.

f. Diamond grinding of Concrete surfaces. Diamond grinding shall be completed prior to pavement grooving. Diamond grinding of the hardened concrete should not be performed until the concrete is at least 14 days old and has achieved full minimum strength. Equipment that causes ravels, aggregate fractures, spalls or disturbance to the joints will not be permitted. The depth of diamond grinding shall not exceed 1/2 inch (13 mm) and all areas in which diamond grinding has been performed will be subject to the final pavement thickness tolerances specified.

Diamond grinding shall be performed with a machine specifically designed for diamond grinding capable of cutting a path at least 3 feet (0.9 m) wide. The saw blades shall be 1/8-inch (3-mm) wide with sufficient number of flush cut blades that create grooves between 0.090 and 0.130 inches (2 and 3.5 mm) wide; and peaks and ridges approximately 1/32 inch (1 mm) higher than the bottom of the grinding cut. The Contractor shall determine the number and type of blades based on the hardness of the aggregate. Contractor shall demonstrate to the ***OAR*** ~~RPR~~ that the grinding equipment will produce satisfactory results prior to making corrections to surfaces.

Grinding will be tapered in all directions to provide smooth transitions to areas not requiring grinding. The slurry resulting from the grinding operation shall be continuously removed and the pavement left in a clean condition. All grinding shall be at the expense of the Contractor.

CONTRACTOR QUALITY CONTROL (CQC)

501-5.1 Quality control program. The Contractor shall develop a Quality Control Program in accordance with Item C-100. No partial payment will be made for materials that are subject to specific quality control requirements without an approved quality control program.

501-5.2 Contractor Quality Control (CQC). The Contractor shall provide or contract for testing facilities in accordance with Item C-100. The ***OAR*** ~~RPR~~ shall be permitted unrestricted access to inspect the Contractor's QC facilities and witness QC activities. The ***OAR*** ~~RPR~~ will advise the Contractor in writing of any noted deficiencies concerning the QC facility, equipment, supplies, or testing personnel and procedures. When the deficiencies are serious enough to be adversely affecting the test results, the incorporation of the materials into the work shall be suspended immediately and will not be permitted to resume until the deficiencies are satisfactorily corrected.

501-5.3 Contractor QC testing. The Contractor shall perform all QC tests necessary to control the production and construction processes applicable to this specification and as set forth in the CQCP. The testing program shall include, but not necessarily be limited to, tests for aggregate gradation, aggregate moisture content, slump, and air content. A QC Testing Plan shall be developed and approved by the ***OAR*** ~~RPR~~ as part of the CQCP.

The ***OAR*** ~~RPR~~ may at any time, notwithstanding previous plant acceptance, reject and require the Contractor to dispose of any batch of concrete mixture which is rendered unfit for use due to contamination, segregation, or improper slump. Such rejection may be based on only visual inspection. In the event of such rejection, the Contractor may take a representative sample of the rejected material in the presence of the ***OAR*** ~~RPR~~, and if it can be demonstrated in the laboratory, in the presence of the ***OAR*** ~~RPR~~, that such material was erroneously rejected, payment will be made for the material at the contract unit price**.**

a. Fine aggregate.

(1) Gradation. A sieve analysis shall be made at least twice daily in accordance with ASTM C136 from randomly sampled material taken from the discharge gate of storage bins or from the conveyor belt.

(2) Moisture content. If an electric moisture meter is used, at least two direct measurements of moisture content shall be made per week to check the calibration. If direct measurements are made in lieu of using an electric meter, two tests shall be made per day. Tests shall be made in accordance with ASTM C70 or ASTM C566.

(3) Deleterious substances. Fine aggregate as delivered to the mixer shall be tested for deleterious substances in fine aggregate for concrete as specified in paragraph 501-2.1b, prior to production of the control strip, and a minimum of every 30-days during production or more frequently as necessary to control deleterious substances.

b. Coarse Aggregate.

(1) Gradation. A sieve analysis shall be made at least twice daily for each size of aggregate. Tests shall be made in accordance with ASTM C136 from randomly sampled material taken from the discharge gate of storage bins or from the conveyor belt.

(2) Moisture content. If an electric moisture meter is used, at least two direct measurements of moisture content shall be made per week to check the calibration. If direct measurements are made in lieu of using an electric meter, two tests shall be made per day. Tests shall be made in accordance with ASTM C566.

(3) Deleterious substances. Coarse aggregate as delivered to the mixer shall be tested for deleterious substances in coarse aggregate for concrete as specified in paragraph 501-2.1c, prior to production of the control strip, and a minimum of every 30-days during production or more frequently as necessary to control deleterious substances.

c. Slump. One test shall be made for each sublot. Slump tests shall be performed in accordance with ASTM C143 from material randomly sampled from material discharged from trucks at the paving site. Material samples shall be taken in accordance with ASTM C172.

d. Air content. One test shall be made for each sublot. Air content tests shall be performed in accordance with ASTM C231 for gravel and stone coarse aggregate and ASTM C173 for slag or other porous coarse aggregate, from material randomly sampled from trucks at the paving site. Material samples shall be taken in accordance with ASTM C172.

e. Unit weight and Yield. One test shall be made for each sublot. Unit weight and yield tests shall be in accordance with ASTM C138. The samples shall be taken in accordance with ASTM C172 and at the same time as the air content tests.

f. Temperatures. Temperatures shall be checked at least four times per lot at the job site in accordance with ASTM C1064.

g. Smoothness for Contractor Quality Control.

The Contractor shall perform smoothness testing in transverse and longitudinal directions daily to verify that the construction processes are producing pavement with variances less than ¼ inch in 12 feet, identifying areas that may pond water which could lead to hydroplaning of aircraft. If the smoothness criteria is not met, appropriate changes and corrections to the construction process shall be made by the Contractor before construction continues

The Contractor may use a 12-foot (3.7 m) straightedge or a rolling inclinometer meeting the requirements of ASTM E2133. Straight-edge testing shall start with one-half the length of the straightedge at the edge of pavement section being tested and then moved ahead one-half the length of the straightedge for each successive measurement. Testing shall be continuous across all joints. The surface irregularity shall be determined by placing the freestanding (unleveled) straightedge on the pavement surface and allowing it to rest upon the two highest spots covered by its length, and measuring the maximum gap between the straightedge and the pavement surface in the area between the two high points. If the rolling inclinometer is used, the data may be evaluated using the FAA profile program, ProFAA, using the 12-foot straightedge simulation function.

Smoothness readings shall not be made across grade changes or cross slope transitions. The transition between new and existing pavement shall be evaluated separately for conformance with the plans.

(1) Transverse measurements. Transverse measurements shall be taken for each day's production placed. Transverse measurements shall be taken perpendicular to the pavement centerline each 50 feet (15 m) or more often as determined by the ***OAR*** ~~RPR~~. The joint between lanes shall be tested separately to facilitate smoothness between lanes.

(2) Longitudinal measurements. Longitudinal measurements shall be taken for each day's production placed. Longitudinal tests shall be parallel to the centerline of paving; at the center of paving lanes when widths of paving lanes are less than 20 feet (6 m); and at the third points of paving lanes when widths of paving lanes are 20 ft (6 m) or greater.

Deviations on the final surface course in either the transverse or longitudinal direction that will trap water greater than 1/4 inch (6 mm) shall be corrected with diamond grinding per paragraph 501-4.19f or by removing and replacing the surface course to full depth. Grinding shall be tapered in all directions to provide smooth transitions to areas not requiring grinding. All areas in which diamond grinding has been performed shall be subject to the final pavement thickness tolerances specified in paragraph 501-6.6.

Control charts shall be kept to show area of each day's placement and the percentage of corrective grinding required. Corrections to production and placement shall be initiated when corrective grinding is required. If the Contractor's machines and/or methods produce significant areas that need corrective actions in excess of 10 percent of a day's production, production shall be stopped until corrective measures are implemented by the Contractor.

h. Grade. Grade will be evaluated prior to and after placement of the concrete surface.

Measurements will be taken at appropriate gradelines (as a minimum at center and edges of paving lane) and longitudinal spacing as shown on cross-sections and plans. The final surface of the pavement will not vary from the gradeline elevations and cross-sections shown on the plans by more than 1/2 inch (12 mm) vertically and 0.1 feet (30 mm) laterally. The documentation will be provided by the Contractor to the ***OAR*** ~~RPR~~ within 48 hours.

Areas with humps or depression that that exceed grade or smoothness and that retain water on the surface must be ground off provided the course thickness after grinding is not more than 1/2 inch (12 mm) less than the thickness specified on the plans. If these areas cannot be corrected with grinding then the slabs that are retaining water must be removed and replaced in accordance with paragraph 501-4.19d. Grinding shall be in accordance with paragraph 501-4.19f. All corrections will be at the Contractors expense.

501-5.4 Control charts. The Contractor shall maintain linear control charts for fine and coarse aggregate gradation, slump, and air content. The Contractor shall also maintain a control chart plotting the coarseness factor/workability factor from the combined gradations in accordance with paragraph 501-2.1d.

Control charts shall be posted in a location satisfactory to the ***OAR*** ~~RPR~~ and shall be kept up to date at all times. As a minimum, the control charts shall identify the project number, the contract item number, the test number, each test parameter, the Action and suspension Limits, or Specification limits, applicable to each test parameter, and the Contractor's test results. The Contractor shall use the control charts as part of a process control system for identifying potential problems and assignable causes before they occur. If the Contractor's projected data during production indicates a potential problem and the Contractor is not taking satisfactory corrective action, the ***OAR*** ~~RPR~~ may halt production or acceptance of the material.

a. Fine and coarse aggregate gradation. The Contractor shall record the running average of the last five gradation tests for each control sieve on linear control charts. Superimposed on the control charts shall be the action and suspension limits. Gradation tests shall be performed by the Contractor per ASTM C136. The Contractor shall take at least **[** two **]** samples per lot to check the final gradation. Sampling shall be per ASTM D75 from the flowing aggregate stream or conveyor belt.

b. Slump and air content. The Contractor shall maintain linear control charts both for individual measurements and range (that is, difference between highest and lowest measurements) for slump and air content in accordance with the following Action and Suspension Limits.

c. Combined gradation. The Contractor shall maintain a control chart plotting the coarseness factor and workability factor on a chart in accordance with paragraph 501-2.1d.

Control Chart Limits[1]

Control Parameter	**Individual Measurements**	
	Action Limit	**Suspension Limit**
Gradation[2]	*[3]	*[3]
Coarseness Factor (CF)	±3.5	±5
Workability Factor (WF)	±2	±3
Slump	+0.5 to -1 inch (+13 to -25 mm)	+1 to -1.5 inch (+25 to -38 mm)
Air Content	±1.5%	±2.0%

[1] Control charts shall developed and maintained for each control parameter indicated.

[2] Control charts shall be developed and maintained for each sieve size.

[3] Action and suspension limits shall be determined by the Contractor.

501-5.5 Corrective action at Suspension Limit. The CQCP shall indicate that appropriate action shall be taken when the process is believed to be out of control. The CQCP shall detail what action will be taken to bring the process into control and shall contain sets of rules to gauge when a process is out of control. As a minimum, a process shall be deemed out of control and corrective action taken if any one of the following conditions exists.

a. Fine and coarse aggregate gradation. When two consecutive averages of five tests are outside of the suspension limits, immediate steps, including a halt to production, shall be taken to correct the grading.

b. Coarseness and Workability factor. When the CF or WF reaches the applicable suspension limits, the Contractor, immediate steps, including a halt to production, shall be taken to correct the CF and WF.

c. Fine and coarse aggregate moisture content. Whenever the moisture content of the fine or coarse aggregate changes by more than 0.5%, the scale settings for the aggregate batcher and water batcher shall be adjusted.

d. Slump. The Contractor shall halt production and make appropriate adjustments whenever:

(1) one point falls outside the Suspension Limit line for individual measurements

OR

(2) two points in a row fall outside the Action Limit line for individual measurements.

d. Air content. The Contractor shall halt production and adjust the amount of air-entraining admixture whenever:

(1) one point falls outside the Suspension Limit line for individual measurements

OR

(2) two points in a row fall outside the Action Limit line for individual measurements.

MATERIAL ACCEPTANCE

501-6.1 Quality Assurance (QA) Acceptance sampling and testing. ~~All acceptance sampling and testing necessary to determine conformance with the requirements specified in this section, with the exception of coring for thickness determination, will be performed by the~~ ***OAR*** ~~RPR.~~ The Contractor shall provide adequate facilities for the initial curing of beams. The Contractor shall bear the cost of providing initial curing facilities and coring and filling operations, per paragraph 501-6.5b(1).

The samples will be transported while in the molds. The curing, except for the initial cure period, will be accomplished using the immersion in saturated lime water method. During the 24 hours after molding, the temperature immediately adjacent to the specimens must be maintained in the range of 60° to 80°F (16° to 27°C), and loss of moisture from the specimens must be prevented. The specimens may be stored in tightly constructed wooden boxes, damp sand pits, temporary buildings at construction sites, under wet burlap in favorable weather, or in heavyweight closed plastic bags, or using other suitable methods, provided the temperature and moisture loss requirements are met.

501-6.2 Quality Assurance (QA) testing laboratory. Quality assurance testing organizations performing these acceptance tests will be accredited in accordance with ASTM C1077. The quality assurance laboratory accreditation must be current and listed on the accrediting authority's website. All test methods required for acceptance sampling and testing must be listed on the lab accreditation. A copy of the laboratory's current accreditation and accredited test methods will be submitted to the ***OAR*** ~~RPR~~ prior to start of construction.

The Contractor shall make all beams, cure beams, and deliver beams to the Owner's Q/A testing organization lab cure room within 48 hours of casting the beam. All beams shall be transported per ASTM/ACI methods as approved by the Construction Manager/Engineer. The Contractor shall observe all tests. All broken test specimens and beams shall become the property of the Contractor.

501-6.3 Lot size. Concrete will be accepted for strength and thickness on a lot basis. A lot will consist of a day's production not to exceed 500 square yards. Each lot will be divided into approximately equal sublots with individual sublots between 100 to 150 square yards. Where three sublots are produced, they will constitute a lot. Where one or two sublots are produced, they will be incorporated into the previous or next lot. Where more than one plant is simultaneously producing concrete for the job, the lot sizes will apply separately for each plant.

501-6.4 Partial lots. When operational conditions cause a lot to be terminated before the specified number of tests have been made for the lot or for overages or minor placements to be considered as partial lots, the following procedure will be used to adjust the lot size and the number of tests for the lot.

Where three sublots have been produced, they will constitute a lot. Where one or two sublots have been produced, they will be incorporated into the next lot or the previous lot and the total number of sublots will be used in the acceptance criteria calculation, that is, n=5 or n=6.

501-6.5 Acceptance Sampling and Testing.

a. Strength.

(1) Sampling. One sample will be taken for each sublot from the concrete delivered to the job site. Sampling locations will be determined by the ***OAR*** ~~RPR~~ in accordance with random sampling procedures contained in ASTM D3665. The concrete will be sampled in accordance with ASTM C172.

(2) Test Specimens. The ***Contractor*** ~~RPR~~ will be responsible for the casting, initial curing, transportation, and curing of specimens in accordance with ASTM C31. Two (2) specimens will be made from each sample and slump, air content, unit weight, and temperature tests will be conducted for each set of strength specimens. Within 24 to 48 hours, the samples will be transported from the field to the laboratory while in the molds. Samples will be cured in saturated lime water.

The strength of each specimen will be determined in accordance with ASTM C78. The strength for each sublot will be computed by averaging the results of the two test specimens representing that sublot.

(3) Acceptance. Acceptance of pavement for strength will be determined by the ***OAR*** ~~RPR~~ in accordance with paragraph 501-6.6b(1). All individual strength tests within a lot will be checked for outliers in accordance with ASTM E178, at a significance level of 5%. Outliers will be discarded and the remaining test values will be used to determine acceptance in accordance with paragraph 501-6.5b.

b. Pavement thickness.

(1) Sampling. One core will be taken by the Contractor for each sublot in the presence of the ***OAR*** ~~RPR~~. Sampling locations will be determined by the ***OAR*** ~~RPR~~ in accordance with random sampling procedures contained in ASTM D3665. Areas, such as thickened edges, with planned variable thickness, will be excluded from sample locations.

Cores shall be a minimum 4 inch (100 mm) in diameter neatly cut with a core drill. The Contractor will furnish all tools, labor, and materials for cutting samples and filling the cored hole. Core holes will be filled by the Contractor with a non-shrink grout approved by the ***OAR*** ~~RPR~~ within one day after sampling.

(2) Testing. The thickness of the cores will be determined by the ***OAR*** ~~RPR~~ by the average caliper measurement in accordance with ASTM C174. Each core shall be photographed and the photograph included with the test report.

(3) Acceptance. Acceptance of pavement for thickness will be determined by the ***OAR*** ~~RPR~~ in accordance with paragraph 501-6.6.

501-6.6 Acceptance criteria.

a. General. Acceptance will be based on the following characteristics of the completed pavement discussed in paragraph 501-6.5b:

(1) Strength

(2) Thickness

(3) Grade

~~(4) Profilograph smoothness~~

(5) Adjustments for repairs

Acceptance for strength, thickness, and grade, will be based on the criteria contained in accordance with paragraph 501-6.6b(1), 501-6.6b(2), and 501-6.6b(3), respectively.

Production quality must achieve 90 PWL or higher to receive full pavement.

Strength and thickness will be evaluated for acceptance on a lot basis using the method of estimating PWL. Production quality must achieve 90 PWL or higher to receive full pavement. The PWL will be determined in accordance with procedures specified in Item C-110.

The lower specification tolerance limit (L) for strength and thickness will be:

Lower Specification Tolerance Limit (L)

Strength	0.93 × strength specified in paragraph 501-3.3
Thickness	Lot Plan Thickness in inches, - 0.50 in

b. Acceptance criteria.

(1) Strength. The strength for each sublot shall be computed by averaging the results of that sublot. When sublot strength equals or exceeds the strength as specified in paragraph 501-3.3, the lot will be acceptable. Acceptance and payment for the lot will be determined in accordance with paragraph 501-8.1.

(**2) Thickness.** If sublot thickness is not be less than ½ inch (12 mm) from plan thickness, the lot will be acceptable. Acceptance and payment for the lot will be determined in accordance with paragraph 501-8.1..

(3) Grade. The final finished surface of the pavement of the completed project will not vary from the gradeline elevations and cross-sections shown on the plans by more than 1/2 inch (12 mm) vertically or 0.1 feet (30 mm) laterally. The documentation, stamped and signed by a licensed surveyor shall be in accordance with paragraph 501-5.3h. Payment for sublots that do not meet grade for over 25% of the sublot shall reduced by 5% and not be more than 95%.

~~**(4) Profilograph roughness for QA Acceptance.** The final profilograph shall be the full length of the project to facilitate testing of roughness between lots. The Contractor, in the presence of the ***OAR*** RPR shall perform a profilograph roughness test on the completed project with a profilograph meeting the requirements of ASTM E1274 or a Class I inertial profiler meeting ASTM E950. Data and results shall be provided within 48 hrs of profilograph roughness tests.~~

~~The pavement shall have an average profile index less than 15 inches per mile per 1/10 mile. The equipment shall utilize electronic recording and automatic computerized reduction of data to indicate "must grind" bumps and the Profile Index for the pavement using a 0.2-inch (5 mm) blanking band. The bump template must span one inch (25 mm) with an offset of 0.4 inches (10 mm). The profilograph must be calibrated prior to use and operated by a factory or State DOT approved, trained operator. Profilograms shall be recorded on a longitudinal scale of one inch (25 mm) equals 25 feet (7.5 m) and a vertical scale of one inch (25 mm) equals one inch (25 mm). Profilograph shall be performed one foot right and left of project centerline and 15 feet (4.5 m) right and left of project centerline. Any areas that indicate "must grind" shall be corrected with diamond grinding per paragraph 501-4.19f or by removing and replacing full depth of surface course. as directed by the ***OAR*** RPR. Where corrections are necessary, a second profilograph run shall be performed to verify that the corrections produced an average profile index of 15 inches per mile per 1/10 mile or less.~~

(5) Adjustments for repair. Sublots with spall repairs, crack repairs, or partial panel replacement, will be limited to no more than 95% payment.

(6) Adjustment for grinding. For sublots with grinding over 25% of a sublot, payment will be reduced 5%.

METHOD OF MEASUREMENT

501-7.1 Concrete pavement shall be measured by the number of cubic yards of plain and reinforced pavement as specified in-place, completed and accepted.

BASIS OF PAYMENT

501-8.1 Payment. Payment for concrete pavement meeting all acceptance criteria as specified in paragraph 501-6.6. Acceptance Criteria shall be based on results of strength, smoothness, and thickness tests. Payment for acceptable lots of concrete pavement shall be adjusted in accordance with paragraph 501-8.1a for strength and thickness; 501-8.1b for repairs; 501-8.1c for grinding; and 501-8.1d for smoothness, subject to the limitation that:

The total project payment for concrete pavement shall not exceed 100 percent of the product of the contract unit price and the total number of cubic yards ~~(square meters)~~ of concrete pavement used in the accepted work (See Note 1 under the Price Adjustment Schedule table below).

Payment shall be full compensation for all labor, materials, tools, equipment, and incidentals required to complete the work as specified herein and on the drawings.

a. Basis of adjusted payment. The pay factor for each individual lot shall be calculated in accordance with the Price Adjustment Schedule table below. A pay factor shall be calculated for both strength and thickness. The lot pay factor shall be the higher of the two values when calculations for both strength and thickness are 100% or higher. The lot pay factor shall be the product of the two values when only one of the calculations for either strength or thickness is 100% or higher. The lot pay factor shall be the lower of the two values when calculations for both strength and thickness are less than 100%.

Price Adjustment Schedule[1]

Percentage of Materials Within Specification Limits (PWL)	**Lot Pay Factor (Percent of Contract Unit Price)**
96 – 100	106
90 – 95	PWL + 10
75 – 90	0.5 PWL + 55
55 – 74	1.4 PWL – 12
Below 55	Reject[2]

[1] Although it is theoretically possible to achieve a pay factor of 106% for each lot, actual payment in excess of 100% shall be subject to the total project payment limitation specified in paragraph 501-8.1.

[2] The lot shall be removed and replaced unless, after receipt of FAA concurrence, the Owner and Contractor agree in writing that the lot will remain; the lot paid at 50% of the contract unit price; and the total project payment limitation reduced by the amount withheld for that lot.

For each lot accepted, the adjusted contract unit price shall be the product of the lot pay factor for the lot and the contract unit price. Payment shall be subject to the total project payment limitation specified in paragraph 501-8.1. Payment in excess of 100% for accepted lots of concrete pavement shall be used to offset payment for accepted lots of concrete pavement that achieve a lot pay factor less than 100%; except for rejected lots which remain in place and/or sublots with adjustments for repairs.

b. Adjusted payment for repairs. The PWL lot pay factor shall be reduced by 5% and be no higher than 95% for sublots which contain repairs in accordance with paragraph 501-4.19 on more than 20% of the slabs within the sublot. Payment factors greater than 100 percent for the strength and thickness cannot be used to offset adjustments for repairs.

c. Adjusted payment for grinding. The PWL lot pay factor shall be reduced by 5% and be no higher than 95% for sublots with grinding over 25% of a sublot.

~~**d. Profilograph Roughness.** The Contractor will receive full payment when the profilograph average profile index is in accordance with paragraph 501-6.6b(4). When the final average profile index for the entire length of pavement does not exceed 15 inches per mile per 1/10 mile, payment will be made at the contract unit price for the completed pavement.~~

e. Payment. Payment shall be made under:

Item P-501-8.1 Portland Cement Concrete Pavement (16” Thick) - **per cubic yard**

REFERENCES

The publications listed below form a part of this specification to the extent referenced. The publications are referred to within the text by the basic designation only.

ASTM International (ASTM)

ASTM A184	Standard Specification for Welded Deformed Steel Bar Mats for Concrete Reinforcement
ASTM A615	Standard Specification for Deformed and Plain Carbon-Steel Bars for Concrete Reinforcement
ASTM A704	Standard Specification for Welded Steel Plain Bar or Rod Mats for Concrete Reinforcement
ASTM A706	Standard Specification for Low-Alloy Steel Deformed and Plain Bars for Concrete Reinforcement
ASTM A775	Standard Specification for Epoxy-Coated Steel Reinforcing Bars
ASTM A884	Standard Specification for Epoxy-Coated Steel Wire and Welded Wire Reinforcement
ASTM A934	Standard Specification for Epoxy-Coated Prefabricated Steel Reinforcing Bars
ASTM A996	Standard Specification for Rail-Steel and Axle-Steel Deformed Bars for Concrete Reinforcement
ASTM A1035	Standard Specification for Deformed and Plain, Low-Carbon, Chromium, Steel Bars for Concrete Reinforcement
ASTM A1064	Standard Specification for Carbon-Steel Wire and Welded Wire Reinforcement, Plain and Deformed, for Concrete
ASTM A1078	Standard Specification for Epoxy-Coated Steel Dowels for Concrete Pavement
ASTM C29	Standard Test Method for Bulk Density (“Unit Weight”) and Voids in Aggregate
ASTM C31	Standard Practice for Making and Curing Concrete Test Specimens in the Field
ASTM C33	Standard Specification for Concrete Aggregates
ASTM C39	Standard Test Method for Compressive Strength of Cylindrical Concrete Specimens
ASTM C70	Standard Test Method for Surface Moisture in Fine Aggregate
ASTM C78	Standard Test Method for Flexural Strength of Concrete (Using Simple Beam with Third-Point Loading)
ASTM C88	Standard Test Method for Soundness of Aggregates by Use of Sodium Sulfate or Magnesium Sulfate
ASTM C94	Standard Specification for Ready-Mixed Concrete
ASTM C114	Standard Test Methods for Chemical Analysis of Hydraulic Cement
ASTM C117	Standard Test Method for Materials Finer than 75-µm (No. 200) Sieve in Mineral Aggregates by Washing
ASTM C123	Standard Test Method for Lightweight Particles in Aggregate
ASTM C136	Standard Test Method for Sieve Analysis of Fine and Coarse Aggregates
ASTM C131	Standard Test Method for Resistance to Degradation of Small-Size Coarse Aggregate by Abrasion and Impact in the Los Angeles Machine
ASTM C136	Standard Test Method for Sieve or Screen Analysis of Fine and Coarse Aggregates

ASTM C138	Standard Test Method for Density (Unit Weight), Yield, and Air Content (Gravimetric) of Concrete
ASTM C142	Standard Test Method for Clay Lumps and Friable Particles in Aggregates
ASTM C143	Standard Test Method for Slump of Hydraulic-Cement Concrete
ASTM C150	Standard Specification for Portland Cement
ASTM C171	Standard Specification for Sheet Materials for Curing Concrete
ASTM C172	Standard Practice for Sampling Freshly Mixed Concrete
ASTM C173	Standard Test Method for Air Content of Freshly Mixed Concrete by the Volumetric Method
ASTM C174	Standard Test Method for Measuring Thickness of Concrete Elements Using Drilled Concrete Cores
ASTM C227	Standard Test Method for Potential Alkali Reactivity of Cement-Aggregate Combinations (Mortar-Bar Method)
ASTM C231	Standard Test Method for Air Content of Freshly Mixed Concrete by the Pressure Method
ASTM C260	Standard Specification for Air-Entraining Admixtures for Concrete
ASTM C295	Standard Guide for Petrographic Examination of Aggregates for Concrete
ASTM C309	Standard Specification for Liquid Membrane-Forming Compounds for Curing Concrete
ASTM C311	Standard Test Methods for Sampling and Testing Fly Ash or Natural Pozzolans for Use in Portland Cement Concrete
ASTM C494	Standard Specification for Chemical Admixtures for Concrete
ASTM C566	Standard Test Method for Total Evaporable Moisture Content of Aggregates by Drying
ASTM C595	Standard Specification for Blended Hydraulic Cements
ASTM C618	Standard Specification for Coal Fly Ash and Raw or Calcined Natural Pozzolan for Use in Concrete
ASTM C642	Standard Test Method for Density, Absorption, and Voids in Hardened Concrete
ASTM C666	Standard Test Method for Resistance of Concrete to Rapid Freezing and Thawing
ASTM C685	Standard Specification for Concrete Made by Volumetric Batching and Continuous Mixing
ASTM C881	Standard Specification for Epoxy-Resin-Base Bonding Systems for Concrete
ASTM C989	Standard Specification for Slag Cement for Use in Concrete and Mortars
ASTM C1017	Standard Specification for Chemical Admixtures for Use in Producing Flowing Concrete
ASTM C1064	Test Method for Temperature of Freshly Mixed Hydraulic-Cement Concrete
ASTM C1077	Standard Practice for Agencies Testing Concrete and Concrete Aggregates for Use in Construction and Criteria for Testing Agency Evaluation
ASTM C1157	Standard Performance Specification for Hydraulic Cement
ASTM C1260	Standard Test Method for Potential Alkali Reactivity of Aggregates (Mortar-Bar Method)

ASTM C1365	Standard Test Method for Determination of the Proportion of Phases in Portland Cement and Portland-Cement Clinker Using X-Ray Powder Diffraction Analysis
ASTM C1567	Standard Test Method for Determining the Potential Alkali-Silica Reactivity of Combinations of Cementitious Materials and Aggregate (Accelerated Mortar-Bar Method)
ASTM C1602	Standard Specification for Mixing Water Used in the Production of Hydraulic Cement Concrete
ASTM D75	Standard Practice for Sampling Aggregates
ASTM D1751	Standard Specification for Preformed Expansion Joint Filler for Concrete Paving and Structural Construction (Nonextruding and Resilient Bituminous Types)
ASTM D1752	Standard Specification for Preformed Sponge Rubber and Cork and Recycled PVC Expansion Joint Fillers for Concrete Paving and Structural Construction
ASTM D2419	Standard Test Method for Sand Equivalent Value of Soils and Fine Aggregate
ASTM D3665	Standard Practice for Random Sampling of Construction Materials
ASTM D4791	Standard Test Method for Flat Particles, Elongated Particles, or Flat and Elongated Particles in Coarse Aggregate
ASTM E178	Standard Practice for Dealing with Outlying Observations
ASTM E1274	Standard Test Method for Measuring Pavement Roughness Using a Profilograph
ASTM E2133	Standard Test Method for Using a Rolling Inclinometer to Measure Longitudinal and Transverse Profiles of a Traveled Surface

American Concrete Institute (ACI)

ACI 305R	Guide to Hot Weather Concreting
ACI 306R	Guide to Cold Weather Concreting
ACI 309R	Guide for Consolidation of Concrete

Advisory Circulars (AC)

AC 150/5320-6	Airport Pavement Design and Evaluation

Federal Highway Administration (FHWA)

HIPERPAV 3, version 3.2

Portland Concrete Association (PCA)

PCA	Design and Control of Concrete Mixtures, 16th Edition

U.S. Army Corps of Engineers (USACE) Concrete Research Division (CRD)

CRD C662	Determining the Potential Alkali-Silica Reactivity of Combinations of Cementitious Materials, Lithium Nitrate Admixture and Aggregate (Accelerated Mortar-Bar Method)

United States Air Force Engineering Technical Letter (ETL)

ETL 97-5	Proportioning Concrete Mixtures with Graded Aggregates for Rigid Airfield Pavements

END ITEM P-501

ITEM P-605 JOINT SEALANTS FOR PAVEMENTS

DESCRIPTION

605-1.1 This item shall consist of providing and installing a resilient and adhesive joint sealing material capable of effectively sealing joints in pavement; joints between different types of pavements; and cracks in existing pavement.

