BID ENVELOPE
MSCAA PROJECT NO. 20-1440-01

NAME OF PROJECT: **DEWITT SPAIN AIRPORT APRON REHABILITATION - CONSTRUCTION**DEWITT SPAIN AIRPORT ***APRON*** REHABILITATION - CONSTRUCTION

BIDS DUE: **1/30/2025** **TIME:** **2:00 PM Local Time**

MEMPHIS SHELBY COUNTY AIRPORT AUTHORITY (MSCAA)
PROCUREMENT DEPARTMENT
MEMPHIS INTERNATIONAL AIRPORT
4150 Louis Carruthers Drive
Memphis, TN 38118 (901) 922-8000

BIDDER IDENTIFICATION:

Bidder _____

Address _____

TENNESSEE CONTRACTOR LICENSE INFORMATION:

License Number _____

License Classification Applicable to Project _____

License Expiration Date _____

Dollar Limit _____

SUBCONTRACTORS (OR PRIME CONTRACTORS) TO BE USED ON THIS PROJECT IN THE BELOW LISTED CAPACITIES:

Note: Where applicable, one contractor/subcontractor performing electrical, plumbing, heating, ventilation, air conditioning, and masonry work must have its license number, applicable classification, expiration date and dollar limit on the BID ENVELOPE containing the BID PROPOSAL. ***Prime contractors*** who are to perform the electrical, plumbing, heating, ventilation, air conditioning or masonry work MUST list themselves as "Self-Perform" in the Sub-contractor list below.

	Sub-contractor List	License No.	Applicable Classification	Expiration Date	Dollar Limit
Electrical					
Plumbing					
Heating					
Ventilation					
Air Conditioning					
Masonry					

BID ENVELOPE

COMPLETE THIS FORM AND ATTACH IT TO THE OUTSIDE OF THE BID ENVELOPE. PLEASE REVIEW INSTRUCTIONS TO BIDDERS FOR BID PACKAGE DELIVERY AND FOR OTHER INFORMATION AND CONDITIONS. MSCAA RESERVES THE RIGHT, IN ITS SOLE DISCRETION, TO REJECT AND DISQUALIFY YOUR BID IF YOU, YOUR PARENT, SUBSIDIARY, AFFILIATE, OR PREDECESSOR IN INTEREST OR ANY OF YOUR SUBCONTRACTORS, SUPPLIERS, AND/OR THEIR PARENTS, SUBSIDIARIES, AFFILIATES OR PREDECESSORS IN INTEREST HAVE PENDING LITIGATION OR CLAIMS WITH THE MSCAA.

SPECIFICATIONS

FOR

DEWITT SPAIN AIRPORT APRON REHABILITATION - CONSTRUCTION

MEMPHIS INTERNATIONAL AIRPORT
MEMPHIS, TENNESSEE

MSCAA PROJECT NO. 20-1440-01

DATED: 01/07/25

ISSUED FOR BID

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SPECIFICATIONS
FOR
DEWITT SPAIN AIRPORT APRON REHABILITATION - CONSTRUCTION

MEMPHIS INTERNATIONAL AIRPORT
MEMPHIS, TENNESSEE

MSCAA NO. 20-1440-01

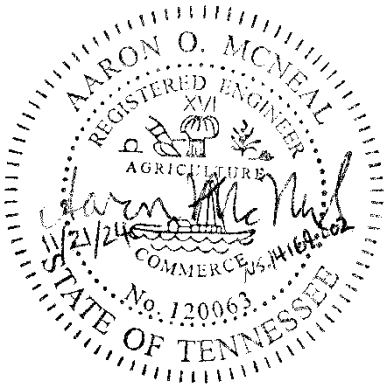
11/21/24

TECHNICAL SPECIFICATIONS – ISSUED FOR CONSTRUCTION

I hereby certify that Specifications C-100, C-102, C-105, C-110, D-751, P-101, P-152, P-207, P-208, P-401, P-602, P-603, P-610, P-620, T-904, T-905, TS-128, TS-129, TS-130, and TS-131, were prepared by me or under my direct supervision and that I am a duly Registered Engineer under the laws of the State of Tennessee.

Aaron McNeal, P.E.

Date: 11/21/24 Reg. No. 120063



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SECTION 00010 - TABLE OF CONTENTS

01500	Construction Facilities and Temporary Controls
01600	Product Requirements
01630	Product Substitution Procedures
01700	Field Engineering
01720	Project Record Documents
01741	Cleaning
01770	Close-Out Procedures
01771	Affidavit of Contractor
01772	Final Waiver and Release of Lien: PRIME
01774	Contractor Warranty Form
01775	Consent of Surety Company to Final Payment
01783	Electrical Characteristics, Capacities, and Wiring Diagrams
01784	Manufacturer's Supervision

TECHNICAL SPECIFICATIONS *(dated 02/12/24)*

SUPPLEMENTAL SPECIFICATIONS

SS-101	Safety Plan Compliance Document (SPCD)
SS-120	Construction Safety and Security
SS-300	Basic Electrical Requirements
SS-301	Electrical Demolition and Rehabilitation Work
SS-310	Airport Lighting Systems
SS-403	Asphalt Pavement

CIVIL

C-100	Contractor Quality Control Program (CQCP)
C-102	Temporary Air and Water Pollution, Soil Erosion, and Siltation Control
C-105	Mobilization
C-110	Method of Estimation Percentage of Material Within Specification Limits
P-101	Preparation and Removal of Existing Pavements
P-152	Excavation, Subgrade, and Embankment
P-207	In-place Full Depth Reclamation (FDR) Recycled Asphalt Agg. Base Course
P-208	Aggregate Base Course
P-401	Asphalt Mix Pavement
P-602	Emulsified Asphalt Prime Coat
P-603	Emulsified Asphalt Tack Coat
P-610	Concrete for Miscellaneous Structures
P-620	Runway and Taxiway Marking
D-751	Manholes, Catch Basins, Inlets and Inspection Holes
T-904	Sodding
T-905	Topsoil
TS-128	VHF Transceivers
TS-129	Construction Safety/Maintenance of Traffic
TS-130	Construction Safety and Phasing Plan (CSPP)
TS-131	Project Survey and Stakeout

Appendices

Appendix A– MSCAA Construction Standards
Appendix B – Geotechnical Report
Appendix C – MEM Construction SWPPP

END OF SECTION 00010

DIVISION 0 – SECTION 00015

LIST OF DRAWINGS

DRAWINGS, Entitled DeWitt Spain Airport Apron Rehabilitation - Construction, ISSUED FOR BID, dated 01/07/25, with revisions, as noted on the drawing sheets:

SHEET NO.	INDEX OF SHEETS
G0.0	COVER SHEET
G0.1	INDEX & SUMMARY OF QUANTITIES
G0.2	GENERAL NOTES
G0.3	SAFETY & PHASING NOTES
G0.4	SAFETY & PHASING DETAILS
C1.00	PHASING PLAN: PHASES 0 & 1
C1.01	PHASING PLAN: PHASE 2
C1.02	PHASING PLAN: PHASE 3
C1.03	PHASING PLAN: PHASE 4
C2.00	HORIZONTAL & VERTICAL CONTROL
C2.01	BORING LOGS
C3.00	OVERALL SITE PLAN
C4.00	MILLING & FDR PLAN
C4.01	PAVING PLAN
C4.02	TYPICAL SECTIONS
C5.00	GRADING, DRAINAGE & EROSION CONTROL PLAN
C5.01	SPOT ELEVATION PLAN
C6.00	PAVEMENT MARKING & TIE-DOWN PLAN
C7.00	MISCELLANEOUS DETAILS
C7.01	DRAINAGE DETAILS

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LEGAL NOTICE
Request for Bids
MSCAA Project Number 20-1440-01
DeWitt Spain Airport Apron Rehabilitation - Construction

Sealed bids for DeWitt Spain Airport Apron Rehabilitation - Construction will be received by the Memphis-Shelby County Airport Authority (Authority), Procurement Department, 4150 Louis Carruthers Drive, Memphis, TN 38118, until **2:00 PM Local Time on 1/30/2025**. Bids will not be received at any other location. Within 30 minutes thereafter, the bids will be opened and publicly read via phone/video conference

Bid Opening Virtual Link
https://teams.microsoft.com/l/meetup-join/19%3ameeting_YTU4NmQzOGUtMzEyZi00Mjc1LTk2YmEtZmViMGExMDc0Zjk0%40thread.v2/0?context=%7b%22Tid%22%3a%227d15b138-6f30-4477-b779-756687956003%22%2c%22Oid%22%3a%226e2d3fed-b72a-4b9c-85eb-516dc4407826%22%7d

Bid Opening Call-in Option
Phone: (872) 242-8851; conference ID: 17180182#.

The Bid Documents, including a description of the scope of work, the required response format, and additional instructions may be obtained on or after **01/07/25** either online at www.flymemphis.com.

A Virtual Pre-Bid Meeting will be held Tuesday, January 14, 2025 at 11:00 a.m. local time via the phone/video conferencing links below.

Pre-Bid Meeting Virtual Link
https://teams.microsoft.com/l/meetup-join/19%3ameeting_YWQ2YTgwMmItMzU4ZS00OGQxLTg2YzAtZWFmYmI0NDJkNjRh%40thread.v2/0?context=%7b%22Tid%22%3a%227d15b138-6f30-4477-b779-756687956003%22%2c%22Oid%22%3a%228659cc03-f592-4b3f-84d1-d045f17019ff%22%7d

Pre-Bid Meeting Call-in Option
Phone: (872) 242-8851; conference ID: 721 319 737#.

Instructions on Pre-Bid Meeting and Site Visit request can be found at https://www.flymemphis.com/rfps-rfqs. Attendance at the Pre-Bid Meeting is strongly recommended.

All Bidders are responsible for checking the Authority's website up to the submission deadline for any updates, addenda or additional information. The successful Bidder must sign a contract with the Authority that includes Federal Aviation Administration provisions, if applicable, regarding the Buy American Preference, Foreign Trade Restriction, Davis-Bacon, Affirmative Action, Debarment and Suspension, and Drug-Free Workplace, all of which are incorporated herein by reference.

Each bid must be made by a contractor licensed in Tennessee and be accompanied by a 5% Bid Guarantee. The successful bidder must execute a Performance Bond and a Payment Bond in the amount of 100% each of the Contract Price and meet the Disadvantaged Business Enterprise (DBE) participation goal for this project, which is **17%.**

The Authority reserves the right to reject any or all responses to this Request for Bids in whole or in part; to waive any informalities, technicalities, or omissions related to this Request for Bids; and to reject responses on any other basis authorized by the Authority's purchasing policies. This project is funded under a grant contract with the State of Tennessee.

The Authority is an equal opportunity employer and prohibits discrimination based on the grounds of age, race, sex, color, national origin, disability, marital status, military service, or sexual orientation in its hiring and employment practices and in the admission to, access to, or operation of its programs, services, and activities.

By order of:
Terry Blue, A.A.E.
President and CEO
Memphis-Shelby County Airport Authority

DIVISION 0 – SECTION 00200

INSTRUCTIONS TO BIDDERS / PROPOSERS

Instruction for the preparation of proposals and the delivery thereof to the Memphis-Shelby County Airport Authority (MSCAA) are contained in General Provision Section 20 and additionally as follows. Prepare and submit proposals accordingly.

1. RESERVATION OF RIGHTS:

MSCAA reserves the right, in its sole discretion, to reject and disqualify the bid of any bidder that has pending litigation or claims with the MSCAA and to reject the bid when a parent, subsidiary, affiliate, or predecessor in interest of the Bidder has pending litigation or claims with the MSCAA.