MATERIALS

605-2.1 Joint sealants. Joint sealant materials shall meet the requirements of ASTM D5893.

Each lot or batch of sealant shall be delivered to the jobsite in the manufacturer's original sealed container. Each container shall be marked with the manufacturer's name, batch or lot number, the safe heating temperature, and shall be accompanied by the manufacturer's certification stating that the sealant meets the requirements of this specification.

The Joint Sealant Material used for sealing Portland Cement Concrete to Portland Cement Concrete joints and cracks as shown on the plans shall be cold applied, single component, non sag, Dow Corning 888 Silicone Joint Sealant or approved equal.

The Joint Sealant Material used for sealing Portland Cement Concrete to Asphalt Concrete Pavement joints and cracks as shown on the plans shall be cold applied, single component, self-leveling, Dow Corning 890SL Silicone Joint Sealant or approved equal.

605-2.2 Backer rod. The material furnished shall be a compressible, non-shrinking, non-staining, non-absorbing material that is non-reactive with the joint sealant in accordance with ASTM D5249. The backer-rod material shall be 25% ± 5 % larger in diameter than the nominal width of the joint.

605-2.3 Bond breaking tapes. Provide a bond breaking tape or separating material that is a flexible, non-shrinkable, non-absorbing, non-staining, and non-reacting adhesive-backed tape. The material shall have a melting point at least 5°F (3°C) greater than the pouring temperature of the sealant being used when tested in accordance with ASTM D789. The bond breaker tape shall be approximately 1/8 inch (3 mm) wider than the nominal width of the joint and shall not bond to the joint sealant.

CONSTRUCTION METHODS

605-3.1 Time of application. Joints shall be sealed as soon after completion of the curing period as feasible and before the pavement is opened to traffic, including construction equipment. The pavement temperature shall be 50°F (10°C) and rising at the time of application of the poured joint sealing material. Do not apply sealant if moisture is observed in the joint.

605-3.2 Equipment. Machines, tools, and equipment used in the performance of the work required by this section shall be approved before the work is started and maintained in satisfactory condition at all times. Submit a list of proposed equipment to be used in performance of construction work including descriptive data, 30 days prior to use on the project.

a. Tractor-mounted routing tool. Provide a routing tool, used for removing old sealant from the joints, of such shape and dimensions and so mounted on the tractor that it will not damage the sides of the joints. The tool shall be designed so that it can be adjusted to remove the old material to varying depths as required. The use of V-shaped tools or rotary impact routing devices will not be permitted. Hand-operated spindle routing devices may be used to clean and enlarge random cracks.

b. Concrete saw. Provide a self-propelled power saw, with water-cooled diamond or abrasive saw blades, for cutting joints to the depths and widths specified.

c. Sandblasting equipment. The Contractor must demonstrate sandblasting equipment including the air compressor, hose, guide and nozzle size, under job conditions, before approval in accordance with paragraph 605-3.3.

The Contractor shall demonstrate, in the presence of the ***Owner's Authorized Representative (OAR)*** ~~Resident Project Representative (RPR)~~, that the method cleans the joint and does not damage the joint.

d. Waterblasting equipment. The Contractor must demonstrate waterblasting equipment including the pumps, hose, guide and nozzle size, under job conditions, before approval in accordance with paragraph 605-3.3. The Contractor shall demonstrate, in the presence of the ***OAR*** ~~RPR~~, that the method cleans the joint and does not damage the joint.

e. Hand tools. Hand tools may be used, when approved, for removing defective sealant from a crack and repairing or cleaning the crack faces. Hand tools should be carefully evaluated for potential spalling effects prior to approval for use.

f. Cold-applied, single-component sealing equipment. The equipment for installing ASTM D5893 single component joint sealants shall consist of an extrusion pump, air compressor, following plate, hoses, and nozzle for transferring the sealant from the storage container into the joint opening. The dimension of the nozzle shall be such that the tip of the nozzle will extend into the joint to allow sealing from the bottom of the joint to the top. Maintain the initially approved equipment in good working condition, serviced in accordance with the supplier's instructions, and unaltered in any way without obtaining prior approval. Small hand-held air-powered equipment (i.e., caulking guns) may be used for small applications.

605-3.3 Preparation of joints. Pavement joints for application of material in this specification must be dry, clean of all scale, dirt, dust, curing compound, and other foreign matter. The Contractor shall demonstrate, in the presence of the ***OAR*** ~~RPR~~, that the method cleans the joint and does not damage the joint.

a. Sawing. All joints shall be sawed in accordance with specifications and plan details. Immediately after sawing the joint, the resulting slurry shall be completely removed from joint and adjacent area by flushing with a jet of water, and by use of other tools as necessary.

b. Sealing. Immediately before sealing, the joints shall be thoroughly cleaned of all remaining laitance, curing compound, filler, protrusions of hardened concrete, old sealant and other foreign material from the sides and upper edges of the joint space to be sealed. Cleaning shall be accomplished by sandblasting, concrete saw, or waterblaster as specified in paragraph 605-3.2. The newly exposed concrete joint faces and the pavement surface extending a minimum of 1/2 inch (12 mm) from the joint edge shall be sandblasted clean. Sandblasting shall be accomplished in a minimum of two passes. One pass per joint face with the nozzle held at an angle directly toward the joint face and not more than 3 inches (75 mm) from it. After final cleaning and immediately prior to sealing, blow out the joints with compressed air and leave them completely free of debris and water. The joint faces shall be surface dry when the seal is applied.

c. Backer Rod. When the joint opening is of a greater depth than indicated for the sealant depth, plug or seal off the lower portion of the joint opening using a backer rod in accordance with paragraph 605-2.2 to prevent the entrance of the sealant below the specified depth. Take care to ensure that the backer rod is placed at the specified depth and is not stretched or twisted during installation.

d. Bond-breaking tape. Where inserts or filler materials contain bitumen, or the depth of the joint opening does not allow for the use of a backup material, insert a bond-separating tape breaker in accordance with paragraph 605-2.3 to prevent incompatibility with the filler materials and three-sided adhesion of the sealant. Securely bond the tape to the bottom of the joint opening so it will not float up into the new sealant.

605-3.4 Installation of sealants. Joints shall be inspected for proper width, depth, alignment, and preparation, and shall be approved by the ***OAR*** ~~RPR~~ before sealing is allowed. Sealants shall be installed in accordance with the following requirements:

Immediately preceding, but not more than 50 feet (15 m) ahead of the joint sealing operations, perform a final cleaning with compressed air. Fill the joints from the bottom up to 3/8 inch ±1/16 inch (2 mm) below the top of pavement surface; or bottom of groove for grooved pavement. Remove and discard excess or spilled sealant from the pavement by approved methods. Install the sealant in such a manner as to prevent the formation of voids and entrapped air. In no case shall gravity methods or pouring pots be used to install the sealant material. Traffic shall not be permitted over newly sealed pavement until authorized by the ***OAR*** ~~RPR~~. When a primer is recommended by the manufacturer, apply it evenly to the joint faces in accordance with the manufacturer's instructions. Check the joints frequently to ensure that the newly installed sealant is cured to a tack-free condition within the time specified.

605-3.5 Inspection. The Contractor shall inspect the joint sealant for proper rate of cure and set, bonding to the joint walls, cohesive separation within the sealant, reversion to liquid, entrapped air and voids. Sealants exhibiting any of these deficiencies at any time prior to the final acceptance of the project shall be removed from the joint, wasted, and replaced as specified at no additional cost to the airport.

605-3.6 Clean-up. Upon completion of the project, remove all unused materials from the site and leave the pavement in a clean condition.

METHOD OF MEASUREMENT

605-4.1 ***For joints adjacent to New PCC Pavement no separate measurement for payment will be made for joint sealing concrete to concrete and concrete to asphalt joints. The work covered by this section shall be considered as a subsidiary obligation of the Contractor and covered under the unit price for P-501 PCC pavement.*** ~~Joint sealing material shall be measured by the linear foot of sealant in place, completed, and accepted.~~

605-4.2 ***Cleaning and Sealing of existing joints not adjacent to new PCC pavement shall be measured by the linear foot of joint cleaned and sealed, regardless of the width of joint, in place, complete and accepted.***

BASIS OF PAYMENT

605-5.1 Payment for joint sealing material shall be made at the contract unit price per linear foot. The price shall be full compensation for furnishing all materials, for all preparation, delivering, and placing of these materials, and for all labor, equipment, tools, and incidentals necessary to complete the item.

Payment will be made under:

~~***Item P-605-5.1 Cleaning and Sealing Concrete Pavement Joints - per lineal foot***~~

REFERENCES

The publications listed below form a part of this specification to the extent referenced. The publications are referred to within the text by the basic designation only.

ASTM International (ASTM)

ASTM D789	Standard Test Method for Determination of Relative Viscosity of Polyamide (PA)
ASTM D5249	Standard Specification for Backer Material for Use with Cold- and Hot-Applied Joint Sealants in Portland-Cement Concrete and Asphalt Joints
ASTM D5893	Standard Specification for Cold Applied, Single Component, Chemically Curing Silicone Joint Sealant for Portland Cement Concrete Pavements

Advisory Circulars (AC)

AC 150/5340-30	Design and Installation Details for Airport Visual Aids

END ITEM P-605

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ITEM P-620 RUNWAY AND TAXIWAY MARKING

DESCRIPTION

620-1.1 This item shall consist of the preparation and painting of numbers, markings, and stripes on the surface of runways, taxiways, and aprons, in accordance with these specifications and at the locations shown on the plans, or as directed by the ***Owner's Authorized Representative (OAR)*** ~~Resident Project Representative (RPR)~~. The terms "paint" and "marking material" as well as "painting" and "application of markings" are interchangeable throughout this specification.

MATERIALS

620-2.1 Materials acceptance. The Contractor shall furnish manufacturer's certified test reports, for materials shipped to the project. The certified test reports shall include a statement that the materials meet the specification requirements. This certification along with a copy of the paint manufacturer's surface preparation; marking materials, including adhesion, flow promoting and/or floatation additive; and application requirements must be submitted and approved by the ~~Resident Project Representative (RPR)~~ ***OAR*** prior to the initial application of markings. The reports can be used for material acceptance or the ~~RPR~~ ***OAR*** may perform verification testing. The reports shall not be interpreted as a basis for payment. The Contractor shall notify the ~~RPR~~ ***OAR*** upon arrival of a shipment of materials to the site. All material shall arrive in sealed containers that are easily quantifiable for inspection by the ~~RPR~~ ***OAR***.

620-2.2 Marking materials.

Table 1. Marking Materials

Paint[1]				**Glass Beads[2]**	
Type	**Color**	**Fed Std. 595 Number**	**Application Rate Maximum**	**Type**	**Application Rate Minimum**
III	Yellow	33538 ~~or 33655~~	90 ft^2/gal	III	8 lb/gal
III	Black	37038	90 ft^2/gal	-	-
III Temporary (New PCC)	***Yellow***	***33538***	***180 ft^2/gal***	**-**	**-**
III Temporary (Relocated Taxilane)	***Yellow***	***33538***	***180 ft^2/gal***	***I***	***7 lb/gal***

[1] See paragraph 620-2.2a

[2] See paragraph 620-2.2b

a. Paint. Paint shall be waterborne in accordance with the requirements of this paragraph. Paint colors shall comply with Federal Standard No. 595. Waterborne black paint should be used to outline a border at least 6 inches (150 mm) wide around markings.

Waterborne. Paint shall meet the requirements of Federal Specification TT-P-1952F, Type III. The non-volatile portion of the vehicle for all paint types shall be composed of a 100% acrylic polymer as determined by infrared spectral analysis.

Biocide Additive. All paint, with the exception of black paint, shall be formulated at the time of manufacture with a biocide enhancement to inhibit algae growth. The biocide additive shall meet or exceed that of ROCIMA™ 63 Industrial Microbicide (EPA Reg:707-303). The Contractor shall submit biocide data to the OAR/Engineer for prior approval. Mixing concentrations shall be in accordance with the paint manufacturer's recommendations and shall not, in any way, diminish the warranty of the paint.

b. Reflective media. Glass beads for white and yellow paint shall meet the requirements for Federal Specification TT-B-1325D Type III.

Glass beads for red and pink paint shall meet the requirements for Type I, Gradation A.

Glass beads shall be treated with all compatible coupling agents recommended by the manufacturers of the paint and reflective media to ensure adhesion and embedment.

Glass beads shall not be used in black and green paint.

Type III glass beads shall not be used in red and pink paint.

CONSTRUCTION METHODS

620-3.1 Weather limitations. Painting shall only be performed when the surface is dry, and the ambient temperature and the pavement surface temperature meet the manufacturer's recommendations in accordance with paragraph 620-2.1. Painting operations shall be discontinued when the ambient or surface temperatures does not meet the manufacturer's recommendations. Markings shall not be applied when the wind speed exceeds 10 mph unless windscreens are used to shroud the material guns. Markings shall not be applied when weather conditions are forecasts to not be within the manufacturers' recommendations for application and dry time.

620-3.2 Equipment. Equipment shall include the apparatus necessary to properly clean the existing surface, a mechanical marking machine, a bead dispensing machine, and such auxiliary hand-painting equipment as may be necessary to satisfactorily complete the job.

The mechanical marker shall be an ~~**atomizing spray-type or**~~ airless type marking machine with automatic glass bead dispensers suitable for application of traffic paint, ***and shall be capable of applying markings from 6 inches to 36 inches in a single pass***. It shall produce an even and uniform film thickness and appearance of both paint and glass beads at the required coverage and shall apply markings of uniform cross-sections and clear-cut edges without running or spattering and without over spray. The marking equipment for both paint and beads shall be calibrated daily. The mechanical marking machine shall be capable of applying two colors simultaneously. ***Hand application of glass beads will not be permitted.***

The waterblasting equipment shall be truck mounted and shall be capable of water pressures of 2,000-40,000 PSI. The equipment shall be capable of adjusting the pressure to accomplish paint removal and/or cleaning without damaging the pavement surface. The equipment shall be capable of following a straight line and be maneuverable to accommodate various pavement types.

The contractor shall provide a vacuum sweeper truck capable of removing all debris and residue from the paint removal or cleaning process. Sweeper trucks/brooms with metal bristles are prohibited from being used.

The contractor shall provide vacuum type equipment capable of removing excess or loose beads from the pavement surface. This is the only acceptable method of removal. The use of any other equipment, such as air blowers, is prohibited.

620-3.3 Preparation of surfaces. Immediately before application of the paint, the surface shall be dry and free from dirt, grease, oil, laitance, or other contaminates that would reduce the bond between the paint and the pavement. Use of any chemicals or impact abrasives during surface preparation shall be approved in advance by the ~~RPR~~ ***OAR***. After the cleaning operations, sweeping, blowing, or rinsing with pressurized water shall be performed to ensure the surface is clean and free of grit or other debris left from the cleaning process.

a. Preparation of new pavement surfaces. The area to be painted shall be cleaned by broom, blower, water blasting, or by other methods approved by the ~~RPR~~ ***OAR*** to remove all contaminants, including PCC curing compounds, minimizing damage to the pavement surface.

b. Preparation of pavement to remove existing markings. ~~Existing pavement markings shall be removed by **rotary grinding,** water blasting, or by other methods approved by the RPR ***OAR*** minimizing damage to the pavement surface.~~ ***Existing marking removal on concrete surfaces shall be conducted by waterblasting. Removal on asphalt surfaces shall be conducted with a rotary grinder unless otherwise specified by the OAR or Airfield***

Operations. Existing pavement marking removal methods shall minimize damage to the pavement surface. The removal area may need to be larger than the area of the markings to eliminate ghost markings. After removal of markings on asphalt pavements, apply a fog seal or seal coat to 'block out' the removal area to eliminate 'ghost' markings.

Acceptable methods of removal on ungrooved surfaces are grinding and/or waterblasting. Waterblasting is the only acceptable method on grooved surfaces. Removal method(s) shall be demonstrated on an area to be removed to determine the relative level of scarring. The Contractor shall perform test strips on actual areas to be removed to demonstrate the capabilities of operator/equipment. The test section shall have a minimum surface area of 100 sf and be conducted at locations as determine by the OAR. A combination of removal methods may be required for thick markings (e.g. greater than or equal to 100 mils) to minimize scarring of the pavements.

Any damage caused by the Contractor's operations shall be corrected at the Contractor's expense and in a manor approved by the OAR. The Contractor shall take precautions to protect the public from any damage due to his operations. Accumulations of sand, water, dust, or other residue resulting from the removal operation shall be removed as the work progresses. Contractor shall supply all equipment required for the removal of all accumulated residue.

c. Preparation of pavement markings prior to remarking. Prior to remarking existing markings, loose existing markings must be removed minimizing damage to the pavement surface, with a method approved by the ~~RPR~~ ***OAR***. After removal, the surface shall be cleaned of all residue or debris.

Prior to the application of markings, the Contractor shall certify in writing that the surface is dry and free from dirt, grease, oil, laitance, or other foreign material that would prevent the bond of the paint to the pavement or existing markings. This certification along with a copy of the paint manufactures application and surface preparation requirements must be submitted to the ~~RPR~~ ***OAR*** prior to the initial application of markings.

620-3.4 Layout of markings. The proposed markings shall be laid out in advance of the paint application. The locations of markings to receive glass beads shall be shown on the plans.

620-3.5 Application. A period of **30** days shall elapse between placement of surface course or seal coat and application of the permanent paint markings. Paint shall be applied at the locations and to the dimensions and spacing shown on the plans. Paint shall not be applied until the layout and condition of the surface has been approved by the ~~RPR~~ ***OAR***.

When painting on new pavement, the final permanent marking application shall occur after the 30 day curing period has passed. The final permanent marking paint shall be applied to the pavement in two (2) coats from opposite directions. The first coat shall be applied at a rate of 50% of the full application rate for permanent parking with no glass beads. The second coat shall be applied from the opposite direction at a rate equal to 100% of the full application rate for permanent markings with glass beads.

If Airfield Operations requires pavement marking earlier than the recommended 30 days, temporary marking shall be placed at the half the application rate of permanent markings and may be placed twenty four (24) hours after paving has been completed. Glass beads are not required for temporary markings. Black non-reflective outline paint is not required for temporary markings. The paint shall not bleed, curl, or discolor when applied to the bituminous surfaces. Temporary markings not in compliance with the FAA AC 150/5340-1L will require a NOTAM regarding any non-standard marking being issued.

The edges of the markings shall not vary from a straight line more than 1/2 inch (12 mm) in 50 feet (15 m), and marking dimensions and spacing shall be within the following tolerances:

Marking Dimensions and Spacing Tolerance

Dimension and Spacing	Tolerance
36 inch (910 mm) or less	±1/2 inch (12 mm)
greater than 36 inch to 6 feet (910 mm to 1.85 m)	±1 inch (25 mm)
greater than 6 feet to 60 feet (1.85 m to 18.3 m)	±2 inch (50 mm)
greater than 60 feet (18.3 m)	±3 inch (76 mm)

The paint shall be mixed in accordance with the manufacturer's instructions and applied to the pavement with a marking machine at the rate shown in Table 1. The addition of thinner will not be permitted.

Glass beads shall be distributed upon the marked areas at the locations shown on the plans to receive glass beads immediately after application of the paint. A dispenser shall be furnished that is properly designed for attachment to the marking machine and suitable for dispensing glass beads. Glass beads shall be applied at the rate shown in Table 1. Glass beads shall not be applied to black paint or green paint. Glass beads shall adhere to the cured paint or all marking operations shall cease until corrections are made. Different bead types shall not be mixed. Regular monitoring of glass bead embedment and distribution should be performed.

620-3.6 Application--preformed thermoplastic airport pavement markings.

Preformed thermoplastic pavement markings not used.

620-3.7 Control strip. Prior to the full application of airfield markings, the Contractor shall prepare a control strip in the presence of the ~~RPR~~ ***OAR***. The Contractor shall demonstrate the surface preparation method and all striping equipment to be used on the project. The marking equipment must achieve the prescribed application rate of paint and population of glass beads (per Table 1) that are properly embedded and evenly distributed across the full width of the marking. Prior to acceptance of the control strip, markings must be evaluated during darkness to ensure a uniform appearance.

The Contractor shall perform the paint application Wet Film Thickness Test to show compliance with the specified application rates utilizing a Wet Film Thickness Gauge. Application rate shall be measured without glass beads.

The Contractor shall perform the Bead Flow Calibration Test to show compliance with the specified application rates utilizing an Airport Bead Calibration Bucket.

620-3.8 Retro-reflectance. Reflectance shall be measured with a portable retro-reflectometer meeting ASTM E1710 (or equivalent). A total of 6 reading shall be taken over a 6 square foot area with 3 readings taken from each direction. The average shall be equal to or above the minimum levels of all readings which are within 30% of each other.

Minimum Retro-Reflectance Values

Material	**Retro-reflectance mcd/m²/lux**		
	~~**White**~~	**Yellow**	~~**Red**~~
Initial Type I	~~300~~	175	~~35~~
Initial Type III	~~600~~	300	~~35~~
Initial Thermoplastic	~~225~~	100	~~35~~
All materials, remark when less than[1]	~~100~~	75	~~10~~

[1] 'Prior to remarking determine if removal of contaminants on markings will restore retro-reflectance

620-3.9 Protection and cleanup. After application of the markings, all markings shall be protected from damage until dry. All surfaces shall be protected from excess moisture and/or rain and from disfiguration by spatter, splashes, spillage, or drippings. The Contractor shall remove from the work area all debris, waste, loose reflective media, and by-products generated by the surface preparation and application operations to the satisfaction of the ~~RPR~~ ***OAR***. The Contractor shall dispose of these wastes in strict compliance with all applicable state, local, and federal environmental statutes and regulations.

METHOD OF MEASUREMENT

620-4.1a Surface preparation will not be measured for payment.

620-4.1b The quantity of markings to be paid for shall be measured by the number of square feet**.**

620-4.1c Reflective media will not be measured for payment.

BASIS OF PAYMENT

620-5.1 This price shall be full compensation for furnishing all materials and for all labor, equipment, tools, and incidentals necessary to complete the item complete in place and accepted by the ~~RPR~~ ***OAR*** in accordance with these specifications.

620-5.1a Payment for surface preparation shall be considered incidental to the contract unit price for each item requiring the surface preparation.

620-5.2b Payment for markings shall be made at the contract price for the number of square feet of painting.

620-5.3c Payment for reflective media shall be considered incidental to the contract unit price for each item requiring the reflective media.

Payment will be made under:

Item P-620-5.1	Runway and Taxiway Marking (Yellow with Glass Beads) - **per square foot**
Item P-620-5.2	Runway and Taxiway Marking (Black – No Beads) - **per square foot**

REFERENCES

The publications listed below form a part of this specification to the extent referenced. The publications are referred to within the text by the basic designation only.

ASTM International (ASTM)

ASTM D476	Standard Classification for Dry Pigmentary Titanium Dioxide Products
ASTM D968	Standard Test Methods for Abrasion Resistance of Organic Coatings by Falling Abrasive
ASTM D1652	Standard Test Method for Epoxy Content of Epoxy Resins
ASTM D2074	Standard Test Method for Total, Primary, Secondary, and Tertiary Amine Values of Fatty Amines by Alternative Indicator Method
ASTM D2240	Standard Test Method for Rubber Property - Durometer Hardness
ASTM D7585	Standard Practice for Evaluating Retroreflective Pavement Markings Using Portable Hand-Operated Instruments
ASTM E303	Standard Test Method for Measuring Surface Frictional Properties Using the British Pendulum Tester
ASTM E1710	Standard Test Method for Measurement of Retroreflective Pavement Marking Materials with CEN-Prescribed Geometry Using a Portable Retroreflectometer
ASTM E2302	Standard Test Method for Measurement of the Luminance Coefficient Under Diffuse Illumination of Pavement Marking Materials Using a Portable Reflectometer

ASTM G154	Standard Practice for Operating Fluorescent Ultraviolet (UV) Lamp Apparatus for Exposure of Nonmetallic Materials

Code of Federal Regulations (CFR)

40 CFR Part 60, Appendix A-7, Method 24 Determination of volatile matter content, water content, density, volume solids, and weight solids of surface coatings

29 CFR Part 1910.1200	Hazard Communication

Federal Specifications (FED SPEC)

FED SPEC TT-B-1325D	Beads (Glass Spheres) Retro-Reflective
FED SPEC TT-P-1952F	Paint, Traffic and Airfield Marking, Waterborne
FED STD 595	Colors used in Government Procurement

Commercial Item Description

A-A-2886B	Paint, Traffic, Solvent Based

Advisory Circulars (AC)

AC 150/5340-1	Standards for Airport Markings
AC 150/5320-12	Measurement, Construction, and Maintenance of Skid Resistant Airport Pavement Surfaces

END OF ITEM P-620

APPENDIX A

APPENDIX A: FAA ADVISORY CIRCULARS

AC 150/5370-2G	OPERATIONAL SAFETY ON AIRPORTS DURING CONSTRUCTION
AC 150/5200-18D	AIRPORT SAFETY SELF INSPECTION
AC 150/5210-5D	PAINTING, MARKING & LIGHTING OF VEHICLES USED ON AN AIRPORT

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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

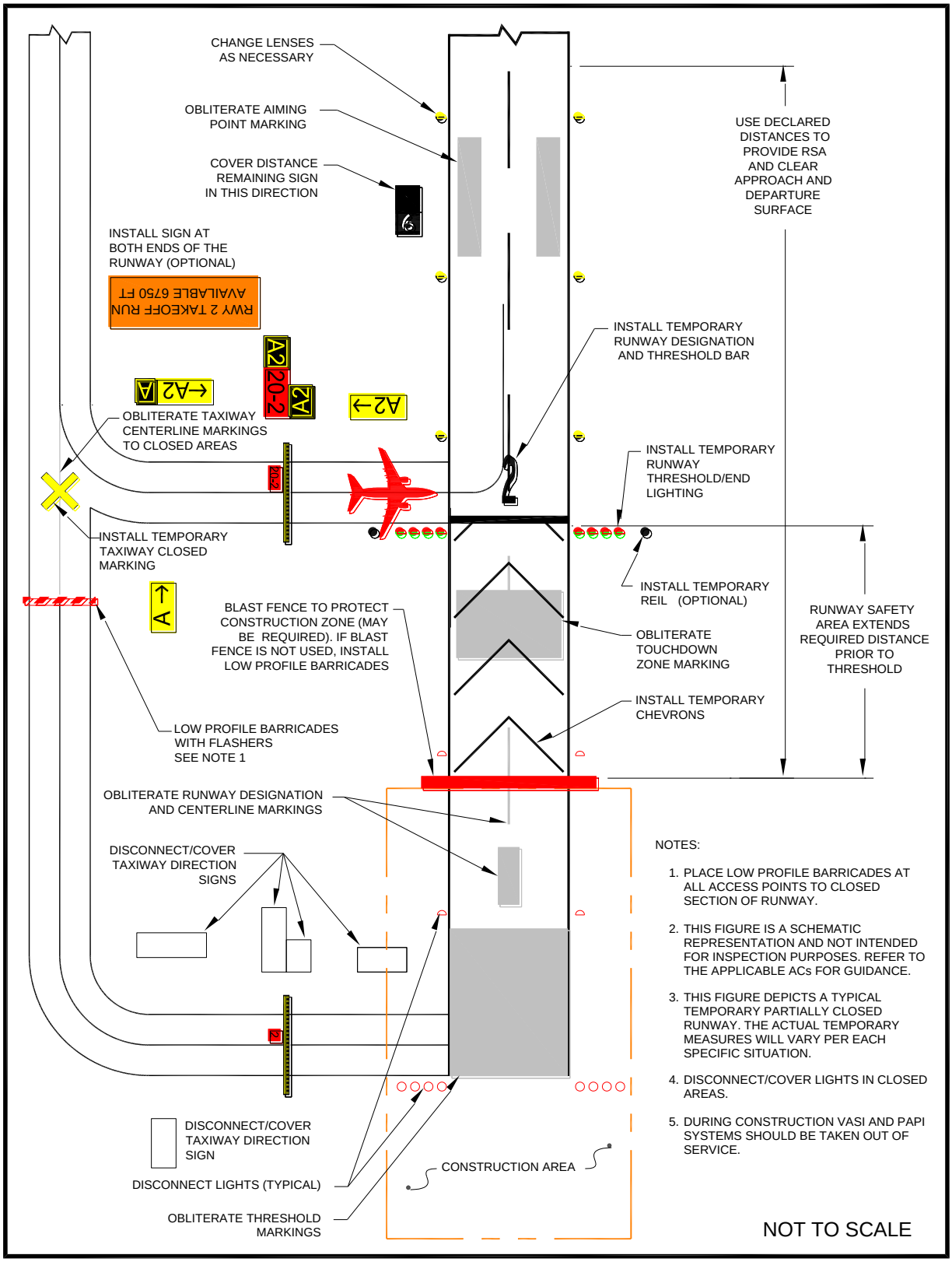
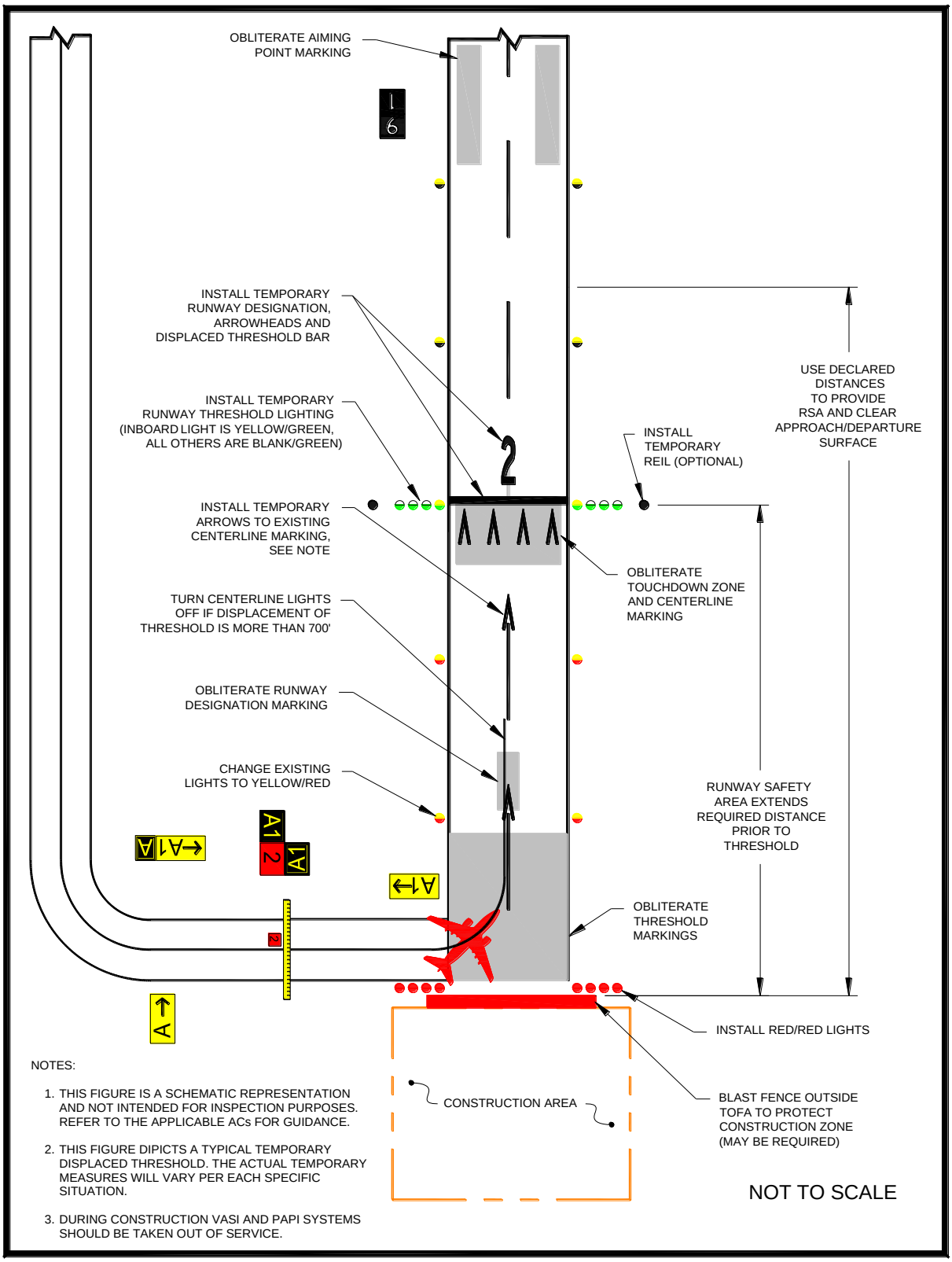


Figure 2-2. Temporary Displaced Threshold



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 Sates Department of Agriculture Soil Conservation Service or the State University Agricultural Extension Service (County Agent or equivalent) for assistance and recommendations. These agencies can also provide liming and fertilizer recommendations.

2.10.4 Poorly Maintained Fencing and Gates.

See paragraph 2.9.2.10.1.

2.10.5 Disruption of Existing Wildlife Habitat.

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

2.11 Foreign Object Debris (FOD) Management.

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

2.12 Hazardous Materials (HAZMAT) Management.

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

2.13 Notification of Construction Activities.

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

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

2.13.2 NOTAMs.

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

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

2.13.4 Coordination with ARFF.

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

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

2.13.5 Notification to the FAA.

2.13.5.1 **Part 77.**

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

2.13.5.2 **Part 157.**

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

2.13.5.3 **NAVAIDs.**

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

2.13.5.3.1 Airport Owned/FAA Maintained.

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

2.13.5.3.2 FAA Owned.

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

2.14 **Inspection Requirements.**

2.14.1 Daily Inspections.

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

2.14.2 Interim Inspections.

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

2.14.3 Final Inspections.

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

2.15 **Underground Utilities.**

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

2.16 **Penalties.**

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

2.17 **Special Conditions.**

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

2.18 **Runway and Taxiway Visual Aids.**

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

2.18.1 General.

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

2.18.2 Markings.

During the course of construction projects, temporary pavement markings are often required to allow for aircraft operations during or between work periods. During the design phase of the project, the designer should coordinate with the project manager,

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

2.18.2.1 **Closed Runways and Taxiways.**

2.18.2.1.1 Permanently Closed Runways.

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

2.18.2.1.2 Temporarily Closed Runways.

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

2.18.2.1.3 Partially Closed Runways and Displaced Thresholds.

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

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

Figure 2-3. Markings for a Temporarily Closed Runway



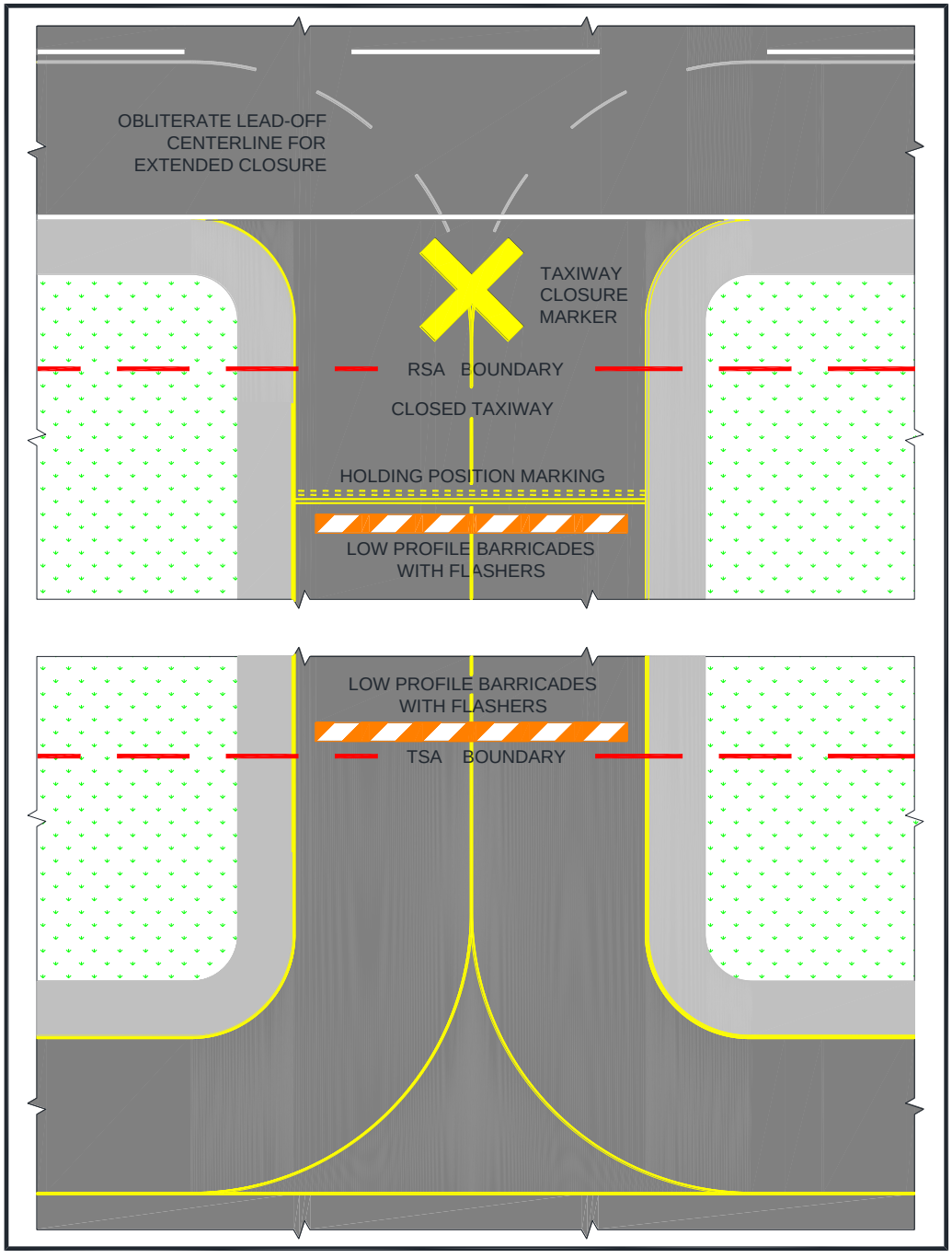
1. **Partially Closed Runways.** Pavement markings for temporary closed portions of the runway consist of a runway threshold bar, runway designation, and yellow chevrons to identify pavement areas that are unsuitable for takeoff or landing (see AC 150/5340-1). Obliterate or cover markings prior to the moved threshold. Existing touchdown zone markings beyond the moved threshold may remain in place. Obliterate aiming point markings. Issue appropriate NOTAMs regarding any nonstandard markings. See Figure 2-4.

2. **Displaced Thresholds.** Pavement markings for a displaced threshold consist of a runway threshold bar, runway designation, and white arrowheads with and without arrow shafts. These markings are required to identify the portion of the runway before the displaced threshold to provide centerline guidance for pilots during approaches, takeoffs, and landing rollouts from the opposite direction. See AC 150/5340-1. Obliterate markings prior to the displaced threshold. Existing touchdown zone markings beyond the displaced threshold may remain in place. Obliterate aiming point markings. Issue appropriate NOTAMs regarding any nonstandard markings. See Figure 2-2.

2.18.2.1.4 Taxiways.

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

Figure 2-4. Temporary Taxiway Closure



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

2.18.2.1.5 Temporarily Closed Airport.

When the airport is closed temporarily, mark all the runways as closed.

2.18.2.2 If unable to paint temporary markings on the pavement, construct them from any of the following materials: fabric, colored plastic, painted sheets of plywood, or similar materials. They must be properly configured and appropriately secured to prevent movement by prop wash, jet blast, or other wind currents. Items used to secure such markings must be of a color similar to the marking.

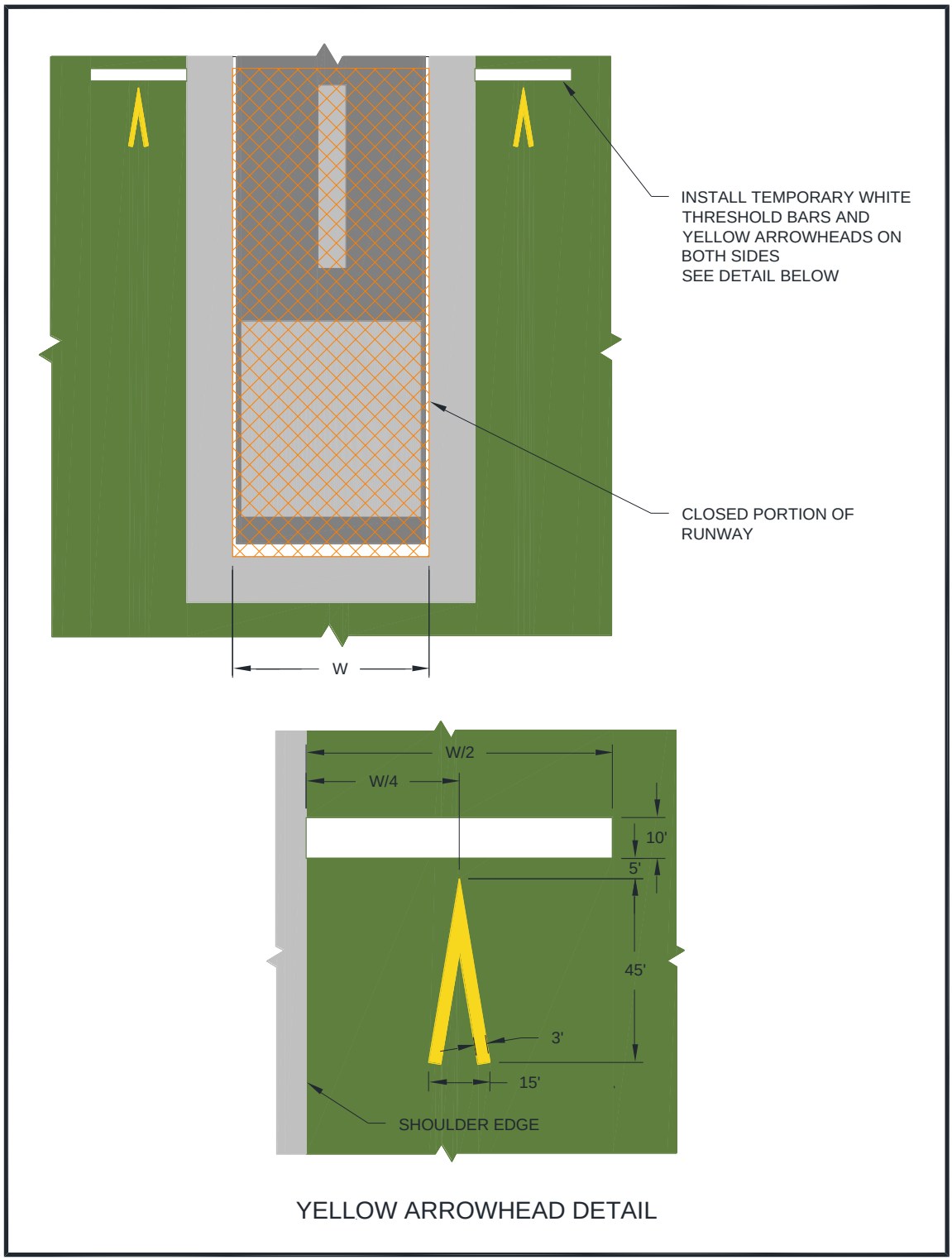
2.18.2.3 It may be necessary to remove or cover runway markings, including but not limited to, runway designation markings, threshold markings, centerline markings, edge stripes, touchdown zone markings and aiming point markings, depending on the length of construction and type of activity at the airport. When removing runway markings, apply the same treatment to areas between stripes or numbers, as the cleaned area will appear to pilots as a marking in the shape of the treated area.

2.18.2.4 If it is not possible to install threshold bars, chevrons, and arrows on the pavement, "temporary outboard white threshold bars and yellow arrowheads", see Figure 2-5, may be used. Locate them outside of the runway pavement surface on both sides of the runway. The dimensions must be as shown in Figure 2-5. If the markings are not discernible on grass or snow, apply a black background with appropriate material over the ground to ensure they are clearly visible.

2.18.2.5 The application rate of paint to mark a short-term temporary runway and taxiway markings may deviate from the standard (see Item P-620, "Runway and Taxiway Painting," in AC 150/5370-10), but the dimensions must meet the existing standards. When applying temporary markings at night, it is recommended that the fast curing, Type II paint be used to help offset the higher humidity and cooler temperatures often experienced at night. Diluting the paint will substantially increase cure time and is not recommended. Glass beads are not recommended for temporary markings. Striated markings may also be used for certain temporary markings. AC

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

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



2.18.3 Lighting and Visual NAVAIDs.

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

2.18.3.1 **Permanently Closed Runways and Taxiways.**

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

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

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

Figure 2-6. Lighted X in Daytime



Figure 2-7. Lighted X at Night



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

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

closed runways and displaced thresholds, approach lighting systems at the affected end must be placed out of service.

2.18.3.3.1 Partially Closed Runways.

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

2.18.3.3.2 Temporary Displaced Thresholds.

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

2.18.3.3.3 Temporary runway thresholds and runway ends must be lighted if the runway is lighted and it is the intended threshold for night landings or instrument meteorological conditions.

2.18.3.3.4 A temporary threshold on an unlighted runway may be marked by retroreflective, elevated markers in addition to markings noted in paragraph 2.18.2.1.3. Markers seen by aircraft on approach are green. Markers at the rollout end of the runway are red. At certificated airports, temporary elevated threshold markers must be mounted with a frangible fitting (see 14 CFR Part 139.309). At non-certificated airports, the temporary elevated threshold markings may either be mounted with a frangible fitting or be flexible. See AC 150/5345-39, *Specification for L-853, Runway and Taxiway Retroreflective Markers.*

2.18.3.3.5 Temporary threshold lights and runway end lights and related visual NAVAIDs are installed outboard of the edges of the full-strength pavement only when they cannot be installed on the pavement. They are installed with bases at grade level or as low as possible, but not more than 3 inch (7.6 cm) above ground. (The standard above ground height for airport lighting fixtures is 14 inches (35 cm)). When any portion of a base is above grade, place properly compacted fill around the base to minimize the rate of gradient change so aircraft can, in an emergency, cross at normal landing or takeoff speeds without incurring significant damage. See AC 150/5370-10.

2.18.3.3.6 Maintain threshold and edge lighting color and spacing standards as described in AC 150/5340-30. Battery powered, solar, or portable lights that meet the criteria in AC 150/5345-50 may be used. These systems are intended primarily for visual flight rules (VFR) aircraft operations but may

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

2.18.3.3.7 When runway thresholds are temporarily displaced, reconfigure yellow lenses (caution zone), as necessary, and place the centerline lights out of service.

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

2.18.3.3.9 Issue a NOTAM to inform pilots of temporary lighting conditions.

2.18.3.4 **Temporarily Closed Taxiways.**

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

2.18.4 Signs.

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

2.18.4.1 **Existing Signs.**

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

2.18.4.2 **Temporary Signs.**

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

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

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

2.18.4.2.1 Takeoff Run Available (TORA) signs.

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

2.18.4.2.2 Sign legends are shown in Figure F-1.

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

2.19 **Marking and Signs for Access Routes.**

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

2.20 **Hazard Marking, Lighting and Signing.**

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

2.20.2 Equipment.

2.20.2.1 **Barricades.**

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

2.20.2.2 **Lights.**

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

2.20.2.3 **Supplement Barricades with Signs (for example) As Necessary.**

Examples are “No Entry” and “No Vehicles.” Be aware of the increased effects of wind and jet blast on barricades with attached signs.

2.20.2.4 **Air Operations Area – General.**

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

Figure 2-8. Interlocking Barricades



Figure 2-9. Low Profile Barricades



2.20.2.5 **Air Operations Area – Runway/Taxiway Intersections.**

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

2.20.2.6 **Air Operations Area – Other.**

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

2.20.2.7 **Maintenance.**

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

2.21 Work Zone Lighting for Nighttime Construction.

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

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

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

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

2.22.1 Runway Safety Area (RSA).

A runway safety area is the defined surface surrounding the runway prepared or suitable for reducing the risk of damage to airplanes in the event of an undershoot, overshoot, or excursion from the runway (see AC 150/5300-13). Construction activities within the existing RSA are subject to the following conditions:

2.22.1.1 No construction may occur within the existing RSA while the runway is open for aircraft operations. The RSA dimensions may be temporarily adjusted if the runway is restricted to aircraft operations requiring an RSA that is equal to the RSA width and length beyond the runway ends available during construction. (See AC 150/5300-13). The temporary use of declared distances and/or partial runway closures may provide the necessary RSA under certain circumstances. Coordinate with the appropriate FAA Airports Regional or District Office to have declared distances information published, and appropriate NOTAMs issued. See AC 150/5300-13 for guidance on the use of declared distances.

2.22.1.2 The airport operator must coordinate the adjustment of RSA dimensions as permitted above with the appropriate FAA Airports Regional or District Office and the local FAA air traffic manager and issue a NOTAM.

2.22.1.3 The CSPP and SPCD must provide procedures for ensuring adequate distance for protection from blasting operations, if required by operational considerations.

2.22.1.4 **Excavations.**

2.22.1.4.1 Open trenches or excavations are not permitted within the RSA while the runway is open. Backfill trenches before the runway is opened. If backfilling excavations before the runway must be opened is impracticable, cover the excavations appropriately. Covering for open trenches must be designed to allow the safe operation of the heaviest aircraft operating on the runway across the trench without damage to the aircraft.

2.22.1.4.2 Construction contractors must prominently mark open trenches and excavations at the construction site with red or orange flags, as approved by the airport operator, and light them with red lights during hours of restricted visibility or darkness.

2.22.1.5 **Erosion Control.**

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

2.22.2 Runway Object Free Area (ROFA).

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

2.22.3 Taxiway Safety Area (TSA).

2.22.3.1 A taxiway safety area is a defined surface alongside the taxiway prepared or suitable for reducing the risk of damage to an airplane unintentionally departing the taxiway. (See AC 150/5300-13.) Since the width of the TSA is equal to the wingspan of the design aircraft, no construction may occur within the TSA while the taxiway is open for aircraft operations. The TSA dimensions may be temporarily adjusted if the taxiway is restricted to aircraft operations requiring a TSA that is equal to the TSA width available during construction. Give special consideration to TSA dimensions at taxiway turns and intersections. (see AC 150/5300-13).

2.22.3.2 The airport operator must coordinate the adjustment of the TSA width as permitted above with the appropriate FAA Airports Regional or District Office and the FAA air traffic manager and issue a NOTAM.

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

2.22.3.4 **Excavations.**

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

2.22.3.5 **Erosion control.**

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

2.22.4 Taxiway Object Free Area (TOFA).

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

2.22.4.1 The taxiway object free area dimensions may be temporarily adjusted if the taxiway is restricted to aircraft operations requiring a taxiway object free area that is equal to the taxiway object free area width available. Give special consideration to TOFA dimensions at taxiway turns and intersections.

2.22.4.2 Offset taxiway centerline and edge pavement markings (do not use glass beads) may be used as a temporary measure to provide the required taxiway object free area. Where offset taxiway pavement markings are provided, centerline lighting, centerline reflectors, or taxiway edge reflectors are required. Existing lighting that does not coincide with the temporary markings must be taken out of service.

2.22.4.3 Construction activity, including open excavations, may be accomplished without adjusting the width of the taxiway object free area, subject to the following restrictions:

2.22.4.3.1 Taxiing speed is limited to 10 mph.

2.22.4.3.2 NOTAMs issued advising taxiing pilots of hazard and recommending reduced taxiing speeds on the taxiway.

2.22.4.3.3 Marking and lighting meeting the provisions of paragraphs 2.18 and 2.20 are implemented.

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

2.22.4.3.5 Five-foot clearance is maintained between equipment and materials and any part of an aircraft (includes wingtip overhang). If such clearance can only be maintained if an aircraft does not have full use of the entire taxiway width (with its main landing gear at the edge of the usable pavement), then it will be necessary to move personnel and equipment for the passage of that aircraft.

2.22.4.3.6 Flaggers furnished by the contractor must be used to direct and control construction equipment and personnel to a pre-established setback distance for safe passage of aircraft, and airline and/or airport personnel. Flaggers must also be used to direct taxiing aircraft. Due to liability issues, the airport operator should require airlines to provide flaggers for directing taxiing aircraft.

2.22.5 Obstacle Free Zone (OFZ).

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

2.22.6 Runway Approach/Departure Areas and Clearways.

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

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

2.22.6.2 **Caution About Partial Runway Closures.**

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

2.22.6.3 **Caution About Displaced Thresholds.**

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

2.23 **Other Limitations on Construction.**

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

2.23.1 Prohibitions.

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

2.23.1.2 No use of open flame welding or torches unless fire safety precautions are provided and the airport operator has approved their use.

2.23.1.3 No use of electrical blasting caps on or within 1,000 feet (300 meters) of the airport property. See AC 150/5370-10.