MSCAA also reserves the right, in its sole discretion, to reject and disqualify the bid of any bidder if the bid includes any subcontractor(s) or supplier(s) of any tier that have pending litigation or claims with MSCAA, and to reject the bid when a parent, subsidiary, affiliate, or predecessor in interest of the subcontractor or supplier has pending litigation or claims with the MSCAA.

Bidders shall request from MSCAA a list of entities that have pending claims or litigation with MSCAA to avoid including such entities or their parents, subsidiaries, affiliates, or predecessors in interest in their proposal or bid. A list of affected entities may be obtained by a written or telephone request to Development Division at MSCAA, 2491 Winchester Road, Suite 113, Memphis, TN 38116-3856, telephone number (901) 922-8033.

2. PRE-BID CONFERENCE:

A Virtual Pre-Bid Meeting will be held Tuesday, January 14, 2025 at 11:00 a.m. local time via the phone/video conferencing links below.
Pre-Bid Meeting Virtual Link
https://teams.microsoft.com/l/meetup-join/19%3ameeting_YWQ2YTgwMmItMzU4ZS00OGQxLTg2YzAtZWFmYmI0NDJkNjRh%40thread.v2/0?context=%7b%22Tid%22%3a%227d15b138-6f30-4477-b779-756687956003%22%2c%22Oid%22%3a%228659cc03-f592-4b3f-84d1-d045f17019ff%22%7d
Pre-Bid Meeting Call-in Option
Phone: (872) 242-8851; conference ID: 721 319 737#.
Instructions on Pre-Bid Meeting and Site Visit request can be found at https://www.flymemphis.com/rfps-rfqs. Attendance at the Pre-Bid Meeting is strongly recommended.

3. DRAWINGS AND SPECIFICATIONS FURNISHED TO CONTRACTOR:

Electronic set of contract and proposal documents are available at https://www.flymemphis.com/rfps-rfqs at no cost. Printed copies are not available.

4. REFUSAL OF ISSUANCE OF PROPOSAL FORM TO BIDDERS IN DEFAULT AND DISQUALIFICATION OF BIDDERS:

See General Provision Section 20 for disqualification of bidders and bidders in default.

5. SUBMIT THE FOLLOWING WITH THE BID IN THE MANNER DESCRIBED BELOW:

A. (1) Proposal
(2) Proposal Guarantee (Required Bid Security)
(3) DBE Assurance Statement/Letter of Intent on Bidder's / Proposer's Letterhead for each DBE subcontractor, subcontractors' signatures not required.

(4) Written quote or proposal or other communication from each DBE upon which the scope of work and dollar value contained in your Assurance Statements is based with items included in the Proposal either circled and/or highlighted.
(5) DBE Goals Accomplishment Statement
(6) Information on All Firms that Provide Bids or Quotes
(7) Signed Addenda (if applicable)

B. The following must be submitted within 24 hours of the proposal submittal deadline:

(1) DBE Assurance Statement/Letter of Intent on Bidder's / Proposer's Letterhead for each DBE subcontractor, subcontractors' signatures required.

See General Provision Section 20, PROPOSAL REQUIREMENTS AND CONDITIONS.

C. By executing the proposal submittal, the Contractor is confirming that (1) neither the Contractor nor any of Contractor's potential subcontractors or suppliers have pending claims or litigation, arbitration, or other dispute resolution proceedings where the Owner and the Contractor or potential subcontractors or suppliers are parties; or (2) the Contractor has disclosed in writing any such pending claims or proceedings to Owner through its own writing and/or the writing of Contractor's potential subcontractors or suppliers and submitted same to Owner with the proposal submittal.

D. Bids should be delivered to the following address:

Memphis-Shelby County Airport Authority
Procurement Department
Memphis International Airport
4150 Louis Carruthers Drive
Memphis, TN 38118
Project No. 20-1440-01

The bid must be sealed and the project number must be included in the address.

Within 30 minutes thereafter, the bids will be opened and publicly read virtually at the following link - MS Teams: https://teams.microsoft.com/l/meetup-join/19%3ameeting_YTU4NmQzOGUtMzEyZi00Mjc1LTk2YmEtZmViMGExMDc0Zjk0%40thread.v2/0?context=%7b%22Tid%22%3a%227d15b138-6f30-4477-b779-756687956003%22%2c%22Oid%22%3a%226e2d3fed-b72a-4b9c-85eb-516dc4407826%22%7d

Bid Opening Call-in Option Phone: (872) 242-8851; conference ID: 17180182#.

Please note that bids **will not** be accepted at the Project Center; they must be delivered prior to the deadline to the 4150 Louis Carruthers Drive address, or they will be rejected.

6. CONSIDERATION OF BID:

The Owner reserves the right to reject any or all bids in whole or in part and to waive any informalities, technicalities, or omissions therein.

It is intention of the Owner to award a contract based upon the lowest responsive bid on any combination of the lump sum base bids and alternates. Bidder understands and agrees that, after a review of all the bids, the Owner will select the combination of the lump sum base bids and alternates that best suits the Owner's needs within the sole discretion of the Owner. The Bidder further understands and agrees that it has no right to protest or object to the combination of the lump sum base bids and alternates that is selected by the Owner

even if another combination would have resulted in the selection of the bidder or another bidder other than the one chosen by the Owner.

7. NO FINANCIAL INTEREST:

Respondent understands and agrees that no Airport Authority employee or member of the Board of Commissioners shall receive any financial benefit arising out of this proposal or its contract, if awarded, either directly or indirectly. Further, any fees paid to any person or entity by contractor for assistance in obtaining this contract, if awarded, with the Authority must be fully disclosed to the Authority.

8. PROTEST:

A. Any protest must be filed in writing and received by the Authority within seven (7) calendar days of the date of the occurrence of the event that is the subject of the protest, e.g., the opening of responses, the award, or a determination that a respondent is not responsible or that a response is not responsive. Any protest must be actually delivered to the Authority during the business hours of 7:00 AM – 3:30 PM Local Time in order to be deemed to be received by the Authority as required under this Section. A protest must be submitted in hard copy and addressed as follows:

Memphis-Shelby County Airport Authority
Attention: Director of Procurement
4150 Louis Carruthers Drive
Memphis, Tennessee 38118-6613

Any protest sent by telegraphic or facsimile transmission or by email or other electronic means will not meet the filing requirements set forth herein and will not be deemed to be received by the Authority.

No objections with regard to the application, meaning, or interpretation of the specifications contained herein will be considered after the opening of the subject bid.

END OF SECTION 00200

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DIVISION 0 – SECTION 00405

PROPOSAL

Project Identification: **DeWitt Spain Airport Apron Rehabilitation - Construction**

Contract Number: MSCAA Project No. **20-1440-01**

For Overnight Courier U.S. Postal Service Mailing,
or Hand Delivery Submit to:

Memphis-Shelby County Airport Authority
Memphis International Airport
Procurement Department
4150 Louis Carruthers Drive
Memphis, Tennessee 38118

1. The undersigned Bidder proposes and agrees, if this Bid is accepted, to enter into an agreement with Owner in the form included in the Contract Documents to perform and furnish all Work as specified or indicated in the Contract Documents for the Contract Price and within the Contract Time indicated in this Bid and in accordance with other terms and conditions of the Contract Documents.

2. Bidder accepts all of the terms and conditions of the Legal Notice to Bidders and Instructions to Bidders, including without limitation those dealing with the disposition of Bid security. This Bid will remain subject to acceptance for seventy-five (75) days after the day of Bid opening. Bidder will sign and submit the Construction Contract with the Bonds and other documents required by the Bidding Requirements, within ten (10) days after the date of Owner's Notice of Award.

3. In submitting this Bid, Bidder represents, as more fully set forth in the Contract that:

   (a) Bidder has examined copies of all the Bidding Documents and of the following Addenda (receipt of all which is hereby acknowledged):

Date	Number
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____

   (b) Bidder has familiarized itself with the nature and extent of the Contract Documents, Work, site, locality, and all local conditions and Laws and Regulations that in any manner may affect cost, progress, performance or furnishing of the Work.

(c) Bidder has studied carefully all reports and drawings of subsurface conditions and drawings of physical conditions which are identified in Division 0 and Division 1 Specifications, and accepts the determination set forth in General Provision Section 20 paragraph 20-06 of the extent of the technical data contained in such reports and drawings upon which Bidder is entitled to rely.

(d) Bidder has obtained and carefully studied (or assumes responsibility for obtaining and carefully studying) all such examinations, investigations, explorations, tests and studies (in addition to or to supplement those referred to in (c) above) which pertain to the subsurface or physical conditions at the site or otherwise may affect the cost, progress, performance or furnishing of the Work at the Contract Price, within the Contract Time and in accordance with other terms and conditions of the Contract Documents, including specifically the provisions of General Provision Section 20 paragraph 20-06; and no additional examination, investigations, explorations, tests, reports or similar information or data are or will be required by Bidder for such purposes.

(e) Bidder has reviewed and checked all information and data shown or indicated on the Contract Documents with respect to existing Underground Facilities at or contiguous to the site and assumes responsibility for the accurate location of said Underground Facilities. No additional examinations, investigations, explorations, tests, reports or similar information or data in respect of said Underground Facilities are or will be required by Bidder in order to perform and furnish the Work at the Contract Price, within the Contract Time and in accordance with the other terms and conditions of the Contract Documents.

(f) Bidder has correlated the results of all such observations, examinations, investigations, explorations, tests, reports and studies with the terms and conditions of the Contract Documents.

(g) Bidder has given Owner or Engineer written notice of all conflicts, errors or discrepancies that it has discovered in the Contract Documents and the written resolution thereof by Owner or Engineer is acceptable to Bidder.

(h) This Bid is genuine and not made in the interest of or on behalf of any undisclosed person, firm or corporation and is not submitted in conformity with any agreement or rules of any group, association, organization or corporation; Bidder has not directly or indirectly induced or solicited any other Bidder to submit a false or sham Bid: Bidder has not solicited or induced any person, firm or corporation to refrain from bidding; and Bidder has not sought by collusion to obtain for itself any advantage over any other Bidder or over Owner.