2.23.2 Restrictions.

2.23.2.1 Construction suspension required during specific airport operations.

2.23.2.2 Areas that cannot be worked on simultaneously.

2.23.2.3 Day or night construction restrictions.

2.23.2.4 Seasonal construction restrictions.

2.23.2.5 Temporary signs not approved by the airport operator.

2.23.2.6 Grades changes that could result in unplanned effects on NAVAIDs.

CHAPTER 3. GUIDELINES FOR WRITING A CSPP

3.1 General Requirements.

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

3.2 Applicability of Subjects.

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

3.3 Graphical Representations.

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

3.4 **Reference Documents.**

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

3.5 **Restrictions.**

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

3.6 **Coordination.**

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

3.7 **Phasing.**

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

3.8 **Areas and Operations Affected by Construction.**

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

3.9 **NAVAID Protection.**

List in this section all NAVAID facilities that will be affected by the construction. Identify NAVAID facilities that will be placed out of service at any time prior to or during construction activities. Identify individuals responsible for coordinating each shutdown and when each facility will be out of service. Include a reference to paragraph 3.6 for FAA ATO NAVAID shutdown, restart, and flight inspection coordination. Outline in detail procedures to protect each NAVAID facility remaining in service from interference by construction activities. Include a reference to paragraph 3.14 for the

issuance of NOTAMs as required. Include a reference to paragraph 3.16 for the protection of underground cables and piping serving NAVAIDs. If temporary visual aids are proposed to replace or supplement existing facilities, include a reference to paragraph 3.19. Attach drawings to graphically indicate the affected NAVAIDS and the corresponding critical areas.

3.10 **Contractor Access.**

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

3.10.1 Location of Stockpiled Construction Materials.

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

3.10.2 Vehicle and Pedestrian Operations.

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

3.10.3 Two-Way Radio Communications.

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

signals, telephone numbers, others) must be included. All radio frequencies should by identified (Tower, Ground Control, CTAF, UNICOM, ATIS, and so on).

3.10.4 Airport Security.

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

3.11 **Wildlife Management.**

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

3.12 **FOD Management.**

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

3.13 **HAZMAT Management.**

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

3.14 **Notification of Construction Activities.**

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

Airmen (NOTAM) required. Detail notification methods for police, fire fighting, and medical emergencies. This may include 911, but should also include direct phone numbers of local police departments and nearby hospitals. Identify the E911 address of the airport and the emergency access route via haul roads to the construction site. Require the contractor to have this information available to all workers. The local Poison Control number should be listed. Procedures regarding notification of Airport Operations and/or the ARFF Department of such emergencies should be identified, as applicable. If airport radio communications are identified as a means of emergency notification, include a reference to paragraph 3.10. Differentiate between emergency and nonemergency notification of ARFF personnel, the latter including activities that affect ARFF water supplies and access roads. Identify the primary ARFF contact person and at least one alternate. If notification is to be made through Airport Operations, then detail this procedure. Include a method of confirmation from the ARFF department.

3.15 **Inspection Requirements.**

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

3.16 **Underground Utilities.**

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

3.17 **Penalties.**

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

3.18 **Special Conditions.**

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

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

3.19 **Runway and Taxiway Visual Aids.**

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

3.20 **Marking and Signs for Access Routes.**

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

3.21 **Hazard Marking and Lighting.**

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

3.22 **Work Zone Lighting for Nighttime Construction.**

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

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

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

3.24 **Other Limitations on Construction.**

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

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APPENDIX A. RELATED READING MATERIAL

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

Table A-1. FAA Publications

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

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

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

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

Table A-2. Code of Federal Regulation

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

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

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APPENDIX B. TERMS AND ACRONYMS

Table B-1. Terms and Acronyms

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

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

Term	Definition
NOTAM	Notices to Airmen
Obstruction	Any object/obstacle exceeding the obstruction standards specified by 14 CFR Part 77, subpart C.
OCC	Operations Control Center
OE / AAA	Obstruction Evaluation / Airport Airspace Analysis
OFA	Object Free Area. An area on the ground centered on the runway, taxiway, or taxi lane centerline provided to enhance safety of aircraft operations by having the area free of objects except for those objects that need to be located in the OFA for air navigation or aircraft ground maneuvering purposes. (See AC 150/5300-13 for additional guidance on OFA standards and wingtip clearance criteria.)
OFZ	Obstacle Free Zone. The airspace below 150 ft (45 m) above the established airport elevation and along the runway and extended runway centerline that is required to be clear of all objects, except for frangible visual NAVAIDs that need to be located in the OFZ because of their function, in order to provide clearance protection for aircraft landing or taking off from the runway and for missed approaches. The OFZ is subdivided as follows: Runway OFZ, Inner Approach OFZ, Inner Transitional OFZ, and Precision OFZ. Refer to AC 150/5300-13 for guidance on OFZ.
OSHA	Occupational Safety and Health Administration
OTS	Out of Service
P&R	Planning and Requirements Group
NPI	NAS Planning & Integration
PAPI	Precision Approach Path Indicator
PFC	Passenger Facility Charge
PLASI	Pulse Light Approach Slope Indicator
Project Proposal Summary	A clear and concise description of the proposed project or change that is the object of Safety Risk Management.
RA	Reimbursable Agreement
RE	Resident Engineer
REIL	Runway End Identifier Lights
RNAV	Area Navigation
ROFA	Runway Object Free Area
RSA	Runway Safety Area. A defined surface surrounding the runway prepared or suitable for reducing the risk of damage to airplanes in the event of an undershoot, overshoot, or excursion from the runway, in accordance with AC 150/5300-13.
SDS	Safety Data Sheet
SIDA	Security Identification Display Area
SMS	Safety Management System

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

APPENDIX C. SAFETY AND PHASING PLAN CHECKLIST

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

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

Table C-1. CSPP Checklist

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

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

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

Coordination	Reference	Addressed?			Remarks
		Yes	No	NA	
Foreign Object Debris Management					
The airport operator's FOD management procedures are addressed.	2.11				
Hazardous Materials Management					
The airport operator's hazardous materials management procedures are addressed.	2.12				
Notification of Construction Activities					
Procedures for the immediate notification of airport user and local FAA of any conditions adversely affecting the operational safety of the airport are detailed.	2.13				
Maintenance of a list by the airport operator of the responsible representatives/points of contact for all involved parties and procedures for contacting them 24 hours a day, seven days a week is specified.	2.13.1				
A list of local ATO/Technical Operations personnel is included.	2.13.1				
A list of ATCT managers on duty is included.	2.13.1				
A list of authorized representatives to the OCC is included.	2.13.2				
Procedures for coordinating, issuing, maintaining and cancelling by the airport operator of NOTAMS about airport conditions resulting from construction are included.	2.8, 2.13.2, 2.18.3.3.9				
Provision of information on closed or hazardous conditions on airport movement areas by the airport operator to the OCC is specified.	2.13.2				
Emergency notification procedures for medical, fire fighting, and police	2.13.3				

Coordination	Reference	Addressed?			Remarks
		Yes	No	NA	
response are addressed.					
Coordination with ARFF personnel for non-emergency issues is addressed.	2.13.4				
Notification to the FAA under 14 CFR parts 77 and 157 is addressed.	2.13.5				
Reimbursable agreements for flight checks and/or design and construction for FAA owned NAVAIDs are addressed.	2.13.5.3.2				
Inspection Requirements					
Daily and interim inspections by both the airport operator and contractor are specified.	2.14.1, 2.14.2				
Final inspections at certificated airports are specified when required.	2.14.3				
Underground Utilities					
Procedures for protecting existing underground facilities in excavation areas are described.	2.15				
Penalties					
Penalty provisions for noncompliance with airport rules and regulations and the safety plans are detailed.	2.16				
Special Conditions					
Any special conditions that affect the operation of the airport or require the activation of any special procedures are addressed.	2.17				
Runway and Taxiway Visual Aids - Marking, Lighting, Signs, and Visual NAVAIDs					
The proper securing of temporary airport markings, lighting, signs, and visual NAVAIDs is addressed.	2.18.1				
Frangibility of airport markings, lighting, signs, and visual NAVAIDs is specified.	2.18.1, 2.18.3, 2.18.4.2, 2.20.2.4				

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

Coordination	Reference	Addressed?			Remarks
		Yes	No	NA	
Hazard marking and lighting are specified to identify open manholes, small areas under repair, stockpiled material, and waste areas.	2.20.1				
The CSPP considers less obvious construction-related hazards.	2.20.1				
Equipment that poses the least danger to aircraft but is sturdy enough to remain in place when subjected to typical winds, prop wash and jet blast is specified.	2.20.2.1				
The spacing of barricades is specified such that a breach is physically prevented barring a deliberate act.	2.20.2.1				
Red lights meeting the luminance requirements of the State Highway Department are specified.	2.20.2.2				
Barricades, temporary markers, and other objects placed and left in areas adjacent to any open runway, taxiway, taxi lane, or apron are specified to be as low as possible to the ground, and no more than 18 inch high.	2.20.2.3				
Barricades are specified to indicate construction locations in which no part of an aircraft may enter.	2.20.2.3				
Highly reflective barriers with lights are specified to barricade taxiways leading to closed runways.	2.20.2.5				
Markings for temporary closures are specified.	2.20.2.5				
The provision of a contractor's representative on call 24 hours a day for emergency maintenance of airport hazard lighting and barricades is specified.	2.20.2.7				

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

Coordination	Reference	Addressed?			Remarks
		Yes	No	NA	
addressed.					
The CSPP specifies that equipment is to be removed from the ROFA when not in use.	2.22.2				
The CSPP clearly states that no construction may occur within a taxiway safety area while the taxiway is open for aircraft operations.	2.22.3				
Appropriate details are specified for any construction work to be accomplished in a taxiway object free area.	2.22.4				
Measures to ensure that personnel, material, and/or equipment do not penetrate the OFZ or threshold siting surfaces while the runway is open for aircraft operations are included.	2.22.4.3.6				
Provisions for protection of runway approach/departure areas and clearways are included.	2.22.6				
Other Limitations on Construction					
The CSPP prohibits the use of open flame welding or torches unless adequate fire safety precautions are provided and the airport operator has approved their use.	2.23.1.2				
The CSPP prohibits the use of electrical blasting caps on or within 1,000 ft (300 m) of the airport property.	2.23.1.3				

APPENDIX D. CONSTRUCTION PROJECT DAILY SAFETY INSPECTION CHECKLIST

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

Table D-1. Potentially Hazardous Conditions

Item	Action Required (Describe)	No Action Required (Check)
Excavation adjacent to runways, taxiways, and aprons improperly backfilled.		
Mounds of earth, construction materials, temporary structures, and other obstacles near any open runway, taxiway, or taxi lane; in the related Object Free area and aircraft approach or departure areas/zones; or obstructing any sign or marking.		
Runway resurfacing projects resulting in lips exceeding 3 inch (7.6 cm) from pavement edges and ends.		
Heavy equipment (stationary or mobile) operating or idle near AOA, in runway approaches and departures areas, or in OFZ.		
Equipment or material near NAVAIDs that may degrade or impair radiated signals and/or the monitoring of navigation and visual aids. Unauthorized or improper vehicle operations in localizer or glide slope critical areas, resulting in electronic interference and/or facility shutdown.		
Tall and especially relatively low visibility units (that is, equipment with slim profiles) — cranes, drills, and similar objects — located in critical areas, such as OFZ and		

Item	Action Required (Describe)	No Action Required (Check)
approach zones.		
Improperly positioned or malfunctioning lights or unlighted airport hazards, such as holes or excavations, on any apron, open taxiway, or open taxi lane or in a related safety, approach, or departure area.		
Obstacles, loose pavement, trash, and other debris on or near AOA. Construction debris (gravel, sand, mud, paving materials) on airport pavements may result in aircraft propeller, turbine engine, or tire damage. Also, loose materials may blow about, potentially causing personal injury or equipment damage.		
Inappropriate or poorly maintained fencing during construction intended to deter human and animal intrusions into the AOA. Fencing and other markings that are inadequate to separate construction areas from open AOA create aviation hazards.		
Improper or inadequate marking or lighting of runways (especially thresholds that have been displaced or runways that have been closed) and taxiways that could cause pilot confusion and provide a potential for a runway incursion. Inadequate or improper methods of marking, barricading, and lighting of temporarily closed portions of AOA create aviation hazards.		
Wildlife attractants — such as trash (food scraps not collected from construction personnel activity), grass seeds, tall grass, or standing water — on or near airports.		
Obliterated or faded temporary markings on active operational areas.		
Misleading or malfunctioning obstruction lights. Unlighted or unmarked obstructions in the approach to any open runway pose aviation hazards.		

Item	Action Required (Describe)	No Action Required (Check)
Failure to issue, update, or cancel NOTAMs about airport or runway closures or other construction related airport conditions.		
Failure to mark and identify utilities or power cables. Damage to utilities and power cables during construction activity can result in the loss of runway / taxiway lighting; loss of navigation, visual, or approach aids; disruption of weather reporting services; and/or loss of communications.		
Restrictions on ARFF access from fire stations to the runway / taxiway system or airport buildings.		
Lack of radio communications with construction vehicles in airport movement areas.		
Objects, regardless of whether they are marked or flagged, or activities anywhere on or near an airport that could be distracting, confusing, or alarming to pilots during aircraft operations.		
Water, snow, dirt, debris, or other contaminants that temporarily obscure or derogate the visibility of runway/taxiway marking, lighting, and pavement edges. Any condition or factor that obscures or diminishes the visibility of areas under construction.		
Spillage from vehicles (gasoline, diesel fuel, oil) on active pavement areas, such as runways, taxiways, aprons, and airport roadways.		
Failure to maintain drainage system integrity during construction (for example, no temporary drainage provided when working on a drainage system).		

Item	Action Required (Describe)	No Action Required (Check)
Failure to provide for proper electrical lockout and tagging procedures. At larger airports with multiple maintenance shifts/workers, construction contractors should make provisions for coordinating work on circuits.		
Failure to control dust. Consider limiting the amount of area from which the contractor is allowed to strip turf.		
Exposed wiring that creates an electrocution or fire ignition hazard. Identify and secure wiring, and place it in conduit or bury it.		
Site burning, which can cause possible obscuration.		
Construction work taking place outside of designated work areas and out of phase.		

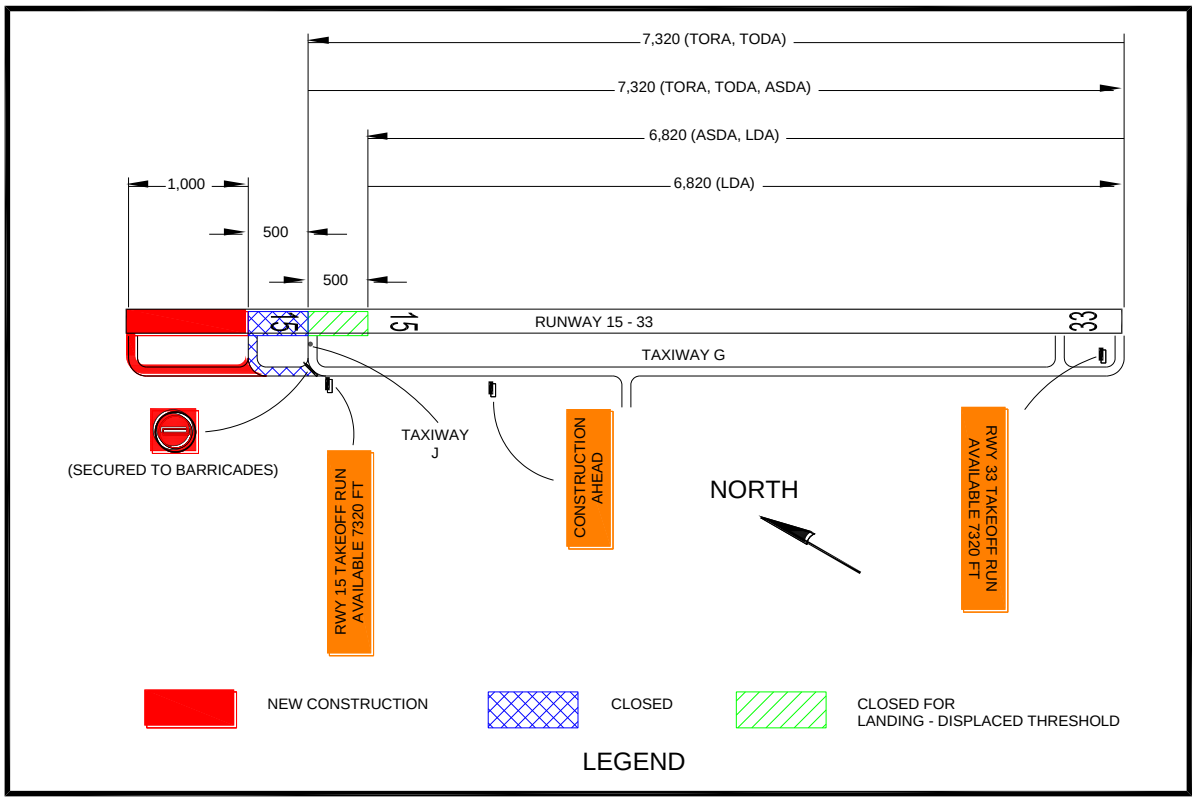
APPENDIX E. SAMPLE OPERATIONAL EFFECTS TABLE

E.1 Project Description.

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

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

Figure E-1. Phase I Example

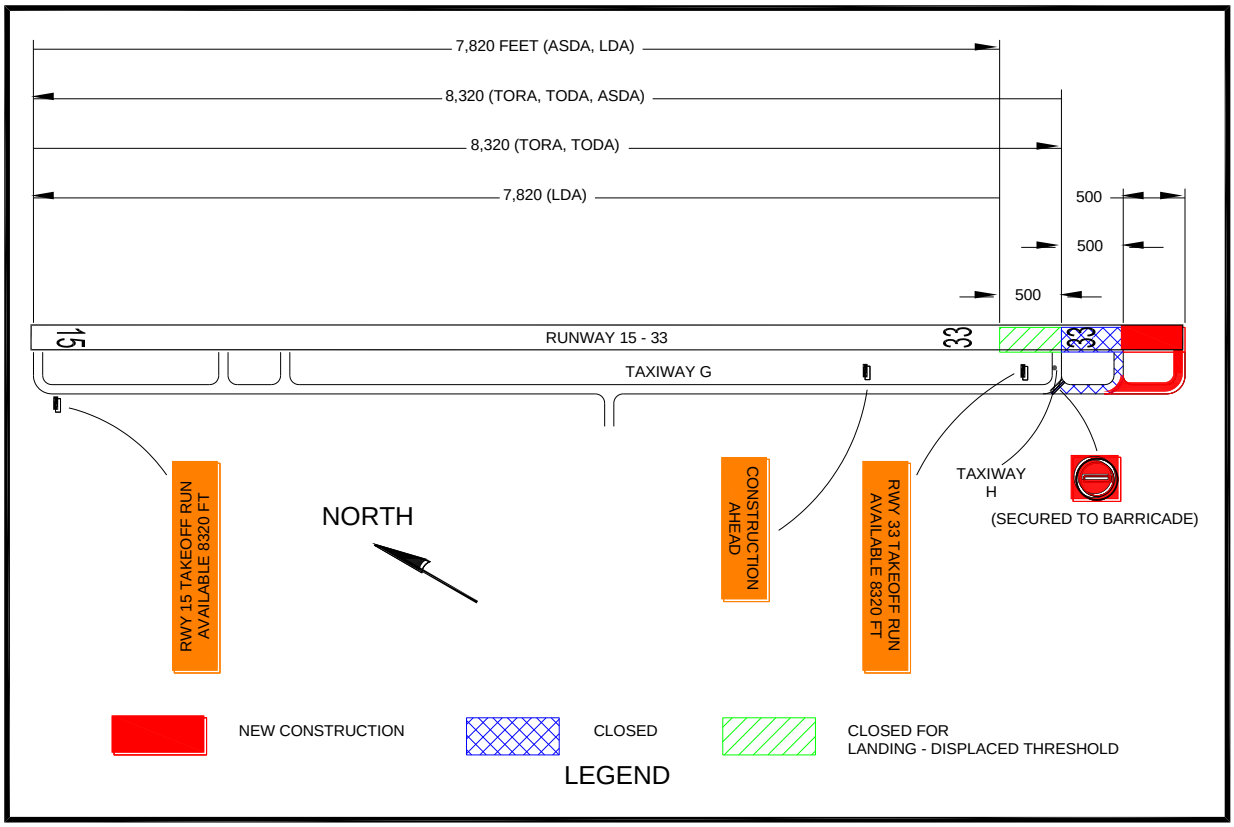


Note 1: Where hold signs are installed on both sides of a taxiway, install the TORA sign on the left side of the taxiway before the final turn to the runway intersection.

Note 2: Based on the declared distances for Runway 33 departures, the maximum equipment height in the construction area is 12.5 feet (500/40 = 12.5).

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

Figure E-2. Phase II Example



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

Note 2: Based on the declared distances for Runway 15 departures, the maximum equipment height in the construction area is 12.5 feet (500/40 = 12.5).

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

Figure E-3. Phase III Example

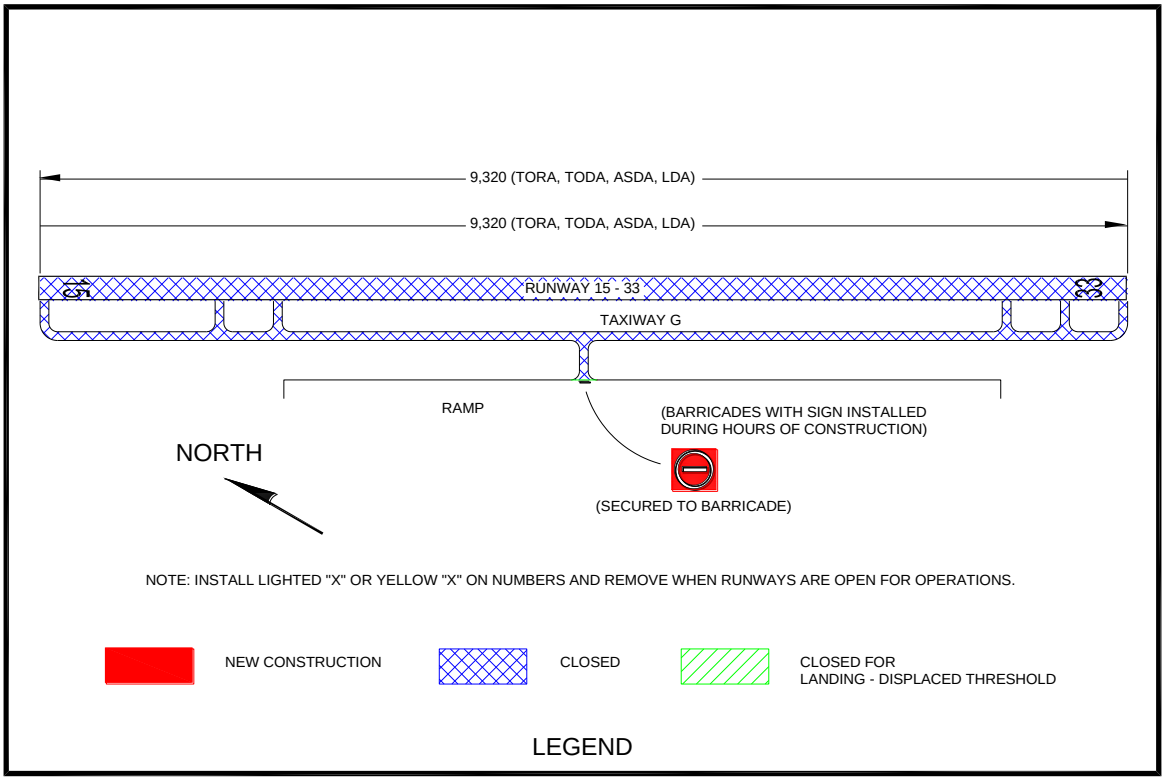


Table E-1. Operational Effects Table

Project	**Runway 15-33 Extension and Repaving**			
Phase	**Normal (Existing)**	**Phase I: Extend Runway 15 End**	**Phase II: Extend Runway 33 End**	**Phase III: Repave Runway**
Scope of Work	N/A	Extend Runway 15-33 1,000 ft on north end with Hot Mix Asphaltic Concrete (HMA).	Extend Runway 15-33 500 ft on south end with Hot Mix Asphaltic Concrete (HMA).	Repave existing runway with HMA Relocate Runway 33 Glide Slope
Effects of Construction Operations	N/A	Existing North 500 ft closed	Existing South 500 ft closed	Runway closed between 8:00 pm and 5:00 am Edge lighting out of service
Construction Phase	N/A	Phase I (Anticipated)	Phase II (Anticipated)	Phase III (Anticipated)
Runway 15 Average Aircraft Operations	Carrier: 52 /day GA: 26 /day Military: 11 /day	Carrier: 40 /day GA: 26 /day Military: 0 /day	Carrier: 45 /day GA: 26 /day Military: 5 /day	Carrier: 45 / day GA: 20 / day Military: 0 /day
Runway 33 Average Aircraft Operations	Carrier: 40 /day GA: 18 /day Military: 10 /day	Carrier: 30 /day GA: 18 /day Military: 0 /day	Carrier: 25 /day GA: 18 /day Military: 5 /day	Carrier: 20 /day GA: 5 /day Military: 0 /day
Runway 15-33 Aircraft Category	C-IV	C-IV	C-IV	C-IV
Runway 15 Approach Visibility Minimums	1 mile	1 mile	1 mile	1 mile
Runway 33 Approach Visibility Minimums	¾ mile	¾ mile	¾ mile	1 mile

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

Project		Runway 15-33 Extension and Repaving			
Phase		Normal (Existing)	Phase I: Extend Runway 15 End	Phase II: Extend Runway 33 End	Phase III: Repave Runway
Runway 15 Declared Distances	TORA	7,820	7,320	8,320	9,320
	TODA	7,820	7,320	8,320	9,320
	ASDA	7,820	7,320	7,820	9,320
	LDA	7,820	6,820	7,820	9,320
Runway 33 Declared Distances	TORA	7,820	7,320	8,320	9,320
	TODA	7,820	7,320	8,320	9,320
	ASDA	8,320	6,820	8,320	9,320
	LDA	7,820	6,820	7,820	9,320
Runway 15 Approach Procedures		LOC only	LOC only	LOC only	LOC only
		RNAV	RNAV	RNAV	RNAV
		VOR	VOR	VOR	VOR
Runway 33 Approach Procedures		ILS	ILS	ILS	LOC only
		RNAV	RNAV	RNAV	RNAV
		VOR	VOR	VOR	VOR
Runway 15 NAVAIDs		LOC	LOC	LOC	LOC
Runway 33 NAVAIDs		ILS, MALSR	ILS, MALSR	ILS, MALSR	LOC, MALSR
Taxiway G ADG		IV	III	IV	IV
Taxiway G TDG		4	4	4	4
ATCT (hours open)		24 hours	24 hours	24 hours	0500 - 2000
ARFF Index		D	D	D	D