4. Bidder will complete Base Bid Work for the following price(s).

UNIT PRICE SCHEDULE – BASE BID

ITEM	PAY ITEM	DESCRIPTION	UNIT	EST. QTY.	UNIT PRICE	TOTAL EST. PRICE
1	C-105-1	MOBILIZATION	LS	1	$_____	$_____
2	C-100-1	CONTRACTOR QUALITY CONTROL PROGRAM (CQCP)	LS	1	$_____	$_____
3	C-102-5.1	INSTALLATION AND REMOVAL OF SILT FENCE	LF	360	$_____	$_____
4	C-102-5.2	INLET PROTECTION	EA	2	$_____	$_____
5	C-102-5.3	TEMPORARY CONSTRUCTION ENTRANCE	EA	2	$_____	$_____
6	P-101-5.4a	TIE-DOWN ABANDONMENT	EA	25	$_____	$_____
7	P-101-5.4b	TIE-DOWN REMOVAL	EA	138	$_____	$_____
8	P-101-5.5	TIE-DOWN REPLACEMENT	EA	117	$_____	$_____
9	P-101-5.6	PIPE REMOVAL	LS	1	$_____	$_____
10	P-152-4.1	GRADING TURF AREA (IMPORT BORROW AS-NEEDED)	SY	3,860	$_____	$_____
11	P-620-5.1	INITIAL COAT: YELLOW PAINT, NON-REFLECTORIZED. APPLICATION RATE = 230SF/GAL	SF	3,400	$_____	$_____
12	P-620-5.2	FINAL COAT: YELLOW PAINT, REFLECTORIZED, APPLICATION RATE = 115SF/GAL)	SF	3,400	$_____	$_____
13	p-620-5.3	FINAL COAT: BLACK PAINT, NO-REFLECTORIZED, APPLICATION RATE = 115SF/GAL	SF	6,800	$_____	$_____
14	D-751-5.1	INLET	EA	1	$_____	$_____
15	D-751-5.2	CONVERT INLET TO AT-GRADE JUNCTION BOX	EA	1	$_____	$_____
16	D-751-5.3	CONCRETE COLLAR	EA	2	$_____	$_____
17	T-904-5.1	SODDING	SY	3,860	$_____	$_____
18	T-905-5.1	TOPSOIL	CY	430	$_____	$_____
19	T-129-5.1	IMPLEMENTATION OF CONSTRUCTION SAFETY PLAN AND MAINTENANCE OF TRAFFIC	LS	1	$_____	$_____
20	P-101-5.1	ASPHALT MILLING (2” DEPTH)	SY	7,639	$_____	$_____
21	P-101-5.2	JOINT AND CRACK REPAIR AFTER MILLING	LF	2,000	$_____	$_____
22	P-401-8.1	ASPHALT SURFACE COURSE OVERLAY (2” & VAIABLE THICKNESS)	TON	1,040	$_____	$_____
23	P-401-8.2	ASPHALT LEVELING COURSE	TON	50	$_____	$_____
24	P-603-5.1	EMULSIFIED ASPHALT TACK COAT	GAL	1,020	$_____	$_____
25	P-101-5.3	FULL DEPTH PAVEMENT REMOVAL (POINT REPAIR WHEN APPROVED BY OWNER’S REPRESENTATIVE)	SY	160	$_____	$_____
26	P-152-4.2	UNDERCUT AND RELATED BACKFILL (WHEN APPROVED BY OWNER’S REPRESENTATIVE)	CY	160	$_____	$_____

UNIT PRICE SCHEDULE – BASE BID

ITEM	PAY ITEM	DESCRIPTION	UNIT	EST. QTY.	UNIT PRICE	TOTAL EST. PRICE

27	P-152-4.3	GEOTEXTILE FABRIC FOR UNDERCUT AREAS (7" THINCKNESS) (POINT REPAIR WHEN APPROVED BY OWNER'S REPRESENTATIVE)	SY	160	$_____	$_____
28	P-208-5.1	CRUSHED AGGREGATE BASE COURSE (7" THICKNESS) (POINT REPAIR WHEN APPROVED BY OWNER'S REPRESENTATIVE)	SY	160	$_____	$_____
29	P-401-8.3	ASPHALT FOR POINT REPAIRS (4" THICKNESS) (POINT REPAIR WHEN APPROVED BY OWNER'S REPRESENTATIVE)	TON	40	$_____	$_____
30	P-152-4.2	UNDERCUT AND RELATED BACKFILL (WHEN APPROVED BY OWNER'S REPRESENTATIVE)	CY	790	$_____	$_____
31	P-152-4.3	GEOTEXTILE FABRIC FOR UNDERCUT AREAS (WHEN APPROVED BY OWNER'S REPRESENTATIVE)	SY	790	$_____	$_____
32	P-207-5.1	IN-PLACE FULL DEPTH RECYCLED (FDR) ASPHALT AGGREGATE BASE COURSE (MECHANICALLY STABILIZED)	SY	15,800	$_____	$_____
33	P-208-5.2	CRUSHED AGGREGATE BASE COURSE (VARIABLE THICKNESS FOR GRADE CORRECTION)	CY	850	$_____	$_____
34	P-401-8.4	ASPHALT SURFACE COURSE (4" THICKNESS, 2-2" LIFTS)	TON	3,920	$_____	$_____
35	P-602-5.1	EMULSIFIED ASPHALT PRIME COAT (WHEN APPROVED BY OWNER'S REPRESENTATIVE)	GAL	3,920	$_____	$_____
36	P-603-5.1	EMULSIFIED ASPHALT TACK COAT	GAL	1,570	$_____	$_____

CONTRACT BASE BID TOTAL (TOTAL OF LINE ITEMS 1-36) $_____

CONTRACT BASE BID TOTAL (TOTAL OF LINE ITEMS 1-36):

_____

(use words)

_____

($_____)

5. The Owner reserves the right to reject any or all bids in whole or in part and to waive any informalities, technicalities, or omissions therein.

   It is intention of the Owner to award a contract based upon the lowest responsive bid on any combination of the lump sum base bids and alternates. Bidder understands and agrees that, after a review of all the bids, the Owner will select the combination of the lump sum base bids and alternates that best suits the Owner's needs within the sole discretion of the Owner. The Bidder further understands and agrees that it has no right to protest or object to the combination of the lump sum base bids and alternates that is selected by the Owner even if another combination would have resulted in the selection of the bidder or another bidder other than the one chosen by the Owner.

6. Bidder agrees that the Work: will be completed and ready for final payment within the calendar days (as described in Section 01100) after the date when the Contract Time commences to run. Bidder accepts the provisions of the Contract as to liquidated damages in the event of failure to complete the Work on time.

7. See Section 00200, INSTRUCTIONS TO BIDDERS, for a complete list of documents that are made a condition of this Bid.

8. Communications concerning this Bid shall be addressed to: _____
   (Printed Name)

   The address of Bidder indicated above, or

   the following address: _____

   email address: _____

9. The terms used in this Bid which are defined in General Provision Section 10 of the Specifications included as part of the Contract Documents have the meanings assigned to them in the Division 0 and Division 1 Specifications.

   Submitted on _____, 20____.

10. The undersigned Bidder confirms that (1) neither Bidder nor any of Bidder's potential subcontractors or suppliers have pending claims or litigation, arbitration, or other dispute resolution proceedings where the Owner and Bidder or Bidder's potential subcontractors or suppliers are parties; or (2) such claims or proceedings are pending and Bidder is disclosing same through its own writing and/or the writing of Bidder's potential subcontractors or suppliers and submitting same to Owner with this proposal submittal.

If Bidder is:

An Individual

_____
(Individual's Printed Name)

_____
(Individual's Signature)

doing business as: _____

Business address: _____

_____

Phone No.: _____ FAX No. _____ E-Mail _____

A Partnership

_____
(Firm Name)

By: _____
(Signature of General Partner and Printed Name)

Business address: _____

_____

Phone No.: _____ FAX No. _____ E-Mail _____

A Corporation

_____
(Corporation Name)

By:_____ Title:_____
(Signature of person authorized to sign)

_____
(Printed Name)

(Corporate Seal)

Attest:_____
(Signature of Secretary) (Printed Name)

_____
(State of Incorporation)

Business address:_____

_____

Phone No.:_____ FAX No. _____ E-Mail_____

A Joint Venture

_____
(Joint Venture)

By:_____
(Signature of Joint Venturer) (Printed Name)

_____
(Address)

Phone No.:_____ FAX No. _____ E-Mail_____

By:_____
(Signature of Joint Venturer) (Printed Name)

_____
(Address)

Phone No.:_____ FAX No. _____ E-Mail_____

(Each joint venturer must sign. The manner of signing for each individual, partnership and corporation that is a party to the joint venture should be in the manner indicated above).

END OF SECTION 00405

DIVISION 0 – SECTION 00410

PROPOSAL GUARANTEE

KNOW ALL MEN BY THESE PRESENT, that we, the undersigned, _____

_____ as Principal, and

_____ as Surety, are

hereby held and firmly bound unto Memphis-Shelby County Airport Authority as Owner, in the sum of _____ for the payment of which, well and truly to be made, the said Principal and Surety hereby jointly and severally bind ourselves, our heirs, executors, administrators, successors, and assigns.

Whereas the Principal has submitted to Memphis-Shelby County Airport Authority a certain bid, attached hereto and hereby made a part hereof, to enter into a contract in writing for the DeWitt Spain Airport Apron Rehabilitation - Construction, MSCAA Project No. 20-1440-01.

NOW, THEREFORE, if said bid shall be rejected, or in the alternate, if said bid shall be accepted and the Principal shall execute and deliver a contract in accordance with the terms of the Contract Documents and shall furnish a bond for its faithful performance of said contract, and for the payment of all persons performing labor or furnishing materials in connection therewith, and shall in all other respects perform the agreement created by the acceptance of said bid, then this obligation shall be void, otherwise the same shall remain in full force and effect; it being expressly understood and agreed that the liability of the Surety for any and all claims hereunder shall, in no event, exceed the amount of this obligation as herein stated.

The Surety, for value received, hereby stipulates and agrees that the obligation of said Surety and its bond shall be in no way impaired or affected by any extension of the time within which the Owner may accept such bid; and said Surety does hereby waive notice of any such extension.

IN WITNESS WHEREOF, the Principal and the Surety have hereunto set their hands and seals, and such of them as are corporations have caused their corporate seals to be hereto affixed and these presents to be signed by their proper officers,

this _____ day of _____, 20_____.

PRINCIPAL

By:_____

_____
(Name and Title)

SURETY

SEAL

By:_____
(Attorney-in-Fact)

END OF SECTION 00410

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DIVISION 0 – SECTION 00440

BUY AMERICAN CERTIFICATION

The Contractor certifies that its bid/offer is in compliance with 49 USC § 50101, BABA and other related Made in America Laws,1 U.S. statutes, guidance, and FAA policies, which provide that Federal funds may not be obligated unless all iron, steel and manufactured goods used in AIP funded projects are produced in the United States, unless the Federal Aviation Administration has issued a waiver for the product; the product is listed as an Excepted Article, Material Or Supply in Federal Acquisition Regulation subpart 25.108; or is included in the FAA Nationwide Buy American Waivers Issued list.

The bidder or offeror must complete and submit the certification of compliance with FAA's Buy American Preference, BABA and Made in America laws included herein with their bid or offer. The Airport Sponsor/Owner will reject as nonresponsive any bid or offer that does not include a completed certification of compliance with FAA's Buy American Preference and BABA.

The bidder or offeror certifies that all constructions materials, defined to mean an article, material, or supply other than an item of primarily iron or steel; a manufactured product; cement and cementitious materials; aggregates such as stone, sand, or gravel; or aggregate binding agents or additives that are or consist primarily of: non-ferrous metals; plastic and polymer-based products (including polyvinylchloride, composite building materials, and polymers used in fiber optic cables); glass (including optic glass); lumber; or drywall used in the project are manufactured in the U.S.

Certification of Compliance with FAA Buy American Preference – Construction Projects

As a matter of bid responsiveness, the bidder or offeror must complete, sign, date, and submit this certification statement with its proposal. The bidder or offeror must indicate how it intends to comply with 49 USC § 50101, BABA and other related Made in America Laws, U.S. statutes, guidance, and FAA policies, by selecting one of the following certification statements. These statements are mutually exclusive. Bidder must select one or the other (i.e., not both) by inserting a checkmark (✓) or the letter "X".

☐ Bidder or offeror hereby certifies that it will comply with 49 USC § 50101, BABA and other related U.S. statutes, guidance, and policies of the FAA by:

a) Only installing iron, steel and manufactured products produced in the United States;

b) Only installing construction materials defined as: an article, material, or supply – other than an item of primarily iron or steel; a manufactured product; cement and cementitious materials; aggregates such as stone, sand, or gravel; or aggregate binding agents or additives that are or consist primarily of non-ferrous metals; plastic and polymer-based products (including polyvinylchloride, composite building materials, and polymers used in fiber optic cables); glass (including optic glass); lumber or drywall that have been manufactured in the United States.

c) Installing manufactured products for which the Federal Aviation Administration (FAA) has issued a waiver as indicated by inclusion on the current FAA Nationwide Buy American Waivers Issued listing; or

d) Installing products listed as an Excepted Article, Material or Supply in Federal Acquisition Regulation Subpart 25.108.

1 Per Executive Order 14005 "Made in America Laws" means all statutes, regulations, rules, and Executive Orders relating to federal financial assistance awards or federal procurement, including those that refer to "Buy America" or "Buy American," that require, or provide a preference for, the purchase or acquisition of goods, products, or materials produced in the United States, including iron, steel, and manufactured products offered in the United States.

By selecting this certification statement, the bidder or offeror agrees:

a) To provide to the Airport Sponsor or the FAA evidence that documents the source and origin of the iron, steel, and/or manufactured product.
b) To faithfully comply with providing U.S. domestic products.
c) To refrain from seeking a waiver request after establishment of the contract, unless extenuating circumstances emerge that the FAA determines justified.
d) Certify that all construction materials used in the project are manufactured in the U.S.

☐ The bidder or offeror hereby certifies it cannot comply with the 100 percent Buy American Preferences of 49 USC § 50101(a) but may qualify for a Type 3 or Type 4 waiver under 49 USC § 50101(b). By selecting this certification statement, the apparent bidder or offeror with the apparent low bid agrees:

a) To the submit to the Airport Sponsor or FAA within 15 calendar days of being selected as the responsive bidder, a formal waiver request and required documentation that supports the type of waiver being requested.
b) That failure to submit the required documentation within the specified timeframe is cause for a non-responsive determination that may result in rejection of the proposal.
c) To faithfully comply with providing U.S. domestic products at or above the approved U.S. domestic content percentage as approved by the FAA.
d) To furnish U.S. domestic product for any waiver request that the FAA rejects.
e) To refrain from seeking a waiver request after establishment of the contract, unless extenuating circumstances emerge that the FAA determines justified.

Required Documentation

Type 2 Waiver (Nonavailability) - The iron, steel, manufactured goods or construction materials or manufactured goods are not available in sufficient quantity or quality in the United States. The required documentation for the Nonavailability waiver is

a) Completed Content Percentage Worksheet and Final Assembly Questionnaire
b) Record of thorough market research, consideration where appropriate of qualifying alternate items, products, or materials including;
c) A description of the market research activities and methods used to identify domestically manufactured items capable of satisfying the requirement, including the timing of the research and conclusions reached on the availability of sources.

Type 3 Waiver – The cost of components and subcomponents produced in the United States is more than 60 percent of the cost of all components and subcomponents of the "facility/project." The required documentation for a Type 3 waiver is:

a) Completed Content Percentage Worksheet and Final Assembly Questionnaire including;
b) Listing of all manufactured products that are not comprised of 100 percent U.S. domestic content (excludes products listed on the FAA Nationwide Buy American Waivers Issued listing and products excluded by Federal Acquisition Regulation Subpart 25.108; products of unknown origin must be considered as non-domestic products in their entirety).
c) Cost of non-domestic components and subcomponents, excluding labor costs associated with final assembly and installation at project location.
d) Percentage of non-domestic component and subcomponent cost as compared to total "facility" component and subcomponent costs, excluding labor costs associated with final assembly and installation at project location.

Type 4 Waiver (Unreasonable Costs) - Applying this provision for iron, steel, manufactured goods or construction

materials would increase the cost of the overall project by more than 25 percent. The required documentation for this waiver is:

a) A completed Content Percentage Worksheet and Final Assembly Questionnaire from
b) At minimum two comparable equal bids and/or offers;
c) Receipt or record that demonstrates that supplier scouting called for in Executive Order 14005, indicates that no domestic source exists for the project and/or component;
d) Completed waiver applications for each comparable bid and/or offer.

False Statements: Per 49 USC § 47126, this certification concerns a matter within the jurisdiction of the Federal Aviation Administration and the making of a false, fictitious, or fraudulent certification may render the maker subject to prosecution under Title 18, United States Code.

Date	Signature
Company Name	Title

END OF SECTION 00440

DIVISION 0 – SECTION 00445

DISADVANTAGED BUSINESS ENTERPRISE (DBE) REQUIREMENTS

MSCAA operates a federal Disadvantaged Business Enterprise (DBE) Program[1] to ensure full and fair opportunities in MSCAA contracting for businesses owned by socially and economically disadvantaged individuals. Only firms that are certified consistent with 49 CFR Part 26 and the Tennessee Department of Transportation Unified Certification Program (TN UCP), as identified below, will be considered to be certified as a Disadvantaged Business Enterprise.

This section, entitled "Disadvantaged Business Enterprise Requirements" is provided in an effort to assist Respondents. The information contained in this section is not intended to, nor does it, supplement or amend any federal regulation. All Respondents are responsible for compliance with all applicable federal and MSCAA rules and requirements.

It is a requirement that all Respondents providing services for the MSCAA take all reasonable steps to ensure that DBE have a full and fair opportunity to compete for and perform contract work without discrimination on the basis of race, color, national origin or sex. In order to satisfy this requirement, Respondents will be expected to timely submit documentation as identified below and throughout the contract period if selected, and cooperate with MSCAA. Failure to timely submit requested documentation, cooperate with MSCAA or answer inquiries truthfully will be considered a material contract breach and may result in termination.

The following documents must be submitted with your response to this solicitation:

DBE Assurance Statement/Letter of Intent. (49 CFR Part 26.53(b)) The Respondent must submit an Assurance Statement for each DBE whose participation the Respondent is counting toward the goal. This may include first, second, third and so on tier subcontractors and the Respondent and all subcontractors between the Respondent and the DBE should sign the Assurance Statement. The Respondent must submit this Assurance Statement on Company Letterhead.

For each Assurance Statement, the Respondent must also provide the written quote or proposal from the DBE or other communication from the DBE upon which the scope of work and dollar value contained in your Assurance Statement is based ("quote/proposal").

For all RFQs using federal monies, the Assurance Statement(s) must still be submitted and list the DBE s to be used and their scope of work, but no dollar amount(s) is entered. Dollar amounts(s) will be submitted by the prevailing Respondent upon completion of the selection process.

All portions of the Assurance Statement must be completed (including the description of work, the estimated contract amount, and the estimated dollar value of DBE participation for counting and goal purposes) before the Assurance Statement is signed by either the DBE or the Respondent. If the DBE's, and if applicable the 2nd/3rd Tier Subcontractor's, signature(s) can be obtained on the completed Assurance Statement before the bid submission deadline, the Respondent should submit the fully-completed and fully-signed Assurance Statement. If the Respondent submits an Assurance Statement that is completed except for the DBE's, and if applicable, the 2nd/3rd Tier Subcontractor's signature(s) and a

[1] The Authority also operates a non-federal Business Diversity Development Program (BDDP). The Authority administers the BDDP Program according to federal regulations, primarily 49 CFR Part 26.

quote/proposal from the DBE as described above, the Respondent will be given 24 hours from the bid submission deadline to submit the completed Assurance Statement signed by the DBE and if applicable the 2nd/3rd Tier Subcontractor. Each Assurance Statement submitted during this 24 hour window must conform to the previously submitted Assurance Statement except for DBE signature. These signed Assurance Statements must be submitted pursuant to the same location and time restrictions that applied to the solicitation response and late signed Assurance Statements will only be accepted for good cause as determined solely by MSCAA.

MSCAA reserves the right to ask questions of the Respondent, investigate and require additional information as it determines necessary in its sole discretion to ensure that the regulations and MSCAA's rules are followed as it relates to DBE participation.

Respondent DBE Goals Accomplishment Statement
Submit on Company Letterhead

Information on All Firms that Provide Bids or Quotes

We ask, but do not require, that the Respondent submit the following information with the response to this solicitation:

Voluntary Disclosure of Respondent Data

DEFINITION OF SOCIALLY AND ECONOMICALLY DISADVANTAGED

The rules that govern eligibility and certification of DBE are found generally at 49 CFR Part 26.5 and 26.61 through 26.73. These rules define a DBE as a for-profit, small business concern which is at least fifty-one percent (51%) owned and controlled by one or more socially and economically disadvantaged individuals. In the case of any publicly owned business, at least fifty-one percent (51%) of the stock must be owned by one or more socially and economically disadvantaged individuals. In addition, the personal net worth of the socially and economically disadvantaged owners of the small business concern must not exceed one million three hundred twenty thousand dollars ($1,320,000).
As defined by 49 CFR, Part 26.5, a socially and economically disadvantaged individual is any individual who is a citizen (or lawfully admitted permanent resident) of the United States and who is –

a. Any individual who a recipient finds to be a socially and economically disadvantaged individual on a case-by-case basis.

b. Any individual in the following groups, members of which are rebuttably presumed to be socially and economically disadvantaged:

(1) "Black Americans" which includes persons having origins in any of the Black racial groups of Africa;

(2) "Hispanic Americans" which includes persons of Mexican, Puerto Rican, Cuban, Dominican, Central or South American, or other Spanish or Portuguese culture or origin, regardless of race;

(3) "Native Americans" which includes persons who are American Indians, Eskimos, Aleuts, or Native Hawaiians;

(4) "Asian-Pacific Americans" which includes persons whose origins are from Japan, China, Taiwan, Korea, Burma (Myanmar), Vietnam, Laos, Cambodia (Kampuchea),

Thailand, Malaysia, Indonesia, the Philippines, Brunei, Samoa, Guam, the U. S. Trust Territories of the Pacific islands (Republic of Palau), the Commonwealth of the Northern Marianas Islands, Macao, Fiji, Tonga, Kiribati, Tuvalu, Nauru, Federated States of Micronesia, or Hong Kong;

(5) "Subcontinent Asian Americans" which includes persons whose origins are from India, Pakistan, Bangladesh, Bhutan, the Maldives islands, Nepal or Sri Lanka;

(6) Women;

(7) Any additional groups whose members are designated as socially and economically disadvantaged by the SBA, at such time as the SBA designation becomes effective.

DBE LIAISON OFFICER

For questions or information related to the DBE program, contact Regina Armstrong, the Senior Manager of Business Diversity Development at (901) 922-1067.

DBE CERTIFICATION

The Authority is a certifying member of the Tennessee Department of Transportation Unified Certification Program (TNUCP). TNUCP is a cooperative of entities that are recipients of federal funds that have developed a "one-stop shop" for certification throughout the State of Tennessee. The Authority compiles a directory of firms who have met the TNUCP's selection criteria for eligibility as a DBE, including 49 CFR Part 26. You can view the directory of certified firms at www.flymemphis.com or at www.tdot.tn.gov. In order to be considered as meeting the DBE goal for this Contract, each business wishing to participate as a DBE or a joint venture DBE, must be certified by a TNUCP certifying member in accordance with 49 CFR Part 26. Out of state firms may be granted reciprocity by a TNUCP certifying member with an existing certification from their home state. Unless a firm is certified by a TNUCP certifying member by the time the responses to this solicitation are due, its participation will not be considered as meeting the DBE goal in the solicitation. Each business wishing to participate as a DBE or a joint venture DBE must be certified by the time the responses are due.

Identification of Contract Goal and Requirements

For this Contract, t the DBE goal is established as **17% for Base Bid.** In order to be responsive, a Respondent must either meet the goal or make good faith efforts to do so. Good faith efforts are defined in Appendix A to 49 CFR Part 26 and discussed in the following section.

If a Respondent's DBE Assurance Statement proposes a DBE percentage less than the established goal, the Respondent must, at the time of making the response, submit appropriate documentation showing good faith efforts to meet the established goal.. MSCAA reserves the right to request additional documentation or information from Respondent regarding its DBE Assurance Statement and, if applicable, any good faith efforts documentation. If MSCAA enters into a contract based on the Respondent's DBE Goals Accomplishment Statement and documentation, the DBE percentage accepted by MSCAA will become a contractual requirement. If the Respondent's DBE Assurance Statement proposes to attain a DBE percentage higher than the established goal, the established goal will remain the contractual requirement.