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

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

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

Table E-2. Runway and Taxiway Edge Protection

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

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

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

Table E-3. Protection Prior to Runway Threshold

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

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

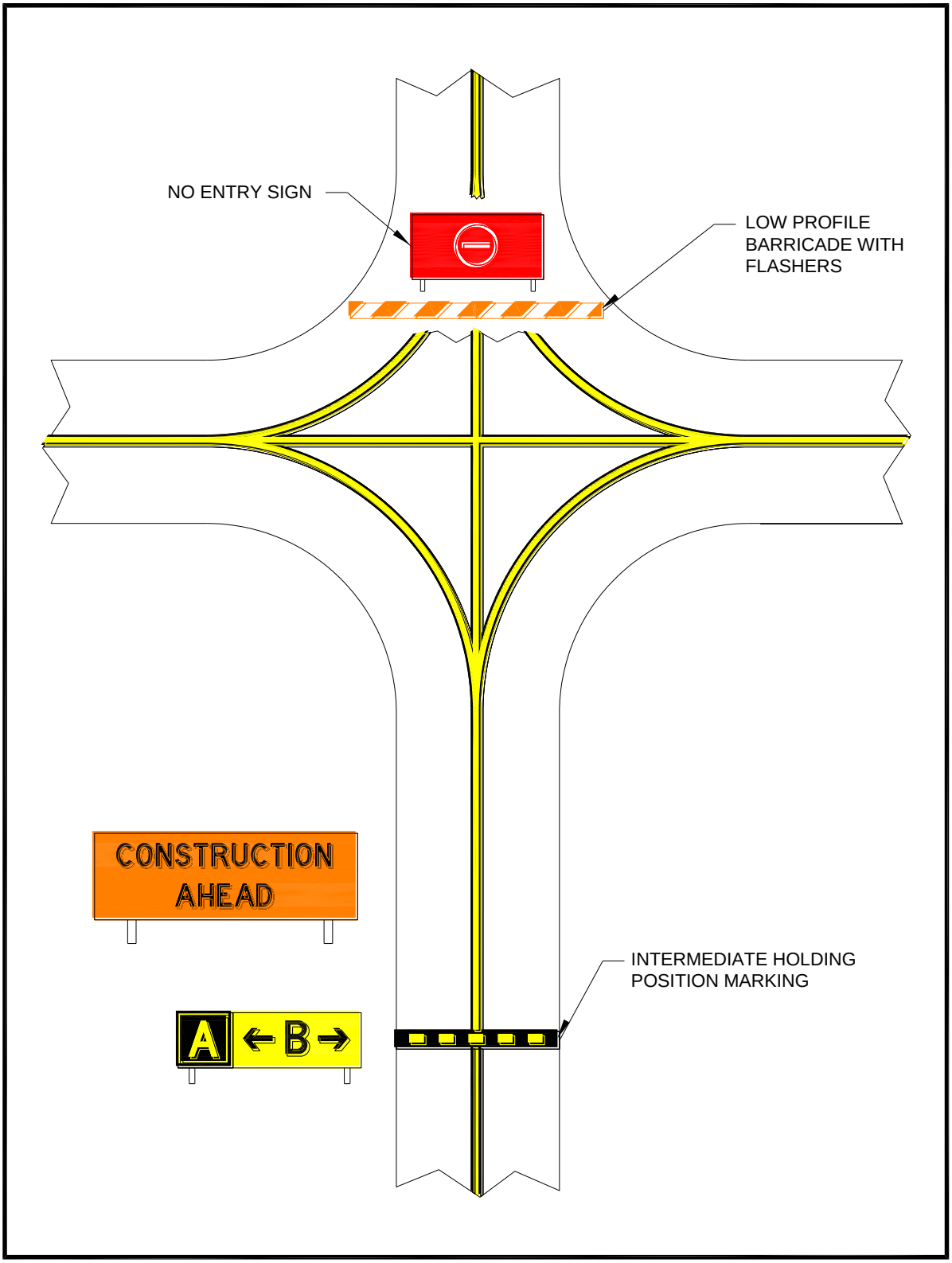
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APPENDIX F. ORANGE CONSTRUCTION SIGNS

Figure F-1. Approved Sign Legends

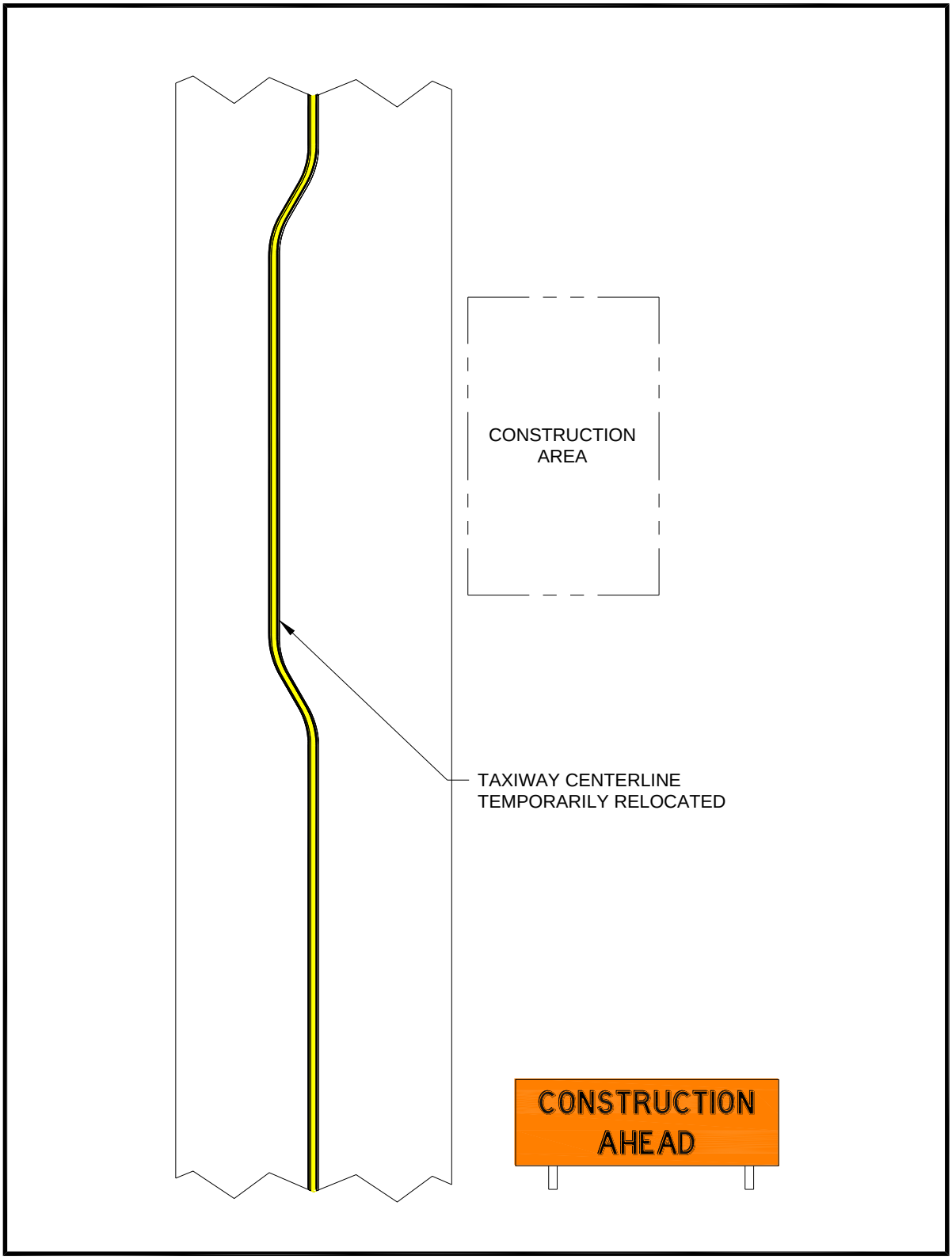


Figure F-2. Orange Construction Sign Example 1



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

Figure F-3. Orange Construction Sign Example 2



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

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Advisory Circular Feedback

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

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

Please check all appropriate line items:

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

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

_____
_____
_____

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

_____
_____
_____

☐ Other comments:

_____
_____
_____

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

_____

Submitted by: _____ Date: _____

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U.S. Department
of Transportation
Federal Aviation
Administration

Advisory Circular

Subject: Airport Safety Self-Inspection	**Date:** 9/27/2022	**AC No:** 150/5200-18D
	Initiated By: AAS-300	**Change:**

1 **Purpose.**

This advisory circular (AC) provides information to airport operators on airport self-inspection programs and identifies the items included in these programs.

2 **Cancellation.**

This AC cancels AC 150/5200-18C, *Airport Safety Self-Inspection,* dated April 23, 2004.

3 **Application.**

This AC provides voluntary guidance for all airport operators in developing self-inspection programs. It also provides the standards for developing and implementing self-inspection programs at airports certificated under Title 14 Code of Federal Regulations (CFR) part 139 (hereinafter referred to as part 139) which are acceptable to the Administrator. Part 139 regulations require an airport operator at a certificated airport to develop a self-inspection program acceptable to the Administrator as a means of compliance with § 139.327, Self-Inspection Program. The standards in this AC may be applicable for projects funded with federal grant monies through the Airport Improvement Program (AIP) and with revenue from the Passenger Facility Charges (PFC) Program. See Grant Assurance No. 34, "Policies, Standards, and Specifications," and PFC Assurance No. 9, "Standards and Specifications." Mandatory terms such as "must" apply only to those who conduct inspections at airports that are obligated by Federal grant funds or PFC agreements or those who seek to demonstrate compliance by use of the specific method described by this AC.

4 **Principal Changes.**

The AC incorporates the following principal changes:

a. Changed the numbering system to reflect the beta testing within the Federal Aviation Administration.

b. Added in Chapter 2, specific role definitions for the Airport Certificate Holder, Airport Manager and or Operations Director.

c. The Recommended Inspection Frequency section moved to chapter 7 “Inspection Requirements by Type.”

d. Knowledge and Equipment for Self-Inspection changed to reflect changes to part 139.

e. Added record keeping requirements to Knowledge and Equipment for Self-Inspection.

f. Changed “Regularly Scheduled Inspection” to “Daily Inspection” for clarity.

g. Added part 139 references to each section.

h. Updated the checklist to reflect changes to part 139.

i. Added photos to show equipment placards and markings.

5 **Related CFR and Reference Materials.**

Appendix A lists related reference materials.

6 **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. BACKGROUND

1.1 A self-inspection program is integral to airport safety. Inspecting features that affect airside operations are critical to ensuring that components of various systems—for example, lighting, marking, and signs—are functioning properly. Additionally, an effective inspection process can identify hazards, e.g. fuel product leaks, exposed ignition sources, that represent safety risks which, when addressed early, can be mitigated successfully and at lower cost.

1.1.1 Through an airport self-inspection program, the airport operator:

1. Monitors airport conditions through a daily inspection schedule
2. Identifies specific conditions that pose a risk to airport safety
3. Takes appropriate corrective actions to address deficiencies on the airport
4. Maintains a self-inspection log (can be electronic) to note deficiencies and the date and time corrective measures were taken, and
5. Identifies trends through recurring deficiencies.

1.2 Through an airport self-inspection program, operators of certificated airports can maintain a level of airport safety by complying with the provisions of part 139. This AC identifies the components and responsibilities of each section of part 139 and provides a basis for developing a comprehensive self-inspection program for the individual airport. Sample checklists to assist airport operators are located in Appendix B.

CHAPTER 2. RESPONSIBILITIES

2.1 Airport Certificate Holder.

The Airport Certificate Holder has overall responsibility for airside safety but can delegate this responsibility to an Airport Manager, Operations Director, or other entity. This AC uses the terms airport certificate holder and airport operator interchangeably, as they are in the regulation, to denote responsibility.

2.2 The Airport Manager or Operations Director.

The Airport Manager or Operations Director authorizes Operations/Maintenance Personnel to perform inspections in the self-inspection program. At certificated airports, operations/maintenance personnel must be thoroughly familiar with part 139; they must be familiar with the airport and properly trained in vehicle/pedestrian operations; and given pertinent sections of the Airport Certification Manual (ACM), which identify their duties and responsibilities. The training must address specifically the following operational areas:

- §139.305, Paved areas
- §139.307, Unpaved areas, if applicable
- §139.309, Safety areas
- § 139.311, Marking, signs, and lighting
- § 139.323, Traffic and wind direction indicators
- § 139.325, Airport emergency plan
- § 139.327, Self-inspection plan
- § 139.329, Pedestrians and ground vehicles
- § 139.335, Public protection
- § 139.337, Wildlife hazard management
- § 139.339, Airport condition reporting
- § 139.341, Identifying, marking, and lighting construction and other unserviceable areas
- § 139.343, Non-complying conditions
- ACM WHMP (Wildlife Hazard Management Plan)
- Types of self-inspections
- Airport self-inspection procedures
- Self-inspection records

Note 1: Chapter 7 addresses each of the above part 139 subjects in more detail.

Note 2: The terms “operations personnel”, “maintenance personnel” and “inspector(s)” are used interchangeably.

CHAPTER 3. THE SELF-INSPECTION PROGRAM

3.1 The effective self-inspection program is comprehensive and thorough. However, it depends on alert and well-trained personnel who understand their duties and responsibilities and have the resources to carry them out.

3.2 Inspection Personnel can be most effective in performing inspections when they have clear instructions, checklists, and access to informational resources. ACs in the 150 Series provide the standards for certificated airports. Self-inspection personnel must have access to these resources. Inspection personnel are also responsible for developing and using techniques that preclude complacency generated by routine. For example, inspectors can vary the pattern of the inspection and view the airport from different perspectives. Avoiding a repetitive inspection pattern enables the inspector to be more aware; fixed inspection patterns, while easy to learn, generally, over time, do not provide for an adequate inspection and have the potential for missing deficiencies during the inspection process.

3.2.1 For example, runway inspections are usually conducted in both directions. During the runway inspection, when time allows, the inspector should inspect all stub taxiways up to the runway side of the runway hold position. When inspecting taxiways adjacent to a runway, the inspector should inspect all stub taxiways up to the taxiway side of the runway hold position. These areas are often overlooked. Any practices and procedures that vary the inspection pattern can greatly benefit airport safety.

3.2.2 While inspecting parallel taxiways, self-inspection personnel should check the stub taxiways and holding positions as stub taxiways are sometimes bypassed during the inspection of the movement area. During nighttime inspections, the runway inspections should be conducted in both directions to check runway lighting and signs in both directions. Some airports have a Letter of Agreement (LOA) with the ATCT addressing self-inspection routes depending on the direction of aircraft landing/takeoff operations.

3.3 Inspection of areas that have been assigned to individual air carriers, fixed base operators, or other tenants can be made the responsibility of the user. The transfer of this responsibility is usually accomplished through Letters of Agreement (LOAs) or through lease agreements, which are legally binding. However, oversight of these areas and accountability for them are within the purview of the airport operator, and, at certificated airports, the Federal Aviation Administration (FAA) holds the certificate holder ultimately responsible for operating the airport safely. Advice from airport counsel can guide the certificate holder in writing agreements and LOAs that identify user responsibilities.

NOTE: Tenants are generally only responsible for leased portions of non-movement areas with rare exceptions such as at military installations where certain taxiways or arresting gear installations are maintained by DOD.

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CHAPTER 4. TYPES OF SELF-INSPECTIONS

4.1 There are different types of inspections in an effective self-inspection program; each type is appropriate to specific activities on the airport. They are:

4.1.1 Daily inspection schedule.

The airport must be inspected daily except otherwise required by the Airport Certification Manual. Larger airports normally conduct multiple inspections daily. The Part 139 requirement to inspect daily does not mean that only one self-inspection is required each day. Typically, the first daily inspection is conducted early in the morning before the first air carrier operation. An effective self-inspection program includes a daylight inspection and a separate nighttime inspection to evaluate lighting systems and glass bead visibility. Optimally, self-inspections should occur when aircraft activity is minimal, in order to create the least impact on airport operations. Part of this inspection must occur during the hours of darkness at those airports that serve air carriers during hours of darkness. Airport operators holding an FAA Airport Operating Certificate—Class I, II, III, or IV—must conduct a daily airport inspection, to include a nighttime inspection to be in compliance. The daily airport inspection requirement, including a nighttime inspection, is required regardless of whether or not the airport receives air carrier service except as otherwise required by the ACM. Air carrier service is not a prerequisite for complying with § 139.327 (a) (1).

4.1.2 Continuous surveillance inspection.

Those activities and facilities that airport management has identified and documented in the ACM as requiring continuous surveillance are inspected whenever personnel are in these areas. Hazardous conditions can occur at any time and in a short period can pose significant safety risks.

4.1.3 Special inspection.

Special inspections of activities and facilities must take place after receipt of a complaint or when an unusual condition or unusual event occurs on the airport, such as a significant meteorological event or an accident or incident. Special inspections must also occur at the end of construction activities, at the end of a construction shift, at the end of the day, and at the end of the construction project, to ensure that there are no unsafe conditions related to the construction activity. This special inspection must occur prior to construction personnel leaving the airport, in the event that corrective actions are necessary. Document special inspections on the appropriate portions of the Airport Daily Safety Self-Inspection checklist. Some airports use a separate inspection checklists for special inspections.

4.1.4 Periodic condition inspection.

Periodic condition inspections are conducted to focus on slowly changing conditions that may not be noticed during daily inspections. For example, a periodic condition inspection of markings may be conducted in the Spring to evaluate the condition of airfield markings to determine the priority for repainting markings when weather

condition permit painting work. A periodic condition inspection of markings may also be conducted in the Fall to evaluate the condition of markings to determine if any marginal airfield markings are in need of repainting before cold weather prevents repainting of markings. Periodic condition inspections may be conducted to focus on the condition of pavement lips and safety areas, especially where turf is not yet well established after construction projects. Settling of soil can expose pavement lips and erosion in safety areas are common problems after construction projects. A periodic condition inspection may be conducted during or immediately after heavy rain to check for drainage problems that may occur from turf damming or plugged drains in safety areas. At airports with potential rubber buildup problems, periodic condition inspection are conducted with Continuous Friction Measuring Equipment (CFME) to monitor the pavement for friction problems and obscuration of the runway centerline marking.

CHAPTER 5. INSPECTION RECORDS

5.1 An effective safety self-inspection program includes procedures for capturing and tracking information about deficiencies and other phenomena from the inspection checklists. In addition, the airport operator must include a work order system so that deficiencies noted on the checklists can be corrected and documented in a timely manner.

5.2 The Inspection Log constitutes a record of conditions noted and can act as proof of follow-up corrective actions taken. Inspection logs can be electronic but the airport operator must be able to print hard copies when necessary. Information from the individual checklists is also an important administrative tool for airport management, providing a daily snapshot of the condition of the airport. Over defined periods, this information can indicate trends and identify problem areas and systems that must be addressed. This helps to direct financial planning and budgetary requirements. Certificated airports must retain checklist records for 12 consecutive calendar months [§139.301 (b) (5)]. Certificate holders are required to prepare and maintain for at least 12 consecutive calendar months, a record of each inspection, showing the conditions found and all corrective actions taken [§139.327 (c)].

5.2.1 Airports can use electronic record keeping programs specifically designed to meet self-inspection requirements. These must be available to the Administrator in an acceptable form during any inspection conducted by the FAA. The log of the regularly scheduled inspection checklists documents that safety inspection responsibilities are being met.

5.2.2 The operator must issue a Notice to Air Missions (NOTAM), as appropriate, reporting deficient conditions that could have an immediate and critical impact on the safety of aircraft operations. When corrective actions take place, the operator cancels the NOTAM. Certificated airports can use other notification systems and procedures in addition to the NOTAM system but not in lieu of NOTAMS, if acceptable to the Administrator.

CHAPTER 6. KNOWLEDGE AND EQUIPMENT FOR THE SELF-INSPECTION PROGRAM

6.1 Knowledge Requirements.

Airport inspection personnel who perform inspections must have a general knowledge of the ACM and a specific knowledge of the sections of the ACM that pertain to their duties and responsibilities [§139.303 (a)(c)]. The following areas require training at the specific airport at which they perform inspections:

1. Airport familiarization, including runway and taxiway configuration, airport marking, lighting, and sign systems, and the location and types of facilities that affect airside operations
2. Part 139 and the FAA AC standards and as applied specifically to the airport. The airport operator must provide training on these standards and provide access to these references [§139.303 (b)]
3. Procedures for conducting self-inspections and discrepancy reporting procedures as addressed in the Self-Inspection Program section of the ACM.
4. Procedures for access to, and operation in, movement areas and safety areas as specified under §139.329 at the specific airport
5. Airport communication procedures, including radio communication between air traffic control tower and personnel, use of the common traffic advisory frequency (CTAF) (aka UNICOM) as appropriate, and procedures for reporting unsafe airport conditions. During hours with no operational control tower, the operations inspector must also listen for aircraft and other vehicle operators.
6. At certificated airports, applicable sections of the approved ACM, as mentioned above, including the airport's:
7. Marking, Lighting, and Sign Plans
8. Airport Emergency Plan (AEP)
9. Wildlife Hazard Management Plan
10. Snow and Ice Control Plan (as applicable)
11. Construction Safety and Phasing Plan (CSPP) for projects (as applicable)
12. NOTAM requirements, notification, and distribution procedures (AC 150/5200-28, *Notice to Air Missions (NOTAMs) for Airport Operators)*

6.2 Records.

At certificated airports, the ACM must contain initial and recurrent training requirements for personnel conducting the airport inspections, and the certificate holder must maintain accurate records of the training received by the inspection personnel and the inspections they perform.

6.3 Equipment.

6.3.1 The self-inspection personnel performing inspections must have a two-way ground control radio capable of communicating with the Airport Traffic Control Tower on controlled airports and on the CTAF (aka UNICOM) at uncontrolled airports or at controlled airports when the tower is closed. Inspectors must know and use correct radio communication phraseology, procedures, and techniques, as referenced in the Aeronautical Information Manual (AIM). Airport police or others authorized to conduct all or part of the self-inspection must also know and use correct radio communication phraseology, procedures, and techniques as referenced in the AIM.

6.3.2 In addition, vehicles used during the inspection process must be equipped with:

1. A beacon for nighttime and low-visibility inspections; and
2. Either a beacon or orange-and-white checkered flag prominently posted on the vehicle for daytime inspections in order to provide maximum visibility.

6.4 Checklists.

Self-inspection personnel must document inspections on checklists that include all areas subject to inspection. A copy of the checklist from the previous inspection may be useful to provide information concerning deficiencies already noted/reported and/or corrective action taken. Uncorrected deficiencies should continue to be documented on inspection checklists until they are resolved. All conditions found must be documented on the inspection checklists, even if corrected during the inspection. All corrective actions must be documented, either on the checklist or on a work order.

CHAPTER 7. INSPECTION REQUIREMENTS BY TYPE

7.1 Daily Inspection.

The daily inspection of the airport's physical facilities concentrates on the areas described below. The inspector uses the airport diagram or an airport map and identifies deficiencies, including necessary details and locations, on it. The term "reporting" means that a comment is made on the checklist and, if applicable, marked on the airport diagram. Photographing the deficiency is an excellent method for documenting the condition in addition to noting the deficiency on the checklist.

7.1.1 §139.305, Paved Areas.

The inspection of pavement surface condition is critical to airport safety. Pavement inspection is conducted daily (e.g., in the early morning before flight operations begin). Additional inspections can be conducted as appropriate at the discretion of the airport operator to ensure pavement surfaces are clear. At airports with a history of pavement heaves, more frequent inspections are appropriate during high heat conditions. During the pavement inspection, the inspector:

7.1.1.1 Checks the pavement lips,—the area between full-strength pavement, and shoulders and between paved shoulders and safety areas. This observation has two purposes: first to check for water drainage problems due to turf damming, and, secondly, to assure that pavement lips do not exceed 3 inches. The inspection includes a check for vegetative growth along runway and taxiway edges that may impede drainage from the pavement surface.

7.1.1.2 Determines the presence of any cracks wide enough to cause loss of directional control in an aircraft. The inspector reports and marks location of cracks on the airport diagram for continued monitoring during future inspections. The inspection also includes the identification of holes that could cause directional control problems for an aircraft [Reference § 139.305 (a)(2)].

7.1.1.3 Checks the condition of pavement areas for cracks, scaling, spalling, bumps, low spots, and debris that could cause foreign object damage to aircraft.

7.1.1.4 Checks for low spots that are conducive to ponding during rainstorms and for areas where water may remain on the runway surface and cause hydroplaning.

7.1.1.5 Checks for mud, dirt, sand, loose aggregate, debris, foreign objects, rubber deposits, and other contaminants that must be removed promptly and as completely as possible.

7.1.1.6 Checks markings (see Par. 7.1.4). Refers to the ACs that contain methods and procedures for maintaining paved surfaces at the specific airport that are acceptable to the Administrator.

7.1.2 §139.307, Unpaved Areas.

At airports where applicable, the airport operator must maintain the condition of gravel, turf, or other unpaved runway, taxiway, or loading ramp and parking area on the airport, which is available for air carrier use, in a manner acceptable to the Administrator. Unpaved surfaces in the state of Alaska are predominantly involved in this Section of the regulation. During the inspection of unpaved areas, the inspector:

1. Checks the slope from the edge of the full-strength surface downward to the existing terrain and confirms that it is no steeper that 2:1.
2. Checks that the full-strength surfaces have an adequate crown or grade to assure sufficient drainage to prevent ponding.
3. Checks to ensure that the full-strength surfaces are adequately compacted and sufficiently stable to prevent rutting and loosening or build-up of surface material, which could impair directional control of aircraft or prevent drainage.
4. Checks that there are no holes or depressions that exceed 3 inches in depth or are of a breadth capable of impairing directional control or causing damage to an aircraft.
5. Checks for mud, dirt, sand, loose aggregate, debris, foreign objects, rubber deposits, and other contaminants that must be removed promptly and as completely as possible.
6. Refers to the ACs that contain methods and procedures for the maintenance and configuration of unpaved areas at the specific airport, which are acceptable to the Administrator.

7.1.3 §139.309, Safety Areas.

At certificated airports, the ACM must document the dimensions of the runway and taxiway safety areas. The inspector must know the dimensions of the runway and taxiway safety areas at the airport. During the safety area inspection, the inspector:

1. Inspects each safety area to ensure that it is cleared and graded and has no potentially hazardous ruts, humps, depressions, or other surface variations.
2. Inspects each safety area to ensure drainage by grading or storm sewers to prevent water accumulation.
3. Confirms that each safety area is capable under dry conditions of supporting aircraft rescue and firefighting (ARFF) personnel and equipment, snow removal equipment, and the occasional inadvertent aircraft excursion, without causing major damage to the aircraft.
4. Checks to ensure no object, except those fixed by function (such as runway lights, signs, or navigational aids), is located there. Objects in the safety areas must be constructed on frangibly mounted structures of the lowest practical height. At

certificated airports, the frangible point must be no higher than 3 inches above grade. Refer to Table 6-1 in AC 150/5300-13, *Airport Design*, current edition, for a list of NAVAID facilities authorized to be located in the RSA because they are fixed-by-function.

5. Determines that the base for any object located in safety areas is at grade level. This includes light fixtures, traffic and wind indicators, and NAVAIDs. This is especially important at airports subject to winter thaws. The inspector must check manhole and handhole covers to ensure they are at grade level and can support vehicles and the inadvertent aircraft excursion.

6. Identifies and documents any damage caused by wildlife. Documents evidence of wildlife activity, e.g., burrowing animals, birds, insects, mammals, etc., on the airport in accordance with part 139.337 and the ACM. Confirms wildlife hazard notification is accomplished through NOTAMS and other methods acceptable to the Administrator.

7. Notes equipment and objects, such as construction equipment or material that are temporarily located in a safety area. At certificated airports, this requires knowledge of the construction safety plan, which specifies locations of material and equipment. The inspection must confirm the airport has issued appropriate NOTAMs in accordance with §§139.309, .339, and .341.

8. Checks for any construction activity or vehicle/equipment located in the safety area. Keep in mind that during some construction projects the runway or taxiway may be restricted to small aircraft that do not need a full safety area for operations. Also keep in mind that in rare circumstances where a taxiway is indispensable for aircraft movement, a straight section of taxiway may be opened with trenches/excavations in the safety area, subject to restrictions. Self-inspection personnel should be familiar with the Construction Safety Phasing Plan (CSPP) for projects and identify any safety area issues related to construction activity that is not in accordance with the CSPP.

7.1.4 §139.311, Marking.

Airport markings provide information to pilots during takeoff, landing, and taxiing. Airport marking must be properly maintained and must comply with standards specified in AC 150/5340-1*, Standards for Airport Markings*, current edition. Part 139 regulations provide compliance with these standards is mandatory for operators of certificated airports and compliance may be required for airport operators of airports where Federal funds have been used for runway and taxiway construction/ rehabilitation and the grant assurances remain in effect. The inspector must be familiar with the appropriate marking required at the airport in the approved Marking Plan. During the inspection, the inspector:

1. Confirms that the marking of each runway meets the specifications for takeoff and landing minimums.

2. Confirms that each taxiway has a centerline and taxiway edge markings, as appropriate (AC 150/5340-1 specifies when edge marking is required).
3. Checks holding position marking for visibility and correct layout.
4. Checks ILS critical area/POFZ/APCH markings if installed on the airport.
5. Checks surface painted holding position signs (SPHPS) and enhanced taxiway centerline markings for visibility and correct layout.
6. Refers to the appropriate sections of AC 150/5340-1 for information regarding marking that differentiates movement area from non-movement area and the associated marking for operations in the non-movement area (e.g. vehicle roadways, taxi lanes, parking for fueling vehicles and other ramp marking).
7. Checks markings for correct color, peeling, blistering, chipping, fading, and obscuration because of rubber buildup and notes on the airport maps the location of any marking that is obscured, faded, or deteriorating.
8. During and after construction projects, checks new markings for compliance with marking standards.
9. Checks markings with glass beads during periods of darkness to determine if the reflectivity level is adequate at night. In addition, the inspector confirms that the glass beads are adequately embedded to avoid being ingested by aircraft engines.
10. Reports deviations from standard marking and their location on the airport map. Inspectors must monitor and document non-complying marking. New markings installed during construction projects must be checked for compliance to marking standards.