Respondents shall not contract with, demand, require or coerce a DBE into any agreement or into the signing of any Assurance Statement or any other document which prohibits the DBE from providing subcontracting quotations or doing business with other Respondents. The DBE shall be free to provide their services to any number of Respondents. To ensure that all obligations under sub-contracts awarded to a

DBE are met, the MSCAA will review the agreement between the Respondent and DBE, and Respondent's DBE involvement efforts during the performance of the contract.

GOOD FAITH EFFORTS STATEMENT AND REQUIREMENTS

Respondents must either meet the DBE goal or make good faith efforts to meet the goal. Respondents who do not meet the goal must establish adequate good faith efforts by submitting documentation along with the Respondent DBE Goals Accomplishment Statement. This statement should show that they took all necessary and reasonable steps to achieve the DBE goal, which could reasonably be expected to obtain sufficient DBE participation, even if they were not fully successful. The Respondent's DBE Goals Accomplishment Statement and supporting documents should conform to the good faith requirements outlined in Appendix A of 49 CFR Part 26.

The following is a list of types of actions that may be part of a Respondent's efforts to obtain DBE participation and may be included in the Respondent DBE Goals Accomplishment Statement and documentation. This list is not intended to be a mandatory checklist, nor is it intended to be exclusive or exhaustive. Other factors or types of efforts may be relevant in appropriate cases:

a. Soliciting through all reasonable and available means (e.g. attendance at pre-bid meetings, advertising and/or written notices) the interest of all certified as a DBE who have the capability to perform the work of the contract. The Respondent must solicit this interest within sufficient time to allow the DBE to respond to the solicitation and take appropriate steps to follow-up initial solicitations to determine interest.

b. Selecting portions of the work to be performed by a DBE in order to increase the likelihood that the goals of the will be achieved.

c. Providing any interested DBE with adequate information about the plans, specifications, and requirements of the contract in a timely manner to assist them in responding to a solicitation with their offer for the subcontractor.

d. Negotiating in good faith with any interested DBE. It is the Respondent's responsibility to make a portion of the work available to DBE subcontractors and suppliers and to select those portions of the work or material needs consistent with the available DBE subcontractors and suppliers, so as to facilitate DBE participation.

e. Not rejecting any DBE as being unqualified without sound reasons based on a thorough investigation of their capabilities.

f. Making efforts to assist any interested DBE in obtaining bonding, lines of credit, or insurance as required by the recipient or contractor.

g. Making efforts to assist any interested DBE in obtaining necessary equipment, supplies, materials, or related assistance or services.

h. Effectively using the services of available minority/women community organizations; minority/women contractors' groups; local, state, and Federal minority/women business assistance offices; and other organizations as allowed on a case-by-case basis to provide assistance in the recruitment and placement of any DBE.

If a Respondent has not met the DBE goal and submits Respondent DBE Goals Accomplishment Statement and documentation, the Respondent should summarize in detail all good faith efforts taken by the

Respondent, including, but not limited to, the activities listed above in A through I, and supporting documentation. While the Respondent should submit documentation to support its good faith efforts at the time of bid submission, MSCAA may ask questions of Respondent or request additional documentation after review of Respondent's DBE Goals Accomplishment Statement and any documentation. In submitting the information required under this section, Respondent understands and agrees that the determination of whether Respondent has met the DBE goal or established good faith efforts to meet the goal is a judgment call that MSCAA will make.

ADMINISTRATIVE RECONSIDERATION (49 CFR PART 26.53(d))

Within 5 business days of being informed by the Authority that it is not responsive because it has not documented sufficient good faith efforts, a Respondent may request administrative reconsideration. Respondent should make this request in writing to the following reconsideration official: Terry Blue, President and CEO, Memphis Shelby County Airport Authority, 2491 Winchester Road, Suite 113, Memphis, Tennessee 38116, (901) 922-8000, tblue@flymemphis.com. The reconsideration official will not have played any role in the original determination that the Respondent did not document sufficient good faith efforts.

As part of this reconsideration, the Respondent will have the opportunity to provide written documentation or argument concerning the issue of whether it met the goal or made adequate good faith efforts to do so. The bidder/offeror will have the opportunity to meet in person with our reconsideration official to discuss the issue of whether it met the goal or made adequate good faith efforts to do. The Authority will send the Respondent a written decision on reconsideration, explaining the basis for finding that the Respondent did or did not meet the goal or make adequate good faith efforts to do so. The result of the reconsideration process is not administratively appealable to the Department of Transportation.

COUNTING THE DBE PARTICIPATION

DBE participation shall be counted toward meeting the DBE goal as outlined in 49 CFR Part 26, specifically 26.55. When **the Respondent** completes an Assurance Statement, **the Respondent** must include not only the total value of the work to be performed and/or the materials to be supplied by the DBE but also the total amount of DBE participation that should be counted toward meeting the goal. If you have any questions about counting, we strongly urge you to consult 49 CFR Part 26. The following may be helpful to you in counting DBE participation and in determining which sections of Part 26.55 you need to review in more detail.

a. When a DBE participates in a contract, you count only the value of the work actually performed by the DBE toward DBE goals.

(1) Count the entire amount of that portion of a construction contract (or other contract not covered by paragraph (a)(2) of this section) that is performed by the DBE's own forces. Include the cost of supplies and materials obtained by the DBE for the work of the contract, including supplies purchased or equipment leased by the DBE (except supplies and equipment the DBE subcontractor purchases or leases from the prime contractor or its affiliate).

(2) Count the entire amount of fees or commissions charged by a DBE firm for providing a bona fide service, such as professional, technical, consultant, or managerial services, or for providing bonds or insurance specifically required for the performance of a DOT-assisted contract, toward DBE goals, provided you determine the fee to be reasonable and not excessive as compared with fees customarily allowed for similar services.

(3) When a DBE subcontracts part of the work of its contract to another firm, the value of the subcontracted work may be counted toward DBE goals only if the DBE's subcontractor is itself a DBE. Work that a DBE subcontracts to a non-DBE firm does not count toward DBE goals. a. When a DBE participates in a contract, you count only the value of the work actually performed by the DBE toward DBE goals.

(1) Count the entire amount of that portion of a construction contract (or other contract not covered by paragraph (a)(2) of this section) that is performed by the DBE's own forces. Include the cost of supplies and materials obtained by the DBE for the work of the contract, including supplies purchased or equipment leased by the DBE (except supplies and equipment the DBE subcontractor purchases or leases from the prime contractor or its affiliate).

(2) Count the entire amount of fees or commissions charged by a DBE firm for providing a bona fide service, such as professional, technical, consultant, or managerial services, or for providing bonds or insurance specifically required for the performance of a DOT-assisted contract, toward DBE goals, provided you determine the fee to be reasonable and not excessive as compared with fees customarily allowed for similar services.

(3) When a DBE subcontracts part of the work of its contract to another firm, the value of the subcontracted work may be counted toward DBE goals only if the DBE's subcontractor is itself a DBE. Work that a DBE subcontracts to a non-DBE firm does not count toward DBE goals.

b. When a DBE performs as a participant in a joint venture, count a portion of the total dollar value of the contract equal to the distinct, clearly defined portion of the work of the contract that the DBE performs with its own forces toward DBE goals.

c. Count expenditures to a DBE contractor toward DBE goals only if the DBE is performing a commercially useful function on that contract. For the definition and explanation of a commercially useful function see 49 CFR Part 26.55(c).

d. To determine whether a DBE trucking company is performing a commercially useful function see 49 CFR Part 26.55(d).

e. Count expenditures with DBEs for materials or supplies toward DBE goals as provided in 49 CFR Part 26.55(e). Please note that materials or supplies obtained from a DBE manufacturer are counted differently toward DBE goals than a DBE regular dealer.

f. If a firm is not currently certified as a DBE in accordance with the standards of 49 CFR Part 26 Subpart D at the time of the execution of the contract, do not count the firm's participation toward any DBE goals, except as provided for in § 26.87(i)).

g. Do not count the dollar value of work performed under a contract with a firm after it has ceased to be certified toward your overall goal.

h. Do not count the participation of a DBE subcontractor toward a contractor's final compliance with its DBE obligations on a contract until the amount being counted has actually been paid to the DBE.

SANCTIONS FOR NON-COMPLIANCE[2]

In case of the Respondent's non-compliance with DBE requirements as applicable, including, but not limited to, documentation, cooperation, and truthfulness, MSCAA shall impose such contract sanctions as it may determine to be appropriate. This may include but is not limited to:

a) Withholding of payments to the Respondent under the Contract until the Respondent complies; and/or

b) Cancellation, termination, or suspension of the Contract, in whole or in part; and/or

c) Assessing sanctions; and/or

d) Payment by the Respondent to MSCAA of an amount equal to the difference in the DBE dollar value contracted for and the dollar value achieved in documented DBE participation, which dollar value shall be considered liquidated damages if the Authority determines that Respondent failed to make good faith efforts in meeting the Contract's DBE goal.

CONTRACT ASSURANCE (49 CFR PART 26.13)

The Contractor and any sub-recipient or subcontractor shall adhere to and ensure the following clause is included in every contract and subcontract.

The successful Respondent, any successful subrecipient or successful subcontractor shall not discriminate on the basis of race, color, national origin, or sex in the performance of this prime contract. The successful Respondent shall carry out applicable requirements of 49 CFR part 26 in the award and administration of DOT-assisted contracts. Failure by the successful Respondent 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 recipient deems appropriate, which may include, but is not limited to:

(a) Withholding monthly progress payments;

(b) Assessing sanctions;

(c) Liquidated damages; and/or

(d) Disqualifying the Contractor from future bidding as non-responsible.

PROMPT PAYMENT/RETAINAGE

The successful Respondent agrees to pay each subcontractor under this prime contract for satisfactory performance of its contract no later than fifteen (15) days from the receipt of each payment the successful Respondent receives from MSCAA. A subcontractor's work is satisfactorily completed when all the tasks called for in the subcontract have been accomplished and documented as required by the MSCAA. When MSCAA has made an incremental acceptance of a portion of a prime contract, the work of a subcontractor covered by that acceptance is deemed to be satisfactorily completed. Any delay or postponement of payment from the above referenced timeframe may occur only for good cause following written approval of the MSCAA. This clause applies to both DBE and non-DBE subcontractors.

[2] The Authority applies Sanctions for Non-Compliance to its BDDP.

Retainage will not be withheld on this project. No retainage will be withheld by MSCAA from progress payments due the successful Respondent. Retainage by the successful Respondent or subcontractors is prohibited, and no retainage will be held by the successful Respondent from progress payments due to subcontractors.

TERMINATION OF DBE SUBCONTRACTS

The successful Respondent must not terminate a DBE subcontractor listed in response to this solicitation (or an approved substitute DBE firm) without prior written consent of Authority. This includes, but is not limited to, instances in which the successful Respondent seeks to perform work originally designated for a DBE subcontractor with its own forces or those of an affiliate, a non-DBE firm, or with another DBE firm.

The successful Respondent shall utilize the specific DBEs listed to perform the work and supply the materials for which each is listed unless the contractor obtains prior written consent as provided in 49 CFR §26.53(f). Unless prior written consent is provided pursuant to 49 CFR §26.53(f),, the successful Respondent shall not be entitled to any payment for work or material unless it is performed or supplied by the listed DBE.