7.1.5 §139.311, Signs.

Signs provide important information to pilots while taxiing and to vehicle and equipment operators on the airport. Signs must be in accordance with the standards specified in the current versions of AC 150/5340-18*, Standards for Airport Sign Systems*, and AC 150/5345-44, *Specification for Runway and Taxiway Signs,* current editions. Part 139 regulations provide compliance with these standards is mandatory for operators of certificated airports and compliance may be required for airport operators of airports where Federal funds have been used for runway and taxiway construction/rehabilitation and the grant assurances remain in effect. The inspector must know the appropriate sign standards and specifications at the airport and ensure that signs comply with the approved Sign Plan. In addition, at Class I, II, and IV airports, the signs required by §139.311 (b)(1) must be internally illuminated. At Class III airports, the signs required by §139.311 (b)(1)(ii) and (b)(1)(iii) must be internally illuminated. During the inspection, the inspector:

1. Checks signs to ensure they are in accord with the approved Sign Plan and that they identify taxiways and runways correctly. Signs must be easy to read, located properly, and follow the color and retro-reflectivity standards.
2. Checks to ensure that all lighted signs are operational and not obscured by vegetation, dirt, snow, etc.

3. Checks to ensure that signs are properly tethered.
4. Checks signs to ensure they are frangibly mounted (the frangible mount being no greater than 3 inches above the base) and that the concrete bases are level, secure, and properly maintained at grade level.
5. Checks to see that sign panels are not missing, askew, cracked, broken, or otherwise damaged or compromised.
6. Most importantly, confirms that signs have the correct legend and arrow orientation as well as that all dividers are placed correctly and are the correct color.
7. During and after construction projects, checks new signs for compliance with sign standards and, at certificated airports, confirms they are in accordance with the approved Sign Plan.
8. During periods of darkness, checks to ensure that signs are properly illuminated and that mandatory instruction signs are illuminated with the associated runway lighting system. However, at some locations where runways are inactive, (lower priority runway during snow events or inactive runways during low visibility operations below 1200 RVR), holding position signs on taxiways crossing inactive runways may be connected to the taxiway circuit.
9. Checks signs for correct operational intensity settings and that they do not flicker or change intensity when runway light intensity is changed.
10. Check runway exit signs to ensure they are illuminated when the runway lights are illuminated. Runway exit signs are typically connected to the runway circuit, however, if they are connected to the taxiway circuit, there may be a local procedure to turn on the associated taxiway lights whenever the runway lights are turned on to meet this standard.
11. Reports non-standard signs or any sign that is not functioning properly, is faded, or is damaged. At certificated airports, the inspector ensures the airport has issued a NOTAM about any malfunctioning holding position sign or ILS critical area sign, per §139.339. Inspectors must document and monitor any non-standard sign.

7.1.6 §139.311, Lighting.

7.1.6.1 The airport operator is required to provide and maintain lighting systems for air carrier operations when the airport is open at night and during conditions below visual flight rules (VFR) minimums. Lighting is also required in Alaska during periods in which a prominent unlighted object cannot be seen from a distance of 3 statute miles or when the sun is more than six degrees below the horizon. The lighting systems required by §139.311 (c) consist of runway lighting, taxiway lighting, approach lighting (as authorized), an airport beacon, and obstruction lighting. Several ACs provide information and guidance on lighting and contain the lighting standards for certificated airports. During the inspection, the inspector checks the taxiway lighting/reflector system to ensure that they

are the proper color, oriented correctly and meet operational tolerance limits specified in AC 150/5340-26, *Maintenance of Airport Visual Aid Facilities,* current edition. Taxiway lighting consists of one of the four following systems.

1. Centerline lights,
2. Centerline reflectors,
3. Edge lights, or
4. Edge reflectors.

7.1.6.2 During the inspection (which can be accomplished over a 24-hour period), the inspector will:

1. Check each runway lighting system to ensure that it meets the specifications for takeoff and landing minimums, as authorized by the Administrator. This can include runway centerline and touchdown zone lights, displaced threshold lights, if installed, lead-on/lead-off lights, Runway End Lights (RENLs), stop bars, LAHSO and Runway Status Lights and the runway threshold/runway end lighting system.
2. Check all runway lights and threshold/end lights, to ensure they are the proper color and oriented correctly, this includes the specified lighting configuration for ILS-capable runways.
3. Check all taxiway lights and runway guard lights, if installed, (both elevated and in-pavement) for meeting operating tolerance limits.
4. Check the approach lighting system for each runway to ensure that it meets the specifications for takeoff and landing minimums, as authorized by the Administrator, unless an entity other than the certificate holder provided and/or maintains the system. However, if the inspector notes and documents a deficiency in a system not owned by the airport, the owner of the system is notified so that corrections or repairs can be made as well as documented that the deficiency has been corrected.
5. Check the operation of the airport beacon and ensure the proper color is being reflected for airport type.
6. Check obstruction lighting and marking within the airport's authority to ensure correct and effective operation.
7. Check apron edge lights, if installed.
8. Check all lights, lighting fixtures, and lighting systems to ensure that they are free of vegetation and obscuration by deposits of foreign material.
9. Check the following for proper shielding, if installed:

10. Apron lights, vehicle parking area lights, lighting in fuel storage areas, roadways, buildings
11. Floodlights used in construction areas.
12. If inspector notes a deficiency with an approach lighting system, the deficiency is documented and the owner or entity responsible for maintenance is notified so that corrections can be made. Document all fixtures missing and lights that are not working (e.g., burned out) or appear dim.
13. Check that lights function properly through the manual or radio features and that photocell controls function properly, if installed.
14. Check all light bases to ensure proper alignment, correct height, and grading to prevent erosion and ensure that fixtures are frangibly mounted, the point of which is no more than 3 inches above the base.
15. For Low Visibility Operations/Surface Movement Guidance and Control System (LVO\SMGCS) operations below RVR1200, conduct an initial inspection of stop bar lights, if installed, runway guard lights, clearance bar lights, taxiway centerline lights, and taxiway edge lights installed on the low-visibility routes in accordance with the airport's LVO/SMGCS plan.
16. For operations below RVR1200 with any LVO/SMGCS lighting systems that are not electronically monitored, periodically inspect every 2 to 4 hours during low visibility operations. The inspections must be conducted according to the airport's LVO/SMGCS plan, which is referenced in the ACM.
17. For operations below RVR600 with any LVO/SMGCS lighting systems that are not electronically monitored, inspect every 2 hours. The inspections must be conducted according to the airport's LVO/SMGCS plan, which is referenced in the ACM.

7.1.6.3 Light inspections must occur during periods of darkness in order to evaluate lighting systems effectively. This is when they provide the primary visual aid for pilots. While the inspector observes airport lighting owned and maintained by the airport operator as a priority, the inspector must also document and report immediately any lighting discrepancy owned or operated by others to the appropriate, responsible owner, in the interest of safety. In Alaska, lighting systems must be inspected during periods of darkness or during periods in which a prominent unlighted object cannot be seen from a distance of three miles or the sun is more than six degrees below the horizon.

7.1.7 §139.313, Snow and Ice Control.

7.1.7.1 Snow and Ice Control Plans (SICP) are unique to each airport. Therefore, the inspector must be familiar with the contents of the plan for the specific

airport. AC 150/5200-30, *Airport Field Condition Assessments and Winter Operations Safety*, current edition, contains guidance and procedures for snow and ice removal. At airports where snow and ice occur throughout the winter season, preparation and tabletop exercises usually begin off-season. Familiarization with the Snow and Ice Plan can begin with the airport's off-season preparation especially when new techniques, equipment, and authorized materials are involved in the snow removal and ice control processes. Many airports conduct a "Lessons Learned" session or series of sessions after the winter season. These sessions can be helpful to the Inspector as well.

7.1.7.2 During the snow and ice control inspection, the inspector, in accordance with the SICP:

1. Checks runways and taxiways to ensure that snow banks and drifts next to the runways and taxiways provide clearance for aircraft wing tips, engines, and propellers.
2. Checks to ensure that snow is not piled across the runway threshold or across runway/runway intersections.
3. Checks runway and taxiway lights and signs to ensure that they are not obscured by snow or damaged by snow removal operations.
4. Checks for foreign objects that may have been left on the pavement from snow removal operations i.e. chunks of ice or debris from the snow removal equipment.
5. Checks taxiway intersections and access routes to ensure that snow removal operations have provided adequate clearances for ARFF equipment.
6. Checks to ensure that critical areas for the operation of electronic NAVAIDs are clear.
7. Checks for and reports slippery pavement conditions, using RCAM as described in AC 150/5200-30 to determine Runway Condition Codes or a MU value from a friction measurement device. There is no correlation between friction measurement numbers and braking action reports of Good, Fair, Poor, or Nil. These reports are transmitted to the ATCT.
8. Checks for snow and /or ice accumulation that the snow and ice removal operation has missed and for any condition resulting from removal operations that creates a hazard on the airside. The inspector must report such accumulations or conditions as a deficiency requiring corrective action. At certificated airports, the inspector must ensure the operator issued NOTAMs for snow, ice, slush, or water on the movement area or loading ramps and parking areas as specified under § 139.339.

7.1.8 §§ 139.315, .317, .319 Aircraft Rescue and Fire Fighting.

Sections 139.315, .317, and .319 address Index Determination, Equipment and Agents, and Operational Requirements. During the inspection of ARFF capabilities, the inspector:

1. Checks the status of ARFF response, which includes the availability of equipment, fire fighters, and extinguishing agent (s) to meet Index if applicable, and operational readiness. At certificated airports, the inspector ensures that ARFF capabilities comply with the index and provisions of the approved ACM. The inspector must report deficiencies for corrective action.
2. Ensures alarm and emergency notification communication systems are operable and verifies that it makes all of the appropriate notifications.
3. Checks for construction or maintenance activity on the movement area, which could require ARFF or affect response routes, and ensures that notification has been given to, and received by, the appropriate ARFF official.
4. Reports and monitors ARFF vehicle(s), equipment, extinguishing agent(s), and any ARFF personnel capability that is not available or inoperative as well as any change to the airport's critical aircraft that may require a change to ARFF Index. At certificated airports, the airport operator must notify the FAA Regional Airports Division if an ARFF vehicle required for Index is inoperative and cannot be replaced immediately, as specified in §139.319(g). The airport operator must also issue a NOTAM about the unavailability of any rescue and fire fighting capability, as specified under §139.339.

7.1.9 §139.321, Handling and storing of hazardous substances and materials.

This section requires the certificate holder or airport operator who acts a cargo handling agent to establish and maintain procedures for the protection of persons and property on the airport during the handling and storing of any material regulated by the Hazardous Materials Regulations (49 CFR 171through 180). The daily inspection of aircraft fueling operations, if certified, must focus on the requirements of §139.321 as well as the local fire code. This includes fuel storage areas and facilities, mobile fuelers, fuel hydrants, fueling cabinets, load racks, self-fueling and requirements for DPF equipped fuel service vehicles and the procedures and practices of fueling personnel. The inspection must also include security, fire protection, general housekeeping, and any other fuel dispensing facilities and procedures. The certificate holder must schedule the more detailed fueling operation inspection on a quarterly basis (see Quarterly Fueling Operations under Periodic Condition Inspection). The National Fire Protection Association publishes the document cited in AC 150/5230-4 (NFPA 407), which contains information about fueling procedures and practices at fuel storage facilities, fuel dispensing, and bonding.

7.1.9.1 During the daily inspection of aircraft fueling operations, the inspector:

1. Determines that fueling personnel are performing fueling operations in a safe and secure manner, in accordance with NFPA 407 and the

local fire code including ramp operations and refilling operations at the fuel storage facility.

2. Checks to ensure that the appropriate signs for the fuel farm are installed, that Emergency Shut-Off placards are installed at both the fuel farm and on mobile fuelers and any other location where required by NFPA 407 and the ACM.
3. Checks to ensure that the fuel storage facility is properly protected, that access is secured when not occupied by an authorized user.
4. Reports and monitors any unsafe fueling practice(s) and violation(s) of part 139, the ACM, and the local fire code. At certificated airports, the inspector must document and report non-compliance items.
5. Refers to NFPA 407 for a complete understanding and application of the standards and requirements for fueling operations and the handling and storing of hazardous materials and substances.

7.1.10 §139.323, Traffic and wind direction indicators.

The inspection of NAVAIDs concentrates on the visual navigational aids owned by the airport operator. However, the inspector must also observe the condition of any navigational aids owned or operated by others, including those owned by the FAA, and report any observed problems immediately to the NAVAID owner. During the inspection of NAVAIDs, the inspector:

1. Determines that a segmented circle, if installed, should be clear of obstructing vegetation that could impair the visibility of the circle elements.
2. Determines that the airport rotating beacon is visible and working properly.
3. Checks any wind cones to ensure they are situated correctly, swing freely, do not have faded or frayed cone fabric, and, if lighted, that all lights are operating.
4. Determines whether the Runway End Lights (RENLs, formerly known as Runway End Identifier Lights) are flashing in proper sequence and mounted on frangible couplings.
5. Checks Visual Glide Slope Indicators (VASIs, PLASIs, or PAPIs) to ensure that the lights are working and mounted on frangible couplings.
6. Determines that the Approach Lighting Systems (ALS) are functioning properly.
7. Checks all installations for proper alignment.
8. Reports any NAVAID that is malfunctioning, inoperable or misaligned, damaged, or missing, to the owner or entity responsible for maintenance.
9. Refers to the appropriate ACs on airport NAVAIDS and their maintenance.

7.1.11 §139.325, Emergency Plan.

Operations personnel must be familiar with activities for which they are responsible in the Airport Emergency Plan, e.g., communications, gate access, coordination

procedures, and their role after an event on the airport [§139.325 (g)(3)(4)]. Inspection of facilities involved in the Emergency Plan, e.g., gates and access points for mutual aid, are integral elements of the daily checklist.

7.1.12 §139.331, Obstructions.

7.1.12.1 The operations personnel must perform a visual check of obstructions shown on the airport diagram or map and determine that they are properly marked and lighted. If an object is found and thought to create an obstruction, the inspector marks its approximate position on the airport diagram or map and reports this to the airport operator so that its status may be determined or if proper notification to the FAA, such as is required through part 77 or Airport Layout Plan review, has been provided.

7.1.12.2 During the inspection of obstructions, the inspector must also determine if vegetation or trees have grown to a height that necessitates additional further action. The inspection must also include, as appropriate:

1. A check on the airport for any construction equipment that may be penetrating protected airspace for flight operations. These obstructions can include piles of material in safety areas, cranes, heavy equipment, and pick-up trucks. If the construction safety plan allows materials and equipment in the safety areas, the inspector must check to ensure that there is no obstruction or derogation of navigation signals or negative effect on aircraft landing and takeoff operations.
2. A check off-airport for construction in the vicinity that could impact operations at the airport (e.g., cranes, radio towers). The inspector monitors off-airport construction and includes a comment on the checklist to alert others to be aware of potential penetrations of the airspace around the airport; this is coordinated with the ATCT, if appropriate.
3. Reporting and monitoring of any obstruction light that is missing, inoperative, or damaged and of any object that appears to be an obstruction and is not properly marked or lighted to the entity responsible for maintenance.
4. Reference to the ACs appropriate to obstructions and the methods for marking and lighting them and addressing them as potential hazards.

7.1.13 §139.333, Protection of NAVAIDs.

This section requires the certificate holder to ensure that the operation of an electronic or visual NAVAID and air traffic control facilities on the airport are not compromised. This requirement includes the protection of NAVAIDs from vandalism and theft, and if the NAVAIDS are owned by an entity other than the certificate holder, assistance in

protecting them. The inspector must check NAVAIDs to confirm there is no derogation of signal and no impediment to a visual aid.

7.1.14 §139.335, Public protection.

7.1.14.1 During the inspection, the inspector checks gates, fencing, locks, and other safeguards that prevent inadvertent entry by unauthorized persons and vehicles onto airport property, especially onto movement area. In addition, protection from jet blast by the use of blast fencing requires inspection to ensure that the fencing is in place and is intact. The inspector reports and monitors any damaged or missing safeguard.

7.1.14.2 In accordance with the airport's security plan, the inspector must report any unauthorized persons or vehicles in the movement area. Airports regulated by the Transportation Security Administration may have additional requirements for reporting and responding to unauthorized persons and vehicles or suspicious activity.

7.1.15 §139.337, Wildlife hazard management.

7.1.15.1 Because of damage to aircraft and the potential loss of life associated with wildlife strikes, operations personnel must be vigilant in checking for evidence of insect, bird, and animal activity on the airport. During inspections of runways and taxiways and their associated safety areas, the inspector must identify and locate on the airport diagram or map any activity that indicates the presence of wildlife. If the inspector observes wildlife of a size, or in numbers, capable of causing an event described in §139.337 (b)(1-3), then the inspector must inform the airport operator and document evidence of wildlife activity, e.g., loafing, burrowing, nesting, perching, feeding, or using the airport as a throughway or flyway. This evidence should be documented in a wildlife log; in accordance with federal, state and local wildlife permit requirements as described in a Wildlife Hazard Management Plan. The inspector must also be aware of the proximity of wildlife attractants, such as landfills, parks, golf courses, construction, ponds and/or other water sources, etc., as potential sources of wildlife visits to the airport.

7.1.15.2 Evidence of wildlife activity found during the daily self-inspection must be properly documented and also reported to the appropriate authority on the airport, e.g., the wildlife biologist. All dead wildlife found and all wildlife aircraft strikes must be reported to the Regional Office Airports Division and on the FAA Form 5200-7, *Bird/Other Wildlife Strike Report.* This form may be obtained from the FAA website, http://www.faa.gov. Additionally, the inspector must check fencing and gates for wildlife accessibility to the airport and ensure that wildlife control equipment is available and operational.

7.1.16 §139.339, Airport condition reporting.

During periods of time when a condition on the airport requires notification, the inspector must monitor for changes that will require action on the part of the airport certificate holder (e.g., that snow plowing operations are being conducted in accordance with the SICP). Each certificate holder must prepare and keep, for at least 12 consecutive calendar months, a record of each dissemination of airport condition to air carriers (§139.339 (d)).

7.1.17 §139.341, Construction and other unserviceable areas.

Operations personnel must be familiar with the construction safety procedures and guidance provided in AC 150/5370-2, *Operational Safety on Airports During Construction*, current edition. At certificated airports, the inspector must also be familiar with the construction safety procedures contained in the ACM and in the specific approved Construction Safety Phasing Plan (CSPP). During the construction inspection, the inspector must:

1. Check all construction adjacent to movement areas to ensure these areas are identified with conspicuous marking and lighting.
2. Determine that stockpiled material and construction materials are properly stored and not left in safety areas or movement area unless properly secured. Any material remaining on the airside must be secure from being moved by wind, jet blast, or prop wash.
3. Determine that construction equipment (such as bulldozers, cranes, etc.) are marked and lighted and parked clear of the safety areas.
4. Ensure construction barricades are properly positioned to define the limits of construction and hazardous areas and, check to ensure lights are working properly and are positioned correctly.
5. Check to ensure that debris and foreign objects are continuously being picked up around construction areas.
6. Check for open trenches in the safety areas or adjacent to movement areas and that barricades, as required, are in place to prevent mishaps.
7. Check operation of lighting in areas adjacent to construction before the construction crews depart for the day. In particular, ensure that mandatory instruction signs remain lighted with the associated runway lights.
8. Check NOTAMs daily during construction projects to ensure they accurately reflect the conditions on the airport.
9. Verify that closed taxiways or runways are properly marked and lighted to include lighted Xs.
10. Report and monitor any dangerous condition created by construction activity, including damage to signs, lights, markings, and NAVAIDs, or equipment and supplies left in movement areas and safety areas.

7.2 **Continuous Surveillance Inspection.**

Continuous surveillance inspections are conducted any time inspection personnel are in an area designated as subject to continuous inspection in the ACM. This inspection also monitors conditions from previous inspections. It consists of a general observation of activities for compliance with part 139 and airport rules and regulations, procedures, etc., as well as to find deficiencies in the physical facilities, which are readily apparent. Appendix B contains a sample Continuous Inspection Checklist. Continuous surveillance of airport physical facilities and activities can involve any of the activities of the daily inspection but must cover at least the areas described below.

7.2.1 §139.329, Pedestrians and ground vehicles.

The inspector:

1. Determines if vehicle drivers are following the airport regulations for procedures on the airside and monitors their communications. This includes the operations of all ground vehicles, maintenance vehicles, mowing equipment, and other vehicles and equipment that may be in the safety areas. Attention to these activities is critical during construction, winter operations, special events, and unusual conditions.
2. Reports and monitors any vehicle operator who is not complying with part 139 and the airport rules and regulations.
3. Reports any ground vehicle incident or accident observed and any ground vehicle signs and markings that are damaged, missing, or obscured.

7.2.2 §139.321, Handling and storing of hazardous substances and materials.

The inspector must:

1. Observe that proper bonding is being used, deadman controls are not blocked, no smoking prohibitions are in effect (this can include a random check of vehicles to ensure that smoking trays and lighters have been removed), and aircraft are not being fueled inside hangars.
2. Check for proper parking of mobile fuelers to ensure these vehicles are at least 10 feet apart and 50 feet from buildings.
3. Check for fuel leaks or spills in the fuel storage area, in hydrants, and around mobile fuelers.
4. Determine that the fuel farm is secure and free of flammable materials, including litter and vegetation.
5. Report and monitors previously reported unsafe fueling conditions/fueling operations discussed above and other violations of the local fire code and the airport's specific fuel fire safety procedures.

7.2.3 §139.313, Snow and Ice Control.

During the continuous surveillance inspection of snow and ice removal operations, the inspector must:

1. Check snow and ice-covered pavements and reports and monitors all surfaces where snow and ice may affect the safety of aircraft operations.
2. Monitor snow and ice removal NOTAMs to ensure they remain current and issues timely corrections, as necessary. If the airport uses other means to notify tenants of snow and ice removal operations, e.g., faxed or electronic messages, the inspector monitors this information for accuracy.

7.2.4 §139.341 Identifying, marking, and lighting construction and other unserviceable areas.

Operations personnel must monitor construction projects continuously to ensure airport safety, since many construction projects include workers who are not familiar with aviation operations. The inspector must:

1. Check construction projects to ensure that the contractor is following the construction safety plan.
2. Report any of the following conditions:
3. Unauthorized use of runways, taxiways, and aprons by construction personnel and equipment.
4. Conditions that can result in runway incursions. This includes ensuring that construction areas are properly barricaded and that cones, markings, lights, etc., are properly positioned to provide warnings to pilots and vehicle operators.
5. Construction equipment that is being operated in the ILS/MLS critical area(s), unless coordinated with the ATCT.
6. Open, unlocked, and/or unattended perimeter gates; construction vehicles and personnel not following access and escort procedures.
7. Construction vehicles not properly marked or missing appropriate flags and/or beacons.
8. Foreign object debris on haul roads adjacent to movement areas, which can be tracked onto taxiways, aprons, and ramp areas.
9. Confusing or missing signs, marking, or lighting that could potentially confuse or mislead pilots or vehicle operators.

7.2.5 §139.335, Public Protection.

Operations personnel must follow instructions regarding gate closures when leaving and entering the airside, to prevent illegal “piggybacking.” They must also be more aware of activities during special airport events and construction projects. Safeguards to protect the public and to protect the airport require extra vigilance, because they are imposed at a level above the normal routine to accommodate an activity that is not part of the airport’s normal routine. The inspector must:

1. Check for unauthorized personnel, vehicles, and animals, particularly in areas reserved for aircraft passengers, when the general public is present or has access to the air carrier ramp and other portions of the movement area, e.g., remote aircraft parking locations.

2. Check for inoperable or blocked gates, particularly those that would impede access by aircraft rescue and firefighting equipment or mutual aid.
3. Check for open or unlocked gates and missing or damaged signs posted to prevent unauthorized access to the airfield.
4. Check for damaged or missing jet blast fences.

7.2.6 §139.337, Wildlife Hazard Management.

The continuous inspection is especially important with respect to the identification of wildlife hazards, and the inspector must check for and report the following conditions:

1. Any animal, bird, or condition on or adjacent to the runways, taxiways, aprons, and ramps, which serves as evidence of wildlife activity. The inspector must report any wildlife activity to the appropriate office (e.g., wildlife biologist, airport operator) for follow-up action to determine if there is a potential wildlife hazard problem.
2. Potential hazards created by existing or proposed landfills, golf courses, parks, or natural conditions and noted on the wildlife log.
3. Wildlife strikes and carcasses found on the airfield. The inspector reports these on FAA Form 5200-7, Bird/Other Wildlife Strike Report, which is available on the FAA website at www.faa.gov.

7.2.7 §139.305, .307, 309, Foreign Object Debris (FOD).

The inspector must continuously check for and remove any debris in movement areas, non-movement areas, aircraft parking areas, and loading ramps.

7.3 Periodic Condition Inspection.

Periodic condition inspections consist of specific checks of physical facilities on a regularly scheduled basis. Usually these inspections occur on a weekly or quarterly basis. Checks can require use of equipment (e.g., Walker Bar to measure VASI glide slope angles, a transit to survey approach slopes, or continuous friction measurement equipment). It can also involve checking specific features of physical facilities. Periodic inspection of airport physical facilities and activities must include at least the areas described in this section and those included in the ACM. A basic checklist is included in Appendix B.

7.3.1 §139.305, Pavement areas.

The inspector must check pavement surfaces, including grooved pavement that facilitates drainage, for rubber buildup, polishing, loose aggregate, or other items that can affect friction. The inspector must report rubber build-up that must be removed in the interest of maintaining the pavement integrity of the touchdown zone area.

7.3.2 §139.31,1 Marking, signs and lighting.

The inspector must check marking for conspicuity during daylight and hours of darkness. Marking with glass beads must be check for effectiveness and for age, when

beads can become loose and act as debris and a hazard to aircraft engines. The inspector notes pavement marking to ensure they are correct and visible and that marking on concrete or faded asphalt is outlined with a black border when conspicuity is at issue.

7.3.2.1 The inspector must check signs for accuracy, position, and to determine the integrity of the base and the frangible mount. The inspector also checks sign faces for peeling, color fading, cracks, and other deterioration. The inspector reports any deficiency for correction.

7.3.2.2 The inspector must check runway and taxiway lights for intensity and color and the integrity of the cans, the fixtures, and associated bases to ensure that electrical connections are secure and not compromised either by winter operations of mowing activities.

7.3.3 §139.321, Three month Fueling inspections.

Operations personnel at certificated airports are required to ensure that fire safety standards, contained in NFPA 407 are being observed. These inspections should be conducted every three consecutive months. During the inspections of the fueling facilities, the inspector also ensures that the local fire code is being observed as well. The fire safety standards for fueling operations must be listed in the ACM, and the three month inspections must confirm that fueling operations comply with the appropriate section of the ACM. Sample inspection checklists for fuel storage areas and mobile fuelers are included in Appendix B. Certificated airports must maintain records of the three month inspections for 12 consecutive calendar months. At fuel storage areas ("fuel farms") and loading/unloading stations, the inspector must:

1. Check fuel storage areas for adequate fencing and security to prevent unauthorized access or tampering.
2. Check for "No Smoking" placards that are clearly visible from all sides.
3. Check fuel storage areas for materials such as trash or vegetation that could contribute to the spread of fire and for equipment malfunctions, leaks, or activities that could be ignition sources.
4. Check fueling equipment to ensure that it is in good operating condition and free of fuel leaks.
5. Check piping for reasonable protection from damage by vehicles, if piping is above ground.
6. Check fuel storage areas for at least two accessible and serviceable fire extinguishers.
7. Check hoses to ensure correct procedures are being used and that abrasion of the hoses is avoided. Where the open hose discharge capacity of the equipment is more than 200 gallons per minute, at least one wheeled extinguisher with at least 125 lbs. of agent is also required.
8. Check for explosion-proof equipment, switches, and wiring that is reasonably protected from heat, abrasion, or impact, which could cause an ignition source.

9. Check for piping, filters, tanks, and pumps being electrically bonded together and interconnected to an adequate grounding rod.
10. Check for a serviceable bond/ground wire with clip at each loading/unloading facility for grounding tankers and mobile fuelers.
11. Check loading stations for deadman control features.
12. Ensure that there is boldly marked emergency cutoff placarding and that the emergency shutoff is capable of stopping all fuel flow with one physical movement. The emergency cutoff must be located outside the probable fuel spill area near the route that normally is used to leave the spill area or to reach the fire extinguishers.
13. Check for clearly visible coding and/or labeling of fuel products.

7.3.4 Mobile fuelers.

During the three month inspection, the inspector inspects all mobile fuelers or a random sample of mobile fuelers at large facilities each quarter. The inspector must track any samples used so that all mobile fuelers in a fleet are inspected in the course of a year. The inspector must:

1. Ensure they meet fire safety standards and ensure that they are in good operating condition and free of fuel leaks.
2. Check mobile fuelers for parking at least 50 feet from a building and at least 10 feet from each other. At airports with a mobile fueler maintenance building, the inspector must ensure it is compliance with directives issued by the local fire marshal.
3. Check for flammability decals on all sides (Lettering should be at least 3 inches high), check for hazardous materials placards on all sides (Hazmat number for Jet A mobile fuelers is #1863 and for 100LL mobile fuelers #1203), check the cab for a “No Smoking” sign, and confirm that ash trays, cigarette lighters, and any other smoking equipment have been removed.
4. Check for two fire extinguishers, accessible from each side of the mobile fueler. Fire extinguishers must be charged, sealed, and tagged from the last fire extinguisher inspection.
5. Check dry chemical extinguishers to ensure they are only B-C rated. (ABC rated multi-purpose dry chemical extinguishers are not to be used on mobile fuelers, as they are highly corrosive to aircraft and can cause significant damage to aircraft engines.)
6. Check emergency fuel cutoff valves to ensure markings are large and legible and the valves are operable. Emergency fuel cutoff must be accessible from both sides.
7. Check electrical equipment, switches, wiring, and tail light lens covers for explosion proof construction and reasonable protection from heat, abrasion, or impact, which could be an ignition source. Crazed lens covers indicate age and deterioration and must be replaced.

8. Check for serviceable bonding wires and clamps.
9. Check nozzles for deadman control feature.
10. Check the vehicle exhaust system for exhaust leaks and for adequate shielding if it extends under the fuel tank portion of the vehicle.
11. As appropriate, check hydrant fueling stations for product leaks and proper maintenance.

7.3.5 Hydrant Fuelers.

As appropriate, the inspector must check hydrant fueling stations for product leaks and proper maintenance.

7.4 Traffic and Wind Direction Indicators and the Protection of NAVAIDs, §139.323 and §139.333 Navigational Aids (NAVAIDs).

The inspector must check for alignment and monitor for calibration NAVAIDs on and owned by the airport, where applicable. For equipment not owned by the airport, the inspector must contact the owner and report any malfunction or problem.

7.4.1 § 139.323, Navigational Aids (NAVAIDs).

The inspector must check the aiming of Runway End Lights (RENLs, formerly known as Runway End Identifier Lights) and Visual Glide Slope Indicators owned by the airport.

7.4.2 § 139.333, Navigational Aids (NAVAIDs).

7.4.2.1 **Lighting.**

The inspector must check lighting and lighting controls and:

1. Determine whether power generator and circuit resistance tests are being conducted, as scheduled.
2. Ensure lights with adjustable optical systems are checked for proper aiming, as scheduled.

7.5 § 139.331, Obstructions.

7.5.1 The inspector must check to ensure there is adequate protection from overhead power lines adjacent to aircraft parking areas.

7.5.2 The inspector must continually monitor trees, vegetation, and structures near the airport that could affect approach surfaces to the runways, encroach on safety areas, or penetrate part 77 surfaces.

7.6 **§ 139.317 and § 139.319 Aircraft Rescue and Fire Fighting.**

ARFF, while a special discipline in its own right, must be inspected to ensure for readiness in terms of the airport's Index and requirements under the regulation. The inspector must:

1. Periodically determine if ARFF personnel and equipment are capable of meeting response times, as required by part 139 and in accordance with the provision of the ACM.
2. Ensure that recurrent training and hot-fire drills are being conducted as required by part 139.319(i)(2) and as described in the ACM. The documentation of training must meet the requirements of § 319.301(b)(2).
3. Check to ensure that equipment, equipment changes, and additions of equipment are included in the ACM as required by part 139.

7.7 **Special Condition Inspections.**

Special condition inspections occur after a complaint is made or an unusual condition, weather, or other event occurs. See chapter 4 above in this AC. A special inspection must be conducted after an accident or incident and must be conducted prior to the end of construction activity, so that the responsible construction personnel can take corrective action can be taken by. Depending on circumstances, special condition inspections may include the inspection of any of the specific facilities or activities under the other three inspection types. A special condition inspection of airport physical facilities and activities must include at least the areas described in this section, which are also included in Appendix B.

7.7.1 §139.305, Pavement Areas.

After a rain or thunderstorm, the inspector checks the pavement areas for ponding and edge damming.

7.7.2 §139.311, Markings and Signs.

The inspector must:

1. Determine if markings are visible at night especially when the pavement is wet following heavy rain.
2. After construction or maintenance operations, ensure that new pavement markings are correct (e.g., precision vs. non-precision runway marking).

7.7.3 §139.309, Safety Areas.

The inspector must:

1. Check the storm sewer system, verify that inlets are not clogged and drainage channels are free of debris, and mark the location on the airport diagram or map of any standing water. This includes checking that all inlet covers are in place and sewer covers are at grade level.

2. Check construction and maintenance activities to ensure that no hazardous conditions have been created (equipment left in safety areas, unacceptable pavement lips created by ground alteration work, ruts from construction equipment or from mowing equipment, etc.), before reopening a runway or taxiway when the construction or maintenance activity has been performed in the adjacent safety area(s).
3. When an aircraft has left the pavement and entered a safety area, check to ensure that no ruts or holes have been made by the aircraft tires or by personnel and equipment during the recovery operation and if present, ensure that corrections are made as soon as practicable.
4. Inspect engineered materials arresting system (EMAS), if installed, for damage and for deterioration.
5. Physically drive or walk the safety areas to check for deficiencies.

7.7.4 §139.313, Snow and Ice.

Several special inspections may be needed during a winter storm until the airport is back to a normal operation. The inspector must:

1. After snow and ice removal operations, check to ensure that no foreign objects remain on the areas where snow removal operations have occurred. If a friction measurement device is used, issue the appropriate numbers obtained from the equipment. Operations personnel are not authorized to correlate friction measurement numbers with braking action reports. If a friction measurement device is not available, issue braking action reports to Air Traffic.
2. Conduct a special sign inspection after snow and ice storms for signs that are obscured by snow or ice or that may have been damaged by plows or by snow thrown by blowers.

7.8 **Construction.**

7.8.1 §139.341, Construction.

The inspector must:

1. Ensure that construction areas are barricaded and lighted properly.
2. Check construction equipment to ensure that they are parked within the pre-arranged areas.
3. Conduct night inspections to ensure barricades, warning lighting, and reflectors are adequate to keep aircraft away from the construction area.
4. Check the location of construction material and stockpiles to ensure that they are outside of safety areas and do not block any signs.
5. Check any movement areas adjacent to construction areas or movement areas traversed by construction vehicles to ensure there is no FOD present.

6. Check movement areas around construction sites for potentially confusing marking, lighting, and signs that could cause pilot confusion or result in a runway incursion.

7.8.2 §139.339, Condition Reporting.

The inspector must ensure that notification of airport conditions is disseminated to airport users.

7.8.2.1 The inspector ensures that appropriate NOTAMs are issued for unsafe airport conditions that are identified during an inspection but cannot be corrected immediately. After issuing NOTAMs, follow-up is required to ensure that the NOTAMs have been processed and published.

7.8.2.2 The inspector must check that NOTAMs issued are also canceled at the appropriate time.

APPENDIX A. REFERENCE AND RELATED READING MATERIAL

A.1 This AC contains safety practices for all airports. The current versions of the documents listed below provide further detail.

A.2 **Related Reading Material.**

- 14 CFR part 139, Certification of Airports, February 10, 2004 (As amended May 3, 2004 and June 4, 2004)
- 14 CFR part 77, Objects Affecting Navigable Airspace
- NFPA 407, Standards for Aircraft Fuel Servicing

A.3 **FAA Advisory Circulars.**

FAA ACs are available on the FAA website at http://www.faa.gov/regulations_policies/advisory_circulars/.

- AC 150/5200-33, *Hazardous Wildlife Attractants on or Near Airports*
- AC 150/5210-22, *Airport Certification Manual (ACM).* This reference is pertinent for certificated airports only.
- AC 150/5370-10, *Standards for Specifying Construction of Airports*

- **Airport Emergencies**
  - AC 150/5200-31, *Airport Emergency Plan*
  - AC 150/5210-13, *Airport Water Rescue Plans, and Equipment*
- **Aircraft Rescue and Fire Fighting (ARFF)**
  - AC 150/5200-12, *First Responders' Responsibility for Protecting Evidence at the Scene of an Aircraft Accident/Incident*
  - AC 150/5210-6, *Aircraft Fire and Rescue Facilities and Extinguishing Agents*
  - AC 150/5210-7, *Aircraft Rescue and Firefighting Communications*
  - AC 150/5210-13, *Airport Water Rescue Plans and Equipment*
  - AC 150/5210 14, *Aircraft Rescue Fire Fighting Equipment, Tools and Clothing*
  - AC 150/5210 15, *Aircraft Rescue and Firefighting Station Building Design*
  - AC 150/5210-17, *Programs for Training of Aircraft Rescue and Firefighting Personnel*
  - AC 150/5210-19, *Driver's Enhanced Vision System (DEVS)*
  - AC 150/5210-23, *ARFF Vehicle and High Reach Extendable Turret (HRET) Operation Training and Qualifications*
  - AC 150/5220-4, *Water Supply Systems for Aircraft Fire and Rescue Protection*

- AC 150/5220-10, *Guide Specification for Aircraft Rescue and Fire Fighting Vehicles*
- AC 150/5220-17, *Design Standards for an Aircraft Rescue and Fire Fighting (ARFF) Training Facility*

- **Ground Vehicles**
  - AC 90-67, *Light Signals from the Control Tower for Ground Vehicles, Equipment, and Personnel*
  - AC 150/5210-5, *Painting, Marking and Lighting of Vehicles Used on an Airport*
  - AC 150/5210-20, *Ground Vehicle Operations on Airports*
- **Hazardous Materials**
  - AC 20-43, *Aircraft Fuel Control*
  - AC 150/5230-4, *Aircraft Fuel Storage, Handling, and Dispensing on Airports*
- **Marking, Signs, and Lighting**
  - AC 150/5210-5, *Painting, Marking, and Lighting of Vehicles Used on an Airport*
  - AC 150/5340-1, *Standards for Airport Markings*
  - AC 150-5340-5, *Segmented Circle Airport Marker System*
  - AC 150/5340-18, *Standards for Airport Sign Systems*
  - AC 150/5340-26, *Maintenance of Airport Visual Aid Facilities*
  - AC 150/5345-28, *Precision Approach Path Indicator (PAPI) Systems*
  - AC 150/5345-43, *Specification for Obstruction Lighting Equipment*
  - AC 150/5345-44, *Specification for Taxiway and Runway Signs*

Note: ACs in the 150/5345 series provide additional detailed information about lighting.

- **Paved Areas**
  - AC 150/5210-24, *Airport Foreign Object Debris FOD Management*
  - AC 150/5320-6, *Airport Pavement Design and Evaluation*
  - AC 150/5380-6, *Guidelines and Procedures for Maintenance of Airport Pavements*
- **Safety Areas**
  - AC 150/5220-22, *Engineered Material Arresting Systems (EMAS) for Aircraft Overruns*
  - AC 150/5300-13, *Airport Design*
  - AC 150/5370-2, *Operational Safety on Airports During Construction*

- **Self-Inspection Program**
  - AC 150/5210-18, *Systems for Interactive Training of Airport Personnel*
- **Snow and Ice Control**
  - AC 150/5200-28, *Notice to Air Missions (NOTAMs) for Airport Operators*
  - AC 150/5200-30, *Airport Winter Safety and Operations*
  - AC 150/5220-20, *Airport Snow and Ice Control Equipment*
- **Traffic and Wind Direction Indicators**
  - AC 150/5340-5, *Segmented Circle Airport Marker System*
  - AC 150/5345-27, *Specification for Wind Cone Assemblies*

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APPENDIX B. SUGGESTED AIRPORT SAFETY SELF-INSPECTION CHECKLISTS

B.1 An airport safety self-inspection checklist should cover the condition of the facilities and equipment on the airport for it to be a part of a good safety inspection program. The checklist should be useful for the airport and its operation. An airfield map or airport diagram of the airport is highly recommended on the back of the checklist; it can help readily identify the location of problems found during the daily inspection.

B.2 The suggested checklists consist of a listing of facilities and equipment and a series of conditions that are inspected.

B.3 The blank squares indicate the conditions the inspector will evaluate for each facility. A check (√) in one of these squares indicates the condition of the facility and equipment is satisfactory. On the other hand, an "x" in one of these squares indicates the condition of the facility and equipment is unsatisfactory.

B.4 When a condition is unsatisfactory, the inspector:

1. Enters an "x" for each applicable square;
2. Provides a note in the Remark/Action Taken section;
3. The location of the condition should be identified in the airport map or diagram; and
4. Initiates appropriate follow-up action, including NOTAMs. The inspector should document corrective action on either the self-inspection checklists or on a separate work order system.

Note: These checklists are ideal for electronic conversion to PDAs and laptop computers and are available online as appendices in this AC (http://www.faa.gov/airports/resources/advisory_circulars/).

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AIRPORT DAILY SAFETY SELF-INSPECTION CHECKLIST

DATE: _____ **DAY**: _____ √ Satisfactory
X Unsatisfactory

Day Inspector/Time: _____ **Night Inspector/Time:** _____

FACILITIES	CONDITIONS	D	N	REMARKS	RESOLVED BY (Date/Initials)
§139.305 Paved areas	Pavement lips over 3"				
	Hole – 5" diam. 3" deep				
	Cracks/spalling/heaves				
	FOD: gravel/debris/sand				
	Rubber deposits				
	Ponding/edge dams				
	Drainage				
	Vegetative growth				
	Surface variations				
§139.307 Unpaved areas	Slope from edge				
	Full strength compaction				
	Holes, depressions				
	FOD, loose aggregate				
§139.309 Safety areas	Ruts/humps/erosion				
	Drainage/construction				
	Support equipment/aircraft				
	Frangible bases, grading				
	Unauthorized objects				
	Wildlife damage/evidence				
	Construction equipment/material				
§139.311 Marking	Clearly visible/standard				
	Runway markings Correct? Color?				
	Taxiway markings Correct? Color?				
	Holding position markings				
	Glass beads				
	Movement/non-movement area separation markings				

FACILITIES	CONDITIONS	D	N	REMARKS	RESOLVED BY (Date/Initials)
§139.311 Signs	Standard/meet sign plan location/position				
	Obscured/operable				
	Damaged/retroreflective				
	Faded, color				
	Tethers intact				
§139.311 Lighting	Obscured/dirty/operable				
	Consistent intensity				
	Damaged/missing				
	Faulty aim/adjustment				
	Runway lighting x				
	Precision runway lighting				
	Taxiway lighting				
	Pilot control lighting				
	Appropriate shielding				
139.313 Snow & ice control	Surface conditions				
	Snowbank clearances				
	Lights & signs obscured				
	NAVAIDs free and clear				
	Emergency ARFF access				
	Braking conditions				
§139.315; .317; .319 Aircraft rescue and fire fighting	Equipment/crew availability				
	Communications/alarms				
	Response routes affected				
§139.321 Handling and storing of hazardous substances and materials (Fueling Operations)	Fencing/gates/signs				
	Fuel marking/labeling				
	Fire extinguishers				
	Frayed wires				
	Fuel leaks/vegetation				
	Abraded hoses				
	Condition of mobile fuelers				
§139.331 Obstructions	Obstruction lights operable				
	Cranes/trees				
	Vegetation				

FACILITIES	CONDITIONS	D	N	REMARKS	RESOLVED BY (Date/Initials)
§139.333 Protection of NAVAIDs	Rotating beacon operable				
	Wind indicators: Number? Lighted at night?				
	RENLs/VGSI systems				
	Electronic components operational				
§139.335 Public protection	Fencing/gates/signs				
	Jet blast problems				
§139.337 Wildlife hazard management	Wildlife present/location				
	Complying with WHMP				
	Dead birds/other evidence				
§139.341 Identifying, marking, and lighting construction and other unserviceable areas	Barricades/lights				
	Equipment parking				
	Material stockpiles				
	Confusing signs/markings				
	Index capability				

Comments/Remarks: _____

Airfield map on reverse

AIRPORT DAILY SAFETY SELF-INSPECTION CHECKLIST

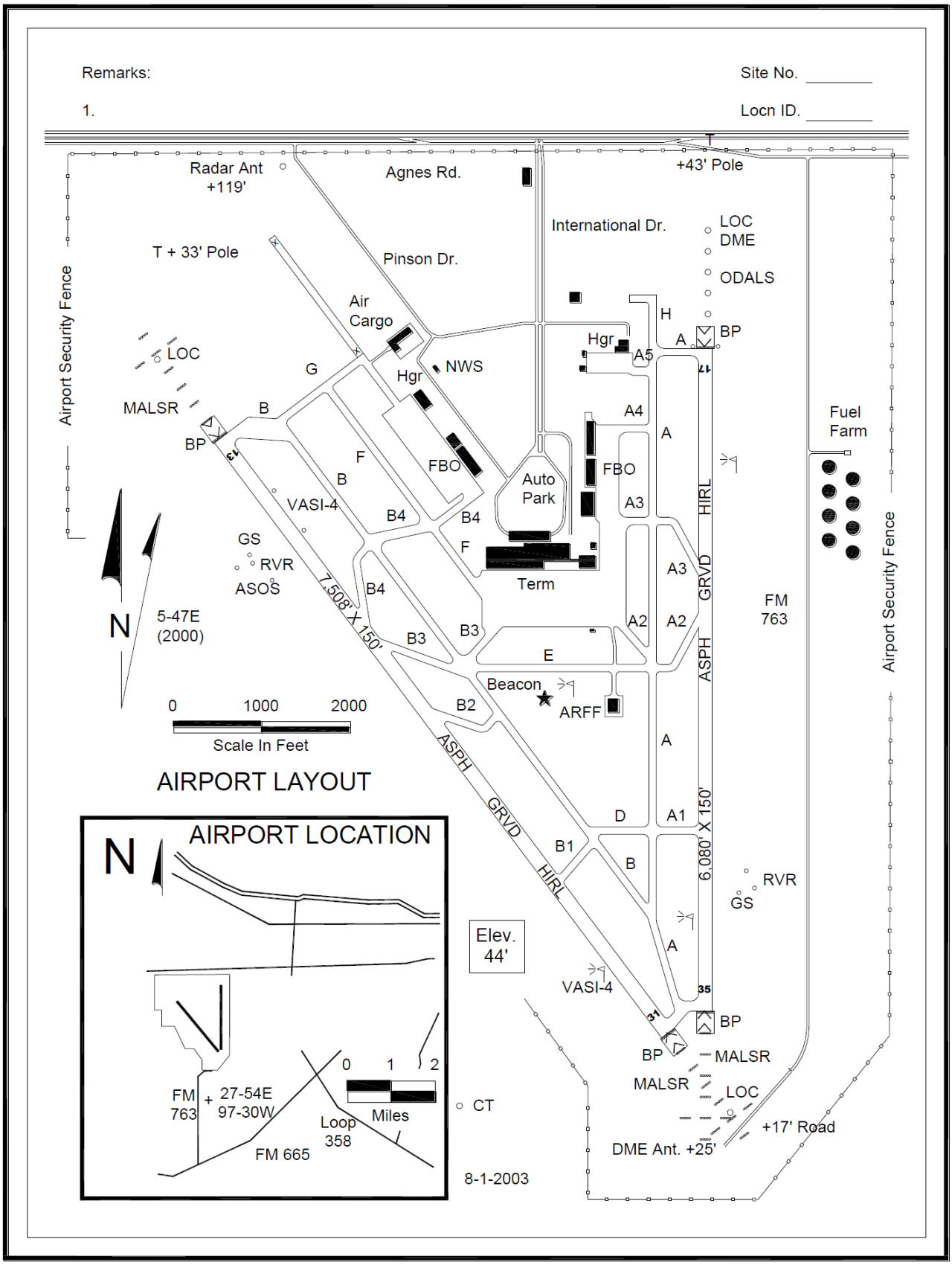
DATE:_____ **DAY**:_____ ✔ Satisfactory ✕ Unsatisfactory

Day Inspector/Time: _____ **Night Inspector/Time:** _____

FACILITIES	CONDITIONS	D	N	REMARKS	RESOLVED BY (Initial & date)
Pavement Areas	Pavement lip over 3"				
	Hole - 5" diam. 3" deep				
	Cracks/spalling/heaves				
	FOD: gravel/debris/sand				
	Ponding/edge dams				
Safety Areas	Ruts/humps/erosion				
	Drainage/construction				
	Support equipment/aircraft				
	Frangible bases				
	Unauthorized objects				
Markings	Clearly visible/standard				
	Runway markings				
	Taxiway markings				
	Holding position markings				
	SPHPS/ETCL markings				
	Glass beads				
Signs	Standard/IAW Sign Plan				
	Obscured/inoperable				
	Damaged/retroreflective				
Lighting	Obscured/dirty/inoperable				
	Damaged/missing/aiming				
	Lighting systems inoperable				
	IAW FAA standards				
	Pilot Control Lighting				
NAVAIDS	Rotating beacon inoperable				
	Wind indicators				
	VASI/PAPI/REIL systems				
	FAA ILS system/ALS/VGSI				
Obstructions	Obstruction lights operable				
	New cranes not reported				
Snow & Ice	Surface conditions				
	Snowbank clearance				
	Signs obscured				
	NAVAID interference				
	NOTAMs current				
Public Protection	Fencing/gates/signs				
	Jet blast problems				
Wildlife Hazards	Wildlife present/location				
	Complying with WHMP				

Airfield Map/Airport Diagram on Reverse

Sample Airfield Map/Airport Diagram



CONTINUOUS SURVEILLANCE INSPECTION CHECKLIST

DATE: _____ **DAY:** _____ √ **Satisfactory**
TIME: _____ **INSPECTOR:** _____ **X Unsatisfactory**

FACILITIES	CONDITIONS	√	REMARKS/ACTIONS TAKEN
§139.313 Snow & ice control	**Surface conditions**		
	Snow banks		
	NOTAMS		
§139.321 Handling and storage of hazardous substances and materials (Fueling Operations)	**Fire/explosion hazards, spills**		
	Signing/no smoking		
	Fueling equipment:		
	• **hydrants**		
	• **mobile fuelers**		
	• **fuel farm**		
	Use of bonding & deadman		
§139.335 Public protection	**Unauthorized persons**		
	Unauthorized vehicles		
	Gates secure and locked		
§139.337 Wildlife hazard management	**Birds/animals**		
	Evidence (describe)		
§139.341 Identifying, marking, and lighting construction and other unserviceable areas	**Safety plan**		
	Runway incursions		
	Runway & taxiway use		
	FOD		
Miscellaneous: **§139.329 Pedestrians and ground vehicles** **§139.335 Public protection** **§139.305; .307; .311**	**Pedestrians in movement areas**		
	Passenger Load/Unload procedures		
	Debris in movement area/safety area		

Additional Remarks: _____

_____

_____

_____

_____

_____

Airfield map on reverse

PERIODIC CONDITION INSPECTION CHECKLIST

DATE: _____ **DAY: _____** **√ Satisfactory**
TIME: _____ **INSPECTOR: _____** **X Unsatisfactory**

FACILITIES	CONDITIONS	√	REMARKS/ACTIONS TAKEN
§139.305 Paved areas	Rubber deposits – Friction deterioration		
	Pavement Polishing/Rutting		
	Pavement Lips/Turf damming		
§139.311 Marking and signs	Visible/night conspicuity/glass beads		
	Condition of markings - Runways		
	Condition of markings - Taxiways		
§139.311 Lighting	Standby Power Generator Check		
	Circuit Resistance Test		
	Aim/Adjustment of lighting fixtures		
	Condition of lenses – Cleaning needed		
§139.319 Aircraft rescue and fire fighting: Operational requirements	Response Times		
	Live Fire Drills		
	Training		
	ARFF truck maintenance		
§139.321 Handling and storing of hazardous substances and materials (Fueling Operations)	Hydraulic fluid; deicing materials – proper handling		
	Exhaust leaks		
	Fuel storage area		
	Fire extinguishers – Fuel storage area		
	Access secured		
	Hoses – no abraded		
	Fuel labeling		
	Emergency fuel shutoff		
	Mobile fuelers		
	Fire Extinguishers – Fuel trucks		
	Fuel Marking/Labeling		
	Frayed Wiring		
	Abraded hoses		
	Proper Fuel Storage Procedures		
	Fire extinguishers – Apron		
§139.333 Protection of NAVAIDS	RENLs/VGSI Aiming		
	Electronic equipment		
§139.331 Obstructions	Surveyed Trees/Structures		
	Overhead Power Lines		
	Construction cranes		
Additional Remarks:			

Airfield map on reverse

SPECIAL INSPECTION CHECKLIST

DATE:_____ **TIME:** _____ **INSPECTOR:**_____

TYPE INSPECTION: Accident Weather Maintenance Snow Wildlife

REASON FOR INSPECTION: _____

_____

Check Conditions Applicable to the Special Inspection

FACILITIES	CONDITIONS	✓ X	REMARKS	RESOLVED BY (Initial & date)
Pavement Areas	FOD/débris/Ponding			
	Cracks/heaves/blowups			
	Surface conditions			
	Snowbanks/windrows			
Safety Areas	Ruts/surface variations			
	Drainage/construction			
	Débris			
	Unauthorized objects			
Markings	Clearly visible			
	IAW FAA standards			
	Hold Positions			
	Glass beads			
Signs	Obscured/inoperable			
	Damaged/Missing			
	IAW Sign & Marking Plan			
	IAW FAA standards/spec.			
Lighting	Inoperable, damaged, or missing			
	Obscured			
	IAW FAA standards			
	Faulty aim/adjustment			
	Lighting systems operational			
	Pilot Control Lighting			
NAVAIDS	Rotating beacon			
	Wind indicators/Obst lights			
	VASI/PAPI/REIL systems			
	FAA ILS & approach lights			
Wildlife Hazards	Wildlife present/location			
	Complying with WHMP			
Fencing	Damaged/Erosion problem			
NOTAMS	Issued as appropriate/current			

Airfield Map on Reverse

CONSTRUCTION IN PROGRESS INSPECTION CHECKLIST

Airport Name:	Inspection Date:	Construction Project:
Inspector:	Inspection Time:	S=Satisfactory U=Unsatisfactory N/A = Not Applicable Remarks Required

Area: Runway	S	U	N/A	REMARKS
1. **Closed runway** - Yellow X or lighted X properly located and functional				
2. **Temporary displaced threshold** marking/lighting, marking removal is correct				
3. **Partial runway closure** marking/lighting, marking removal is correct				
4. **Runway Distance Remaining signs** relocated or covered in appropriate direction for partial runway closure				
5. **Runway Caution Zone lighting** adjusted for partial runway closure				
6. **Closed Runway Exit** – Lead-off line obliterated for high speed exit and other long term exit closure, Yellow X adjacent to runway, barricades at hold position, runway exit signs covered, taxiway lights off or covered				
7. **Barricades** – At hold position, easily collapsible, orange/white reflective, less than 18" high, 4' spacing or continuously linked, secured, red lights spacing 10' or less				
8. **Runway Object Free Area** – No parked equipment in ROFA and no stockpiled material unless necessary and FAA approved				
9. **Crossing Taxiways for Closed Runway** – Hold signs illuminated for night operations				
10. **No construction activity in RSA** of active runway, unless aircraft restriction in effect for smaller RSA				
11. **Part time runway closure** – RSA meets Part 139 requirements before opening – declared distance				
12. Construction related **NOTAMS** issued and current				

Area: Closed Taxiways	S	U	N/A	REMARKS
1. **Taxiway centerlines obliterated** to closed areas for long term closures				
2. **Barricades** are easily collapsible, have orange/white diagonal reflective stripes and are secured				
• **Barricades** are located outside TSA and are less than 18" high, not counting red lights/flags				
• **Barricade** spacing for aircraft 30 ft – minimum 3 barricades for closed taxiway where Const. not present				
• **Barricade** spacing 4' for vehicles/equipment or continuously linked to exclude pedestrians				
• **Barricade red lights** spacing 10' or less and maintained operable				
3. **Taxiway direction signs** for closed taxiways do not need to be covered as they provide info to pilots				
4. **Outbound runway destination signs** are covered for closed runways where appropriate				
5. **Orange Construction Signs** – IAW standards				
6. **No construction activity in TSA** of active taxiway, unless aircraft restriction in effect for smaller TSA				
7. **Straight Taxiway Open with excavations in TSA** Restrictions in place/no equipment or objects in TSA				
8. **Taxiway object free area** – Clear of equipment if necessary to protect aircraft wing tip clearance				
9. **Taxiway lights** are disconnected or covered in closed areas				
10. **Construction crossing points** on active taxiways are controlled by flag persons, have FOD control				
11. Construction related **NOTAMS** issued and current				

POST CONSTRUCTION INSPECTION CHECKLIST

Airport Name:	Inspection Date:	Construction Project:
Inspector:	Inspection Time:	S=Satisfactory U=Unsatisfactory N/A = Not Applicable Remarks Required

Area:	S	U	N/A	REMARKS
1. **Paved areas swept and free of FOD**				
2. **No pavement lips** over 3"				
3. **Pavement is sufficiently drained** to prevent ponding that could affect directional control of aircraft or obscure markings				
4. **No Potentially hazardous surface variations** present in the safety areas/ graded				
5. **No Objects in the safety areas** except those that are required and are frangibly mounted				
6. **Safety areas are adequately drained** to prevent water accumulations				
7. **No exposed concrete bases** located in the safety areas (potentially hazardous surface variation)				
8. **Old markings** which are no longer needed are removed IAW Marking AC standards				
9. **Required markings and glass beads** are provided and are IAW Marking AC standards				
10. **Required signs** are provided and are IAW Sign AC standards/Sign & Marking Plan				
11l. **Required SPHPS** are provided and are IAW Marking AC standards				
12. **Required lighting** is provided and is IAW lighting AC standards				
13. **Supplemental wind cone** is provided at the takeoff end of runways and do not have logos				
14.				
15.				