The Authority may provide such written consent only if the Authority agrees, for reasons stated in the concurrence document, that the successful Respondent has good cause to terminate the DBE firm. For purposes of this paragraph, good cause includes the circumstances listed in 49 CFR §26.53.

Before transmitting to the Authority its request to terminate and/or substitute a DBE subcontractor, the prime contractor must give notice in writing to the DBE subcontractor, with a copy to the Authority, of its intent to request to terminate and/or substitute, and the reason for the request.

The successful Respondent must give the DBE five days to respond to the successful Respondent's notice. In the response, the DBE must advise the Authority and the successful Respondent of the reasons, if any, why it objects to the proposed termination of its subcontract and why Owner should not approve the prime contractor's action. If required in a particular case as a matter of public necessity (e.g., safety), Owner may provide a response period shorter than five days.

In addition to post-award terminations, the provisions of this section apply to preaward deletions of or substitutions for DBE firms put forward by offerors in negotiated procurements.

49 CFR PART 26

The Respondent shall carry out the applicable requirements of 49 CFR Part 26 in the award and administration of MSCAA contracts. Respondent agrees to provide all its subcontractors and suppliers and to require all its subcontractors and suppliers on this project to provide a complete copy of the **Disadvantaged Business Enterprise (DBE) Requirements** of this contract to all those who provide supplies or work related to this contract and to require all those providing supplies or work to be bound by these requirements as it relates to their work related to this contract.

DBE ASSURANCE STATEMENT/LETTER OF INTENT

RESPONDENT:

Name of Firm: _____

Address: _____

City: _____ State: _____ Zip: _____

Telephone: _____

DBE:

Name of Firm: _____

Address: _____

City: _____ State: _____ Zip: _____

Telephone: _____

Description of work to be performed by DBE:

_____

_____

_____

The Respondent is committed to utilizing the above-named DBE for the work described above. The estimated dollar value of this work is $_____, which is _____% the total base bid proposal.

AFFIRMATION

The above-named DBE affirms that it will perform the portion of the contract for the estimated dollar value as stated above.

By: _____
Signature of DBE and Title Date Name

By: _____
Signature of 2nd/3rd Tier Subcontractor and Title Date Name

If the Respondent does not receive award of the prime contract, any and all representations in this letter of Intent and Affirmation shall be null and void. If the Respondent does receive award of the prime contract, Respondent commits to using the DBE subcontractor listed and described above to meet the DBE contract goal, pursuant to 49 CFR Part 26.

By: _____
Signature of Respondent and Title Date Name

(SUBMIT ON RESPONDENT'S LETTERHEAD FOR EACH DBE SUBCONTRACTOR.)

RESPONDENT DBE GOALS ACCOMPLISHMENT STATEMENT

The undersigned Respondent has satisfied the requirements of the bid/proposal specification in the following manner (please complete the appropriate spaces):

_____ The Respondent is committed to a minimum of _____% DBE utilization on this contract.

_____ The Respondent is unable to meet the DBE goal of _____% but is committed to a minimum of _____% DBE utilization on this contract and submits the attached narrative and documentation demonstrating good faith efforts consistent with Appendix A of 49 CFR 26. **The Respondent should attach as many pages as necessary to provide a full and complete narrative and supporting documentation of good faith efforts made. This narrative must be written on company letterhead and signed.**

Please provide an explanation for the percentage quoted above:

Provide an explanation of the dollar value of DBE's participation and compensation and how this has been determined to meet the specific goal requirements of this solicitation in whole or part.

_____

_____

_____

If DBE and company will enter into a Joint Venture, please describe the terms of the relationship and attach a copy of the contract between the parties.

_____

_____

_____

It is the present intent of the Respondent to utilize the specific DBE firms identified in this proposal in the execution of this contract. If for any reason, one or more of the DBE identified here are unable or unwilling to participate, the Respondent will make good faith efforts to replace the DBE with a similar DBE. The Authority DBE Good Faith Procedures are provided in this package and apply to this proposal.

Respondent's Name: _____

State Registration No.: _____

Federal Tax ID No.: _____

By: _____
Signature and Title Date

(SUBMIT THIS PAGE ON RESPONDENT'S LETTERHEAD)

VOLUNTARY DISCLOSURE OF RESPONDENT DATA

For Title VI Compliance, we ask for **voluntary disclosure** of the following information:

Gender: Male

Female

Race: Caucasian

Black American

Hispanic American

Native American

Subcont. Asian American

Asian-Pacific American

Other (please specify) _____

(DO NOT SUBMIT THIS PAGE ON LETTERHEAD)

Received: _____ Date: _____ Sr. Manager of BDD	Project Name: _____ Project No.:_____

DISADVANTAGED BUSINESS ENTERPRISE (DBE) REQUIREMENTS FOR SUBCONTRACTS

Memphis-Shelby County Airport Authority (MSCAA) operates a federal Disadvantaged Business Enterprise (DBE) Program to ensure full and fair opportunities in MSCAA contracting for businesses owned by socially and economically disadvantaged individuals, which is governed by 49 CFR Part 26. This document sets forth DBE provisions that must be included in all contracts and subcontracts for the subject project as required by federal regulations. ***A SIGNED COPY MUST BE (1) SUBMITTED TO THE MSCAA DBE LIAISON OFFICER AND (2) INCLUDED IN YOUR SUBCONTRACT AS AN EXHIBIT TO ANY UNDERLYING AGREEMENT FOR THE SUBJECT PROJECT.***

The undersigned parties agree and acknowledge that this document shall be deemed to form, be read and construed as, as if stated verbatim therein, part of any agreement between the parties related to the subject project. This document is an agreement wherein the parties accept, agree to, and incorporate federally mandated contractual provisions into any underlying agreement for the subject project as well as acknowledge applicable federal and local DBE rules and regulations. *THE TEXT CONTAINED IN THIS DOCUMENT CANNOT BE REVISED, ALTERED, OR OTHERWISE MODIFIED BY THE PARTIES. THIS IS A FINAL DOCUMENT.*

Any subcontract for the subject project shall be governed by regulations set forth in 49 CFR Part 26 and MSCAA DBE program rules and regulations, including but not limited to the following:

1. **Assurance** (*49 CFR 26.13(b)*): The contractor, sub-recipient, or subcontractor shall not discriminate on the basis of race, color, national origin, or sex in the performance of this contract. The contractor shall carry out applicable requirements of 49 CFR Part 26 in the award and administration of DOT assisted contracts. 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 recipient deems appropriate, which may include, but is not limited to: 1) Withholding monthly progress payments; 2) Assessing sanctions; 3) Liquidated damages; and/or 4) Disqualifying the contractor from future bidding as non-responsible.
2. **Prompt Payment** (*49 CFR 26.29*): The prime contractor is required to pay its subcontractors performing work related to this contract for satisfactory performance of that work no later than 15 days after the prime contractor's receipt of payment for that work from MSCAA. A subcontractor's work is satisfactorily completed when all the tasks called for in the subcontract have been accomplished and documented as required by MSCAA. When MSCAA has made an incremental acceptance of a portion of a prime contract, the work of a subcontractor covered by that acceptance is deemed to be satisfactorily completed. Any delay or postponement of payment from the above referenced timeframe may occur only for good cause and written approval of the MSCAA. Retainage will not be withheld on this project. No retainage will be withheld by the MSCAA from progress payments due the prime contractor. Retainage by the prime or subcontractors is prohibited. No retainage will be held by the prime from progress due subcontractors.
3. **Termination/Substitution** (*49 CFR 26.53*): The prime contractor may not terminate or substitute any DBE subcontractor and perform that work through its own forces or those of an affiliate without prior written consent of MSCAA. The prime contractor must follow the procedures set forth in 49 CFR 26.53(f).
4. **Counting Participation**: DBE participation in a contract must be counted in accordance with 49 CFR 26.55 and applicable guidance.
5. **DBE Independence**: Only an independent business may be certified as a DBE. An independent business is one the viability of which does not depend on its relationship with another firm or firms. Determination of ownership and control of a DBE is governed by 49 CFR 26.71.
6. **DBE Liaison Officer (DBELO)**: For DBE-related questions, issues, and disputes, please contact the MSCAA DBELO (contact information found at https://flymemphis.com/business-diversity-development-program/). The current DBELO is Regina Armstrong, who may be reached at 901-922-0167 or rarmstrong@flymemphis.com.

This document shall control and supersede any inconsistency, conflict or ambiguity contained in any underlying agreement between the parties for the subject project as to the procedures, processes, or subject matter set forth in this document or otherwise governed by 49 CFR Part 26 and/or other applicable MSCAA DBE program rules and regulations.

PRIME CONTRACTOR: _____	SUBCONTRACTOR: _____
SIGNATURE:_____	SIGNATURE:_____
TITLE:_____ DATE: _____	TITLE:_____ DATE: _____

Information on All Firms that Provided Bids or Quotes to:

This requirement applies to all firms, regardless of whether they are subs or primes, regardless of the gender or race of their owners, and regardless of whether they are ultimately chosen to participate in the contract. Please list below the name, address, phone number and contact person for every firm that provided you a bid or a quote on this project – even if you ultimately decided not to use the firm in preparing your final bid. The first line should be used for the **prime contractor** on this project. All sections must be completed to the best of your ability.

MSCAA Proj./Bid No.: _____

Name of Firm	Selected? Y/N	Full Address of Firm	Point of Contact	Phone No.	DBE? Y/N	Firm Age	AGRR *
						yrs	
						yrs	
						yrs	
						yrs	
						yrs	
						yrs	
						yrs	
						yrs	
						yrs	
						yrs	
						yrs	
						yrs	
						yrs	
						yrs	
						yrs	

*Footnote: Please enter the letter for the category that best identifies your annual gross revenue.
AGRR =Annual Gross Revenue Ranges:
A = Less than $500,000 **B** = $500,000 - $1 Million **C** = $1 - $2 Million **D** = $2 - $5 Million **E** = Over $5 Million

DIVISION 0 – SECTION 00490

ADDENDA AND MODIFICATIONS

1. INTERPRETATIONS - ADDENDA AND MODIFICATIONS

A. If, during the bidding period Bidder finds discrepancies, ambiguities, omissions, or is in doubt as to meaning or intent of Contract Documents, notify the Owner or Engineer not less than seven (7) days prior to Bid Date. All such necessary clarifications, information, interpretations or amendments shall be answered in the form of written addenda to Drawings and Specifications, and shall be issued simultaneously to all holders of complete sets of Documents.

B. No Addenda will be issued less than two days prior to the Bid opening date. Neither the Owner nor Engineer shall be responsible for oral interpretations or instructions during the bidding period.

C. All Addenda are incorporated by reference into the Contract. Failure of any Bidder or sub-bidder to receive any addenda shall not relieve the Bidder of any obligation with respect to the Bid.

D. All Addenda and Modifications to the Contract Documents shall be inserted and indexed in this location behind this page.

END OF SECTION 00490

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CONSTRUCTION CONTRACT
FOR
DEWITT SPAIN AIRPORT APRON REHABILITATION - CONSTRUCTION

BY AND BETWEEN
THE MEMPHIS-SHELBY COUNTY AIRPORT AUTHORITY
AND
(CONTRACTOR NAME)

MSCAA PROJECT NO. 20-1440-01

THIS CONSTRUCTION CONTRACT (hereinafter referred to as "Contract") is made and entered into as of _____, between MEMPHIS-SHELBY COUNTY AIRPORT AUTHORITY, a body politic and corporate under the laws of Tennessee (hereinafter referred to as **"Owner" or "Sponsor"**) doing business at 2491 Winchester Road, Suite 113, Memphis, Tennessee 38116-3856, and {insert **CONTRACTOR NAME**}, a {insert **LEGAL ENTITY TYPE and STATE**} doing business at {insert Contractor address}, (hereinafter referred to as "**Contractor**," "**Bidder**," or "**Offeror**"). Owner and Contractor may sometimes be referred to herein individually as "Party" or collectively as "Parties."

RECITALS

1. **WHEREAS,** the Owner desires to have constructed certain work in Memphis, Tennessee, more particularly described as_____, MSCAA PROJECT NO. 20-1440-01 (herein referred to as "the Project"); and

2. **WHEREAS,** the Contractor desires to enter into this Contract as an independent contractor and is ready, willing and able to construct the Project in accordance with the terms and subject to the conditions of this Contract; and

3. **WHEREAS,** the "Program Manager" is to act as the Owner's representative, and the Owner will advise the Contractor in writing of the name of the Program Manager; and

4. **WHEREAS**, the "Engineer" is the Owner's representative with responsibility for design of the technical specifications, and the Owner will advise the Contractor in writing of the name of the Engineer; and

NOW, THEREFORE, in consideration of good and valuable consideration, received or to be received, the sufficiency of which the Parties acknowledge, the Parties agree as follows:

ARTICLE 1

SCOPE OF THE WORK AND TERM OF AGREEMENT

Section 1.01. Scope of the Work. The general scope of the work is more particularly described in Exhibit A, which is attached hereto and incorporated herein by reference. Contractor agrees that the Project shall be constructed in accordance with the terms of this Contract and the "Contract Documents" as defined in Article 2 of this Contract. The term "Work" includes, but is not limited to, all labor, materials, supplies, tools, equipment and services necessary to construct the Project as described in the Contract Documents, whether or not all materials and equipment are incorporated or will be incorporated in the Project; and all Work deemed necessary to fully close the Project including demobilization.

.Section 1.02. Term of Contract and Completion. The term of this Contract shall commence upon Owner's issuance of the Notice to Proceed pursuant to Section 3.01 and shall continue until the Work is completed in accordance with the Contract Documents, unless earlier terminated by the provisions set forth in Section 23 of this Contract.

ARTICLE 2

CONTRACT DOCUMENTS

Section 2.01. Definition. The "Contract Documents" include this Contract, the Legal Notice, Instructions to Bidders, the Proposal, the Proposal Guaranty, the drawings and the specifications, the Federal Aviation Authority ("FAA") General Provisions ("GP"), all addenda, and exhibits or modifications to any of them, issued prior to or after execution of this Contract. The Contract Documents are more particularly described in Exhibit B, which is attached hereto and incorporated herein by reference. As used in this Contract, a "modification" is either:

(a) a written and signed Contract Amendment to this Contract; or

(b) an accepted Request for Proposal ("RFP"); or

(c) an Engineer's Supplemental Instruction ("ESI"); or

(d) a Construction Change Directive (as defined in Section 9.02(c) of this Contract).

Section 2.02. Intent of Contract Documents. The intent of the Contract Documents is to include all design, architecture and engineering, except as otherwise expressly provided in the Contract Documents, materials, appliances, labor and services of every kind necessary for the proper execution of the Work and the terms and conditions of payment for the Work. The Contract Documents are to be considered as one document, and whatever is called for by any one of the Contract Documents shall be as binding as if called for by all.

Section 2.03. Coordination of the Contract, Plans and Specifications. This Contract, the plans, specifications, and all referenced standards cited in the Contract Documents are essential parts of the Contract requirements. A requirement occurring in one of the Contract Documents is as binding as though occurring in all. They are intended to be complementary and used to describe and provide for a complete project. In case of dimensional discrepancies, calculated dimensions will govern over scaled dimensions. In the event of conflicts or discrepancies among the Contract Documents, interpretations will be based on the following priorities:

(a) This Contract.

(b) The Addenda, with those of later date having precedence over those of earlier date.

(c) The Technical Specifications.

(d) The Plans.

(e) Cited standards for materials or testing and cited FAA General Provisions and advisory circulars.

Section 2.04. Errors in Contract Documents. Prior to commencing the Work, the Contractor shall review all of the Contract Documents for the purpose of identifying any error, inconsistency, omission, discrepancy or variance that may be contained therein. If the Contractor finds any error, inconsistency, omission, discrepancy or variance in the Contract Documents, it shall notify the Owner at least ten (10) days before beginning the affected portion of the Work. The Owner shall make any correction, interpretation or clarification promptly, basing its decision on the intent of the Contract Documents. Failure of the Contractor to timely notify the Owner of any such error, inconsistency, discrepancy or variance within the time provided by this paragraph shall bar the Contractor from making any claim for additional time or compensation caused by any such error, inconsistency, discrepancy or variance even if the error, inconsistency, discrepancy or variance caused the Contractor to incur additional expense or time of performance.

ARTICLE 3

PROGRESS OF THE WORK

Section 3.01. Commencement and Completion. The Contractor shall commence the Work upon receipt of the written Notice to Proceed, as defined in Section 01100 of the Technical Specifications, from the Owner and shall achieve substantial completion of the Work, as defined in Section 01100 of the Technical Specifications. The Contractor warrants that it will deliver the Project to the Owner free from any and all mechanics' liens or other encumbrances. Contractor further agrees to promptly (which is defined for purposes of this paragraph as no more than three (3) days from receipt of any lien or other notice) notify the Owner of the existence of any and all mechanics' liens filed by any subcontractors, materialmen, suppliers or sub-subcontractors. If any mechanics' liens are filed, Contractor shall, at its expense, bond off any such mechanics' liens within three (3) days from receipt of a written request of Owner to do so. Time is of the essence, and the substantial completion date may be altered only as provided in this Contract. Substantial completion shall occur when the Work is sufficiently complete in accordance with the Contract Documents, so the Owner can occupy or utilize the Work for its intended use, and when only minor punch list work remains to be done and a certificate of occupancy has been issued. The Owner will, upon written request of the Contractor, issue a certificate establishing the substantial completion date at any time after substantial completion has occurred.

Section 3.02. The Progress Schedule. Contractor shall fully comply with the requirements for scheduling the Work as set forth in Section 01100 and Section 01320 of the Technical Specifications. The Owner reserves the right to reschedule the Work, or the sequence of the activities of the Contractor, for no additional compensation should Owner deem such rescheduling to be in its best interest. At least fifteen (15) days prior to the due date of the first payment to be made hereunder by the Owner and thereafter on a monthly basis, the Contractor shall submit to the Owner a cash flow projection depicting the projected monthly cash flow for the entire Project.

Section 3.03. Extension of Substantial or Final Completion Date.

(a) Except as otherwise expressly provided herein, the "Substantial Completion Date" or "Final Completion Date" shall be extended only for such number of calendar days that the Work is actually delayed by a casualty, a fire, or a Contract Amendment (hereinafter referred to as "Excusable Delays"). No extensions to the Substantial Completion Date shall be granted due to the negligence or fault of the Contractor or its subcontractors, non-availability of materials or non-availability of labor. No extension to the Substantial Completion Date shall be granted for the period of time during a delay in the performance of the Work which is caused in part by the Owner or the Engineer , and in part by the Contractor or one for whom the Contractor is responsible ("Concurrent Delay"). A request for a time extension based upon inclement weather shall be governed by the provisions of Section 01320 (3.05) of the Technical Specifications.

(b) In order to obtain an extension of the Final Completion Date or the Substantial Completion Date due to an Excusable Delay, the Contractor in each instance shall give written notice to the Owner within seven (7) days after the occurrence of each Excusable Delay. If the Contractor fails to issue written notice to the Owner, its right to an extension, if any, will be deemed waived. The Owner shall render a written decision, which shall be made in good faith, granting or refusing the request of the Contractor for an extension within a reasonable time after receipt of the request for a time extension. If a Contract Amendment is agreed to by the Contractor and Owner, any extension of the Substantial Completion Date caused by the Contract Amendment work must be stated in the Contract Amendment. If no extension to the Substantial Completion Date is stated in the Contract Amendment, then the Contractor shall be barred from later seeking an extension to the Substantial Completion Date or Final Completion Date because of the Contract Amendment work. No extension to the Substantial Completion Date or the Final Completion Date shall be granted due to the aggregate number of Contract Amendments.

Section 3.04. No Damage for Delay. Contractor agrees to perform the Work and to require the subcontractors to perform the Work in a timely and proper method so as to meet the dates reflected on the progress schedule. In the event that the Contractor is delayed in the performance of the Work through no fault of the Contractor or its subcontractors, and for causes set forth in Section 3.03(a), and defined therein as Excusable Delay, then the Contractor may seek a time extension in accordance with the provisions of Section 3.03(b). Contractor agrees that such time extension is its sole and exclusive remedy for any damages regardless of the cause of such delays. Contractor also agrees that the Owner shall

not be liable for any other monetary damages sustained by Contractor or its subcontractors for acceleration, disruption, inefficiencies, suspension or resequencing of the Work or any other damages related to the progress schedule regardless of the cause of such damages. The Owner shall not be liable for consequential damages of any nature for any reason at any time.

Section 3.05. Liquidated Damages. As set forth in Section 01100 of the Technical Specifications, liquidated damages will be assessed for the Project. The Contractor shall proceed with the Work at such rate of progress to ensure full completion by the Final Completion Date.

ARTICLE 4

PAYMENT

Section 4.01. Contract Price. The Owner and Contractor agree that the Contractor shall be paid the amount of **Thousand and 00/100 Dollars ($000.00)** ("Contract Price"), as set forth in the Contractor's Proposal, for completion of the Work in accordance with the Contract Documents. The Contract Price shall include all profit and overhead, including without limitation field overhead, general conditions and home office overhead of the Contractor. The Contract Price also includes all allowances specified in the Contract Documents.

Section 4.02. Payment Procedures. As Work proceeds under the Contract, payments ("Progress Payments") shall be made by the Owner to the Contractor in accordance with the following procedure:

(a) By the 1st day of each calendar month during the performance of the Work, the Contractor shall submit to the Owner an Application and Certificate for Payment, based on the Work completed during the previous month ("previous month" being defined for this Section only as the second calendar day of the prior month through the first calendar day of the current month), using a form approved by the Owner. Contractor shall not be paid any amounts exceeding the Contract Price set forth in Section 4.01 of this Contract, unless modified by a properly executed written Contract Amendment in accordance with the provisions of Article 9 of this Contract.

(b) Each Application and Certificate for Payment shall be accompanied by: (1) lien waivers of the Contractor conditioned upon payment by the Owner of the amount sought in the Application; (2) other documentation as may be requested by the Owner for the proper review of the Application and Certificate for Payment; (3) a list of current subcontractors, sub-subcontractors and material suppliers; (4) the Business Diversity Monthly Compliance Reports; and (5) all documents required by the Owner Controlled Insurance Program ("OCIP") Manual, as applicable.

(c) The Owner or Engineer shall promptly review each Application and Certificate for Payment and recommend for approval such amount as is properly due under the Contract Documents.

(d) Payments by the Owner shall be made within thirty (30) days from the date on which an Application and Certificate for Payment has been submitted and approved by the Owner or the next working day if the thirtieth day is a Saturday, Sunday or holiday.

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Section 4.03. Mobilization. The work which is conducted in preparation for the construction activities, which includes but is not limited to, movement of personnel, equipment, stockpiles, supplies to the project site, (all as more particularly described in Article 3.01 of Section 01100 of the Technical Specifications) shall be designated as "Mobilization." The Mobilization lump sum amount for this Contract shall be in accordance with Specification C-105.

Section 4.04. Demobilization. Not Used.

Section 4.05. Payment for Material Stored On-Site.

(a) Payment for the actual unit cost of materials suitably stored on the site of the Work ("Work Site") and intended for incorporation in the Work will be made by the Owner to the Contractor subject to the provisions of Section 4.02 of this Contract, Section 90-07 of the FAA General Provisions, and the following conditions:

(1) The Contractor shall furnish supporting evidence satisfactory to the Owner evidencing the cost of the materials and shipment to the work site.

(2) The materials shall not be stored on the work site for more than ninety (90) calendar days before they are installed without the written consent of the Owner.

(3) The materials shall be stored on the work site in accordance with applicable recommendations of the manufacturer and the instructions of the Owner.

(4) A representative of the Owner or Engineer may inspect and inventory any stored materials.

(b) Payment will not be made for materials stored away from the work site without the written consent of Owner. In the event that the Owner consents to payment for materials stored off-site, such payment shall be conditioned upon submission by the Contractor of bills of sale or such other documentation satisfactory to the Owner to establish the title of the Owner to such materials or equipment, and the submission of satisfactory insurance certificates for the stored materials.

(c) Notwithstanding any provision herein to the contrary, if payments are to be made on account of materials or equipment not incorporated in the Work but delivered and suitably stored at the work site, such payments shall be conditioned upon submission by the Contractor of bills of sale or such other documentation satisfactory to the Owner to establish the title of the Owner to such materials or equipment, and the submission of satisfactory insurance certificates for the stored materials to protect the interest of the Owner.

(d) Regardless of ownership or insurance, the Contractor shall remain the guardian and protector of all materials and equipment stored or incorporated into the Work.

Section 4.06. Use of Payments. The Contractor shall use all sums paid to it pursuant to this Contract for the performance of the Work in accordance with the Contract Documents. Upon the request of the Owner or Engineer, the Contractor shall furnish satisfactory proof of payment, including, but not limited to, partial release of liens and the Business Diversity Monthly Compliance Report, as to the disposition of any monies paid to the Contractor by the Owner.

Section 4.07. **Payment Not a Waiver.** Neither the approval or making of any payment to the Contractor, nor the partial or entire use or occupancy of the Work by the Owner, shall be deemed an acceptance of any portion of the Work.

Section 4.08. **Final Payment.**

(a) "Final Payment," by the Owner shall constitute a waiver of all claims by the Owner for performance of the Work except for claims of the Owner arising from unsettled liens, incomplete or defective workmanship, defective materials, failure to perform in accordance with the progress schedule, or for the breach of any guarantees of warranties provided or to be provided by the Contractor under this Contract. Acceptance of the Final Payment by the Contractor shall constitute a waiver and release of any and all claims which the Contractor may then have or in the future have against the Owner or the Engineer arising from the Work or this Contract.

(b) Final Acceptance of the Work shall occur only after all Work (including punch list items) provided for in the Contract Documents has been finally completed and accepted in writing by the Owner, and only after the Contractor has provided the Owner with instructions and operating manuals, parts lists, "record" drawings and all other items required by the Contract Documents.

(c) Within thirty (30) days after "Final Acceptance" of the Work, the Final Payment of amounts found properly due under the Contract Documents shall be paid to the Contractor.

(d) Final Payment shall not become due until the Contractor submits to the Owner the following:

(1) An affidavit that all payrolls, bills for materials and equipment, and other indebtedness connected with the Work for which the Owner or its property might in any way be responsible, have been paid or otherwise satisfied; and

(2) A consent of surety to Final Payment; and

(3) Other data establishing payment or satisfaction of all such obligations, such as receipts, releases and waivers of liens arising out of the Work, to the extent and in such form as may be designated by the Owner or Engineer; and

(4) Any documents required by Article 6 of this Contract.

(e) The Owner shall issue a "Certificate of Final Completion" when, in its sole discretion, the Project has been completed and all conditions required by this Section 4.07 have been complied with by Contractor.

Section 4.09. **The Right of Owner to Withhold Payment.** The Owner may withhold or, on account of subsequent evidence, nullify, the whole or part of any Progress Payment, including the Final Payment, to such extent as may be necessary to reasonably protect itself from any of the following:

(a) unacceptable work as further described in Section 50-10 of the FAA General Provisions; or

(b) third-party claims filed or reasonable evidence indicating probable filing of such claims; or

(c) reasonable doubt that the Work will be substantially completed by the Substantial Completion Date; or

(d) failure of the Contractor to make payments properly to subcontractors or for equipment, materials, services or labor; or

(e) reasonable evidence of fraud, over-billing or overpayment; or

(f) failure of the Contractor to perform the Work in accordance with the Contract Documents; or

(g) a reasonable doubt that the Work can be completed for the unpaid balance of the Contract Price; or

(h) damage to the Owner, or to another contractor, subcontractor or sub-subcontractor caused by the Contractor; or

(i) failure to provide certified payroll records; or

(j) failure to provide any documents required by the Owner Controlled Insurance Program (OCIP); or

(k) failure to keep the record drawings current each month in accordance with Article 6 of this Contract.

ARTICLE 5

EQUIPMENT AND MATERIALS

Section 5.01. Materials Provided by Contractor.

(a) Unless otherwise provided in the Contract Documents, the Contractor shall provide all equipment, materials, labor, services, water, and power to the Work Site, as well as all tools, equipment, lights, transportation, and other facilities necessary for the performance of the Work.

(b) All equipment, machinery, material, and articles incorporated in the Work shall be new and unused unless otherwise specified in the Contract Documents. When not specified in detail in the Contract Documents, the equipment, machinery, material, and articles incorporated in the Work shall be of the most suitable grade and quality for the purpose intended.

Section 5.02. Type of Equipment Used.

(a) When any equipment, machinery, material, or article is referred to by trade name, make, or catalog number followed by the words "or equal," the reference shall be regarded as establishing the minimum standard of quality and performance required and shall not be construed as limiting competition. The Contractor may, with the prior written approval of the Owner, use other equipment, machinery, materials, or articles which are at least equal in quality and performance to that named in the Contract Documents; provided, however, that in no event shall such approval be construed as a waiver of the right of the Owner to require equipment, machinery, materials, or articles which conform to the standard of quality and performance established by reference to the trade name, make, or catalog number of the equipment, machinery, materials, or articles for which the substitution has been approved. Any cost of redesign and additional expense resulting from the substitution shall be at the sole expense of the Contractor.

(b) The name of the manufacturer, model number, and other identifying information respecting the performance, capacity, nature, and rating of equipment, machinery, materials, and articles proposed in substitution of those specified in the Contract Documents shall be submitted to the Owner in sufficient time to avoid delays in the Work.

Section 5.03. Non-Conforming Materials.

(a) Equipment, machinery, materials or articles installed or used in the Work which do not comply with the requirements of the Contract Documents, and which have not been previously approved in writing by the Owner shall be installed or used at the risk of the Contractor of subsequent rejection by the Owner.

(b) The Contractor shall be fully and solely responsible for quality control for all equipment, machinery, materials or articles used in the performance of the Work.

Section 5.04. Owner Furnishing Equipment or Fixtures. The Owner may directly furnish any and all of the equipment or fixtures required for the Project. In the event the Owner elects to do so, the Contract Price shall be reduced by the amount which was to be charged by Contractor for such equipment or fixtures as set forth and included in the Contract Documents. A Contract Amendment reducing the Contract Price for that item of Work shall be executed by Owner and Contractor to reflect a reduction in the Contract Price for that item of Work and that the Owner is to furnish the equipment or fixtures. The Contractor shall assume responsibility for and be fully responsible for the care, custody, and control of all Owner furnished equipment or fixtures after said equipment or fixtures arrives on the Work Site or in any approved offsite storage facility, as set forth in Section 60-08 of the FAA's General Provisions.

ARTICLE 6

RECORD DRAWINGS AND DATA

Section 6.01. Record Drawings. A complete set of drawings shall be maintained by the Contractor at the Work Site for the purpose of accurately indicating all record conditions. The drawings shall be kept up-to-date and marked each day to show all changes and variations and each entry shall be dated and verified as made. At the completion of the Work and prior to Final Payment, a complete set of marked record drawings shall be furnished by the Contractor to the Owner. If the record drawings are not kept current each month, the Owner shall have no obligation to pay the Contractor until the record drawings are made current.

Section 6.02. Operation and Maintenance Data.

(a) The Contractor shall furnish complete and necessary data for the operation, repair, and maintenance of each operating component of the Work (hereinafter referred to as "the Data"). The Data shall include prints of shop drawings, "as-installed" conditions, sources of equipment and principal materials, specified tests and performance data, repair and maintenance data, lubrication instructions and recommendations, parts lists, and other catalog data or information required to operate and maintain any part of the Work. Care shall be taken to include all pertinent data and to exclude inapplicable or duplicative information.

(b) Prior to Final Payment, a set of Data shall be furnished to the Owner in an electronic PDF format. In addition, three (3) complete sets of the Data in a form directed by the Owner shall be provided to the Owner, indexed alphabetically by components, grouped together and securely bound in a durable folder or binder that is labeled and indexed to show its contents.

(c) Installation information for all machinery and equipment also shall be kept on the site of the Work during construction, but used or marked prints or data sheets are not to be used in assembling the final maintenance and operating manuals described in paragraph (b) of this Section 6.02.

(d) Operations and maintenance demonstrations by the manufacturer of all machinery and equipment shall be complete in all respects and shall specify the appropriate and inappropriate uses of the machinery and equipment.

Section 6.03. Information from Suppliers. The Contractor shall make it a requirement or condition of purchase from its suppliers of equipment and/or materials: (1) to furnish complete and adequate operating and maintenance data pertaining to their equipment and/or materials; (2) to assign to the Owner any warranty, express or implied, furnished by the manufacturer of the equipment and/or materials; and, (3) to assign to the Owner any customary maintenance or repair service, spare parts supply service, or personnel support service furnished by the manufacturer of the equipment and/or materials. If the terms and conditions of any warranty, maintenance or repair service, spare parts supply service, or personnel support service furnished by manufacturer of the equipment and/or materials are negotiable, they shall be negotiated by the Owner and the manufacturer.

ARTICLE 7

SUBCONTRACTS

Section 7.01. Definition.

(a) As used in the Contract Documents, a "subcontractor" is a person or organization that has a contract with the Contractor to perform any portion of the Work or to furnish any equipment, labor or materials to the Project.

(b) As used in the Contract Documents, a "sub-subcontractor" is a person or organization that has a contract with a subcontractor to perform any portion of the Work or to furnish any equipment, labor or materials to the Project.

Section 7.02. No Contractual Relationship with Owner. Nothing contained in the Contract Documents or otherwise shall create any contractual relationship between the Owner and any subcontractor or sub-subcontractor, and no subcontract or sub-subcontract shall relieve the Contractor of its responsibilities and obligations should any subcontractor or sub-subcontractor fail to perform its work in a satisfactory manner. The Contractor agrees to be as fully responsible to the Owner for the acts and omissions of its subcontractors and their sub-subcontractors and of persons either directly or indirectly employed by them as it is for the acts and omissions of persons directly employed by Contractor.

Section 7.03. Award of Subcontracts.

(a) Unless the Owner gives its written approval to Contractor, the Contractor shall not enter into a subcontract or purchase order with any entity that is a party in any litigation, arbitration, or other dispute resolution proceeding with the Owner. The Contractor shall request written confirmation from any potential subcontractor or supplier prior to the execution of any subcontract or purchase order that there is no pending litigation, arbitration, or other dispute resolution proceeding where the Owner and the potential subcontractor or supplier are adverse parties. Such written confirmation shall be sent to the Owner within seven (7) days from the receipt of bids.

(b) If the Owner refuses to accept any subcontractor or material supplier (or sub-subcontractor