Other	S	U	N/A	REMARKS
1. **ACM/Sign & Marking Plan** updated if needed				
2. **5010 data** updated if needed				
3. **Airport Diagram Change** submitted to NFDC website if needed				
4.				
5.				

Remarks

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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 Safety and Operations Division, Federal Aviation Administration ATTN: AAS-300, 800 Independence Avenue SW, Washington DC 20591 or (2) faxing it to the attention of the Office of Airport Safety and Standards at (202) 267-5257.

Subject: AC 150/5200-18D 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: _____

U.S. Department
of Transportation

Federal Aviation
Administration

Advisory Circular

Subject: Painting, Marking, and Lighting of Vehicles Used on an Airport	**Date:** April 1, 2010	**AC No:** AC 150/5210-5D
	Initiated by: AAS-100	**Change:**

1. PURPOSE. This advisory circular (AC) provides guidance, specifications, and standards for painting, marking, and lighting of vehicles operating in the airport air operations area (AOA). The approved lights, colors, and markings herein assure the conspicuity of vehicles operating in the AOA from both the ground and the air.

2. CANCELLATION. This AC cancels AC 150/5210-5C, Painting, Marking, and Lighting of Vehicles Used on an Airport, dated August 31, 2007.

3. APPLICATION. The Federal Aviation Administration (FAA) recommends the guidelines and standards in this Advisory Circular for vehicles operating in the airport AOA. In general, use of this AC is not mandatory. ***However***, use of this AC is mandatory for vehicles funded with federal grant monies through the Airport Improvement Program (AIP) and/or with revenue from the Passenger Facility Charges (PFC) Program. See Grant Assurance No. 34, "Policies, Standards, and Specifications," and PFC Assurance No. 9, "Standard and Specifications."

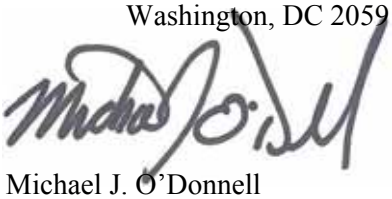
Vehicles covered by this AC that do not meet this standard may be used until the vehicle is repainted or replaced, but no later than **December 31, 2010.**

4. PRINCIPAL CHANGES. This AC contains new specifications and recommendations for the painting, marking, and lighting of Towbarless Tow Vehicles (TLTVs).

5. METRIC UNITS. To promote an orderly transition to metric units, this AC includes both English and metric dimensions. The metric conversions may not be exact equivalents, and until there is an official changeover to the metric system, the English dimensions will govern.

6. COMMENTS OR SUGGESTIONS for improvements to this AC should be sent to:

Manager, Airport Engineering Division
Federal Aviation Administration
ATTN: AAS-100
800 Independence Avenue, S.W.
Washington, DC 20591



Michael J. O'Donnell
Director of Airport Safety and Standards

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PAINTING, MARKING, AND LIGHTING OF VEHICLES USED ON AN AIRPORT

1. SOURCES OF APPLICABLE DOCUMENTS.

a. American National Standards Institute, Inc. (ANSI), 25 West 43rd St. 4th Floor, New York, NY 10036. Website: **www.ansi.org**

b. American Society for Testing & Materials (ASTM), ASTM International, 100 Barr Harbor Drive, P.O. Box C700, West Conshohocken, PA 19428-2959. Website: **www.astm.org**

c. The National Fire Protection Association (NFPA), 1 Batterymarch Park, Quincy, Massachusetts 02169-7471. Website: **www.nfpa.org**

d. The U. S. General Services Administration (GSA), Centralized Mailing List Services, 501 West Felix Street, Whse 9, South End P.O. Box 6477, Fort Worth, Texas 76115-6477. Website: **www.gsa.gov**

e. The Superintendent of Documents, U.S. Government Printing Office, 732 North Capitol St. NW, Washington, DC 20401.

f. Society of Automotive Engineers, Inc. (SAE), 400 Commonwealth Drive, Warrendale, PA 15096-0001. Website: **www.sae.org**

g. FAA Advisory Circulars: U.S. Department of Transportation, Subsequent Distribution Office, Ardmore East Business Center, 3341 Q 75th Ave., Landover, MD 20785. Website: **www.faa.gov**

h. FAA Engineering Briefs: **www.faa.gov/airports/engineering/engineering_briefs/**

2. DEFINITIONS.

The following definitions apply in this AC:

a. **Vehicle –** All conveyances, except aircraft, used on the ground to transport persons, cargo, equipment or those required to perform maintenance, construction, service, and security duties.

b. **Air Operations Area (AOA) –** The portion of airport that encompasses the landing, take off, taxiing, and parking areas for aircraft.

c. **Airport Emergency Vehicles** – Vehicles that are authorized in the AOA for emergency purposes (e.g., ambulances, aircraft rescue and fire fighting (ARFF) vehicles and emergency response vehicles) as authorized by the airport traffic control tower (ATCT) or an authorized on-site accident/incident commander.

d. **Airport Operations Vehicles –** Vehicles routinely used by airport operations personnel for airport inspection and duties associated with airfield operations (such as airfield condition reporting and Incident Command) on the AOA and Movement Area.

e. **Airport Security Vehicles –** Vehicles that are authorized in the AOA for security purposes, as needed (e.g. police cars).

f. Airfield Service Vehicles – Vehicles that are routinely used in the AOA for airfield service, maintenance, or construction (e.g. snow blowers, snowplows, maintenance trucks, and tractors).

g. Aircraft Support Vehicles – Vehicles that are routinely used in the AOA to support aircraft operations (e.g. aircraft pushback tractors, baggage/cargo tractors or trucks, air conditioning and aviation fuel trucks). These vehicles are typically owned by airlines, vendors, or contractors and are not eligible for Federal funding.

h. Reduced Visibility – Prevailing visibility is less than one statute mile (1609 meters) and/or the runway visual range (RVR) is less than 6,000 feet (1830 meters).

i. Movement Area – The runways, taxiways, and other areas of an airport/heliport that are used for taxiing/hover taxiing, air taxiing, takeoff, and landing of aircraft, exclusive of loading ramps and parking areas. At those airports/heliports with an operating airport traffic control tower (ATCT), specific approval for entry onto the movement area must be obtained from air traffic control (ATC).

j. Other Vehicles – Vehicles that are not routinely authorized in the AOA (e.g. construction vehicles). These vehicles are typically owned by airlines, vendors, or contractors and are not eligible for Federal funding.

k. Peak Intensity – Peak intensity, for purposes of this document, means the maximum magnitude of luminescence as measured in candela.

l. Towbarless Tow Vehicle (TLTV) – a type of aircraft support vehicle whose main purpose is to tow aircraft in the AOA by way of nose gear capture.

3. VEHICLE PAINTING.

NOTE: *Airport vehicle paint and markings are a safety of flight requirement. The approved colors/markings herein assure conspicuity of vehicles operating in the AOA from both the ground and air.*

a. Airport Emergency Vehicles.

(1) Ambulances. Ambulance vehicles are painted per the most current version of Federal Specification KKK-A-1822, *Federal Specification for the Star-of-Life Ambulance*. Ambulances are not considered vehicles routinely operating on the AOA.

(2) Aircraft Rescue and Fire Fighting (ARFF) Vehicles. Yellowish-green is the vehicle color standard. Color specifications are per Appendix A.

NOTE: *A yellowish-green color provides optimum visibility during all light levels encountered during a 24-hour day and under variations of light that result from weather and seasonal changes.*

b. Airport Operations Vehicles. Airport operations vehicles may be painted in colors designated by the airport operator. The characteristics must be coordinated with the respective ATCT and identified in the tower letter of agreement.

c. Airport Security Vehicles. Comply with specific state or local requirements.

d. Airfield Service Vehicles. Chrome yellow is the vehicle color standard. Color specifications are per Appendix A. When vehicles are equipped with bumper bars 8 inches (200 mm) or more in depth, the bars must be painted in alternate stripes 4 inches (100 mm) in width of chrome yellow and black inclined 45° to the vertical.

e. Aircraft Support Vehicles.

(1) Any color or combination of colors other than yellowish-green or chrome yellow. The bumper bar paint scheme in paragraph 3.d (of alternating chrome yellow and black stripe) is recommended.

(2) TLTVs. International orange is the vehicle color standard. Retroreflective tape covering more than 25 percent of the vehicle's vertical surfaces may be used as a temporary measure to meet this standard prior to scheduled vehicle painting.

f. Other Vehicles. Any color or combination of colors other than solid black or white.

4. VEHICLE MARKING.

a. Airport Emergency Vehicles.

(1) Ambulances. Ambulances are marked per the most current version of Federal Specification KKK-A-1822.

(2) ARFF Vehicles. Emergency rescue and fire fighting vehicles are marked with the letters "ARFF, "Fire," or "Rescue" and in accordance with 4.c.(1)-(5) of this AC.

b. Airport Operations Vehicles. Airport operations vehicles may be marked as designated by the airport operator. Marking must be coordinated with the respective ATCT and identified in the tower letter of agreement.

c. Airfield Service Vehicles and Aircraft Support Vehicles.

(1) Airport operator owned vehicles must display an identification number on each side and on the roof (the hood should be used if the vehicle has no roof).

(2) Side numbers will be a minimum of 16 inches (410 mm) in height and conspicuously located.

(3) Roof numbers will be a minimum of 24 inches (610 mm) in height and affixed with their bases toward the front of the vehicle. The identification numbers should provide sharp color contrast to the vehicle color.

(4) In addition to the identification numbers, airport operator-owned vehicles must display either the name of the airport and/or the airport insignia.

(5) To further improve night-time recognition of vehicles, a minimum 8 inch (200 mm) wide horizontal band of high gloss white paint or white reflective tape (Retroreflective, ASTM-D 4956-09, *Standard Specification for Retroreflective Sheeting for Traffic Control*, Type III & above) must be used around the vehicle's surface. Figures 1, 2, and 3 show suggested locations for the horizontal reflective band.

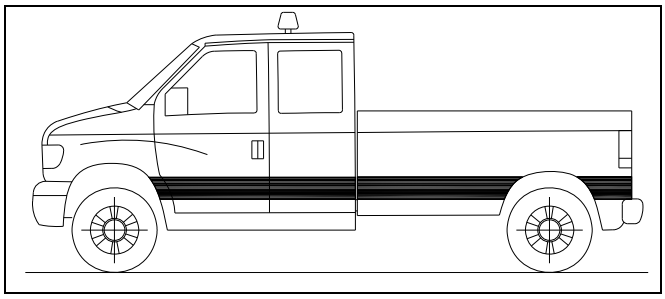


Figure 1: Suggested location for the horizontal reflective band, Option 1

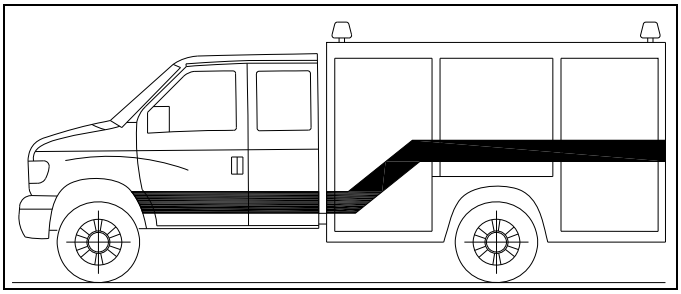


Figure 2: Suggested location for the horizontal reflective band, Option 2

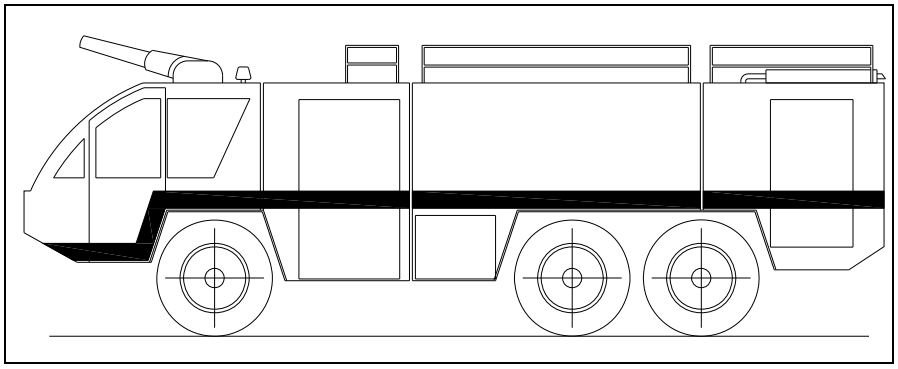


Figure 3: Suggested location for the horizontal reflective band, Option 3

(6) TLTVs. Retroreflective tape is used to outline the shape of a TLTV. If the vertical edge of the vehicle is rounded, the tape should be placed on the rounded portion to reflect light in both the horizontal and vertical planes. Where the placement of the tape may interfere with, or may be worn down by, maintenance or operational activities, tape is not required. Suggested locations for the retroreflective bands are shown in Figure 4.

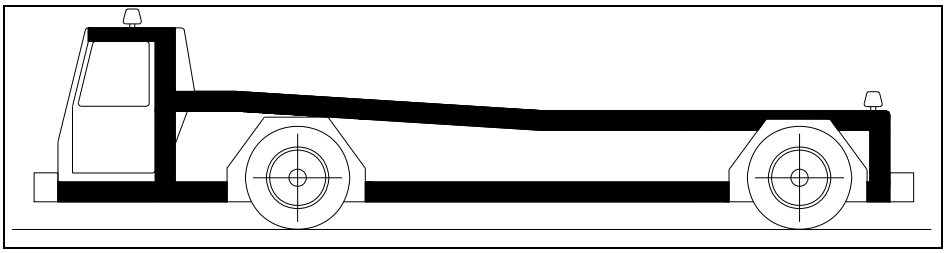


Figure 4: Suggested placement of retroreflective tape on a TLTV

d. Airport Security and Other Vehicles.

(1) Vehicles other than those that routinely traverse any portion of the AOA under the control of ATC, which are not escorted by a vehicle in constant two-way radio communication with ATC and properly equipped and authorized to operate in the AOA, must be provided with a flag on a staff attached to the vehicle so that the flag will be readily visible.

(2) At airports without air traffic control facilities, flags must be provided on all vehicles.

(3) The flag must be at least a 3-foot by 3-foot (0.9 meter by 0.9 meter) square having a checkered pattern of international orange and white squares at least 1 foot (300 mm) on each side (see Appendix A for the fabric color specification).

5. VEHICLE LIGHTING.

a. Airfield Service, Aircraft Support, and Airport Operations Vehicles.

(1) The standard for identification lighting is a yellow flashing light that is mounted on the uppermost part of the vehicle structure. A steady yellow light designates vehicles limited to non-movement areas.

(2) The light must be visible from any direction, day and night, including from the air.

(3) Color specifications for vehicle identification lights are per Appendix B.

(4) TLTVs. An LED light bar placed above the operator's cab may be used in place of the rotating yellow flashing light. In addition, a yellow flashing light (of any type) must be installed on the upper left-rear and right-rear corners of the TLTV, and must be activated when an aircraft is in tow. The size of the rear flashing lights must be large enough to meet the requirements of Section 5.c, but not so large as to interfere with the normal or towing operations of the TLTV.

b. Airport Emergency, Security, and Other Vehicles, which are not escorted by a properly lighted vehicle, must be identified during periods of low visibility by a light.

c. Characteristics of Flashing Lights:

(1) Ambulance lights must meet the specifications in the most current version of Federal Specification KKK-A-1822, and ARFF vehicles must meet NFPA, state, and local requirements.

(2) Lights must have peak intensity within the range of 40 to 400 candelas (effective) from 0^{o} (horizontal) up to 10^{o} above the horizontal and for 360^{o} horizontally. The upper limit of 400 candelas (effective) is necessary to avoid damage to night vision.

(3) From 10^{o} to 15^{o} above the horizontal plane, the light output must be $1/10^{th}$ of peak intensity or between 4 and 40 candelas (effective).

(4) Lights must flash at 75 ± 15 flashes per minute.

NOTES:

1. The effective intensity of a flashing light is equal to the intensity of a steady-burning (fixed) light of the same color that produces the same visual range under identical conditions of observation.

2. If xenon flashtubes are used, refer to AC 150/5345-43, Specification for Obstruction Lighting Equipment, for guidance concerning methods of calculating effective intensity.

d. Light Colors.

(1) Airport Emergency Vehicles.

(a) **Ambulances.** Per the most current version of Federal Specification KKK-A-1822.

(b) **ARFF Vehicles.** Red or a combination of red-and-white flashing lights per the chromaticity requirements in Appendix B.

(2) Airport Security Vehicles. Signal blue or a combination of red and signal blue flashing light per the chromaticity requirements in Appendix B.

(3) Airfield Service, Aircraft Support, Airport Operations, and Other Vehicles. Yellow flashing light per the chromaticity requirements in Appendix B.

APPENDIX A. COLOR SPECIFICATIONS

A-1. SPECIFICATIONS. Colors specified in Table A-1 are per the Commission Internationale de l'Eclairage (CIE) L*a*b* system of color specification. For a description of this system, refer to American Society for Testing & Materials (ASTM) D 2244, *Standard Practice for Calculation of Color Tolerances and Color Differences from Instrumentally Measured Color Coordinates.*

Table A-1. Specification for vehicle and flag colors

Standard Illuminant D65 Usage	Chrome Yellow			Yellowish-Green			International Orange		
	Vehicle Paint			Vehicle Paint			Vehicle Paint / Flag Fabric		
CIELAB DATA	**L***	**a***	**b***	**L***	**a***	**b***	**L***	**a***	**b***
Centroid Color	72.8	24.4	77.6	78.3	-10.2	80.4	45.0	53.5	52.0
Point 1	72.8	31.8	82.9	78.3	-9.0	92.0	45.0	61.4	47.8
Point 2	72.8	25.5	66.7	78.3	-7.6	73.2	45.0	53.9	41.4
Point 3	72.8	18.0	69.3	78.3	-11.0	69.3	45.0	53.5	53.4
Point 4	72.8	22.4	86.0	78.3	-13.4	86.2	45.0	49.7	60.4
Light Limit	77.8			83.3			49.9		
Dark Limit	67.8			73.3			41.6		
Max ΔE	11.1			11.7			10.7		

A-2. COLOR TESTS. Acceptable colors are those that meet the gloss rating test and either a visual or an instrumental color test as follows:

NOTE: *Flag fabric colors must meet either the instrumental tests in Table A-1 or the visual method described in paragraph A-2b(1).*

a. Gloss Rating Test. This test is performed per ASTM D 523, *Standard Test Method for Specular Gloss,* on a paint sample of the color to be applied on the vehicle. An acceptable color sample is high gloss with a minimum gloss rating of 70 units, for 60° geometry.

b. Color Test Methods:

(1) Visual. Prepare a master specimen of the color (per Table A-1) and gloss (per paragraph A-2a). This specimen will be the master color and be used as the basis of comparison per ASTM D 5531-05, *Standard Guide for the Preparation, Maintenance, and Distribution of Physical Product Standards for Color and Geometric Appearance of Coatings.* To verify the paint color of a vehicle visually, vehicle paint samples must be

prepared and viewed per ASTM D 1729-96 (Reapproved 2009), *Standard Practice for Visual Appraisal of Colors and Color Differences of Diffusely-Illuminated Opaque Materials.*

(2) Instrumental. This test requires a test specimen sample and reference to Table A-1. All test specimen measurements should be conducted per ASTM E 1164-09a *Standard Practice for Obtaining Spectrometric Data for Object-Color Evaluation.* Test specimen tolerances must be per Table A-1 per the following:

(a) Plot the centroid color using the a* and b* CIELAB coordinate data from Table A-1 on graph paper or by entry of the coordinate data into a computer program. Plot and connect points 1 through 4 from the same table to form a quadrilateral; noting that the centroid color is within this figure. See Figure A-1 for plots of all three color specifications in Table A-1.

(b) Perform color sample measurements per ASTM E 1164-09a. If necessary, convert measurements to CIELAB L*, a*, and b* color space. See ASTM E 308-08, *Standard Practice for Computing the Colors of Objects by Using the CIE System,* for color space conversion formulae.

(c) An acceptable color is one that meets:

(i) the chromaticity requirements of the color samples a* and b* CIELAB coordinate data by falling within the quadrilateral;

(ii) the L* data lightness requirement by falling within the range defined by the light and dark data of Table A-1;

(iii) the total color difference (ΔE) by not exceeding the limits in Table A-1 when the CIELAB data are computed in the following formula:

$$\Delta E = (\Delta L^{*2} + \Delta a^{*2} + \Delta b^{*2})^{\frac{1}{2}}$$

where ΔL*, Δa*, and Δb* values are the differences between those values for the centroid color in Table A-1 and those of the color sample measurements.

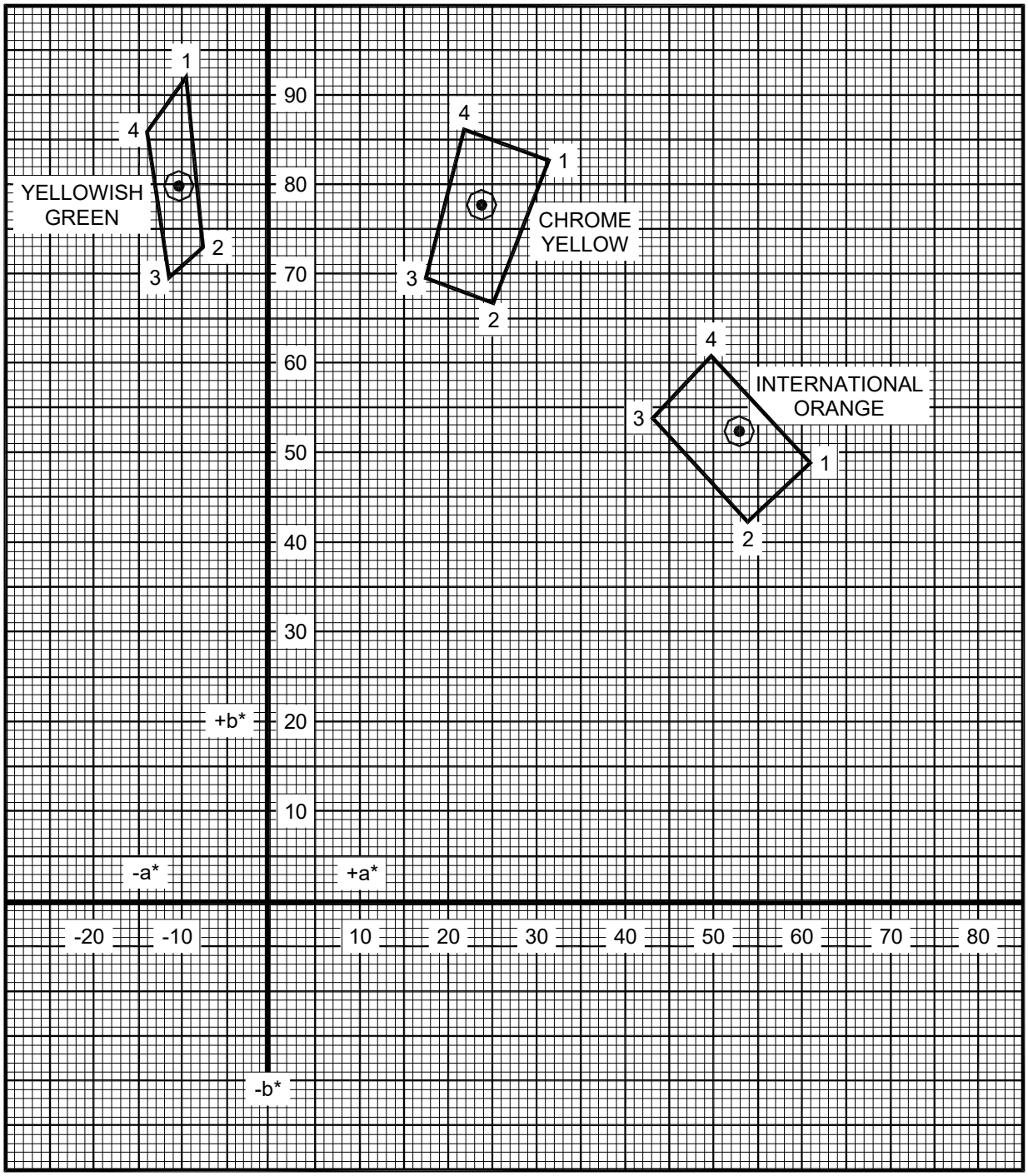


Figure A-1. Plot of selected color paint specifications

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APPENDIX B. COLOR SPECIFICATIONS FOR VEHICLE IDENTIFICATION LIGHTS

B-1. SPECIFICATIONS. The Society of Automotive Engineers (SAE) Standard J578 Revised December 2006, *Color Specification*, defines the acceptable color boundary limits and measurement of emitted red, white, signal blue, and yellow light for vehicle lights. This standard applies to the overall emitted color of light from the device in lieu of emitted light from any small area of the lens. The color of emitted light must fall within the color boundaries per SAE J578 Revised December 2006 (color boundary equations are in the standard) using color measurement methods detailed in the standard. See FAA Engineering Brief #67, Light Sources Other Than Incandescent and Xenon for Airport and Obstruction Lighting Fixtures, for additional information and Alternative Lighting Devices.

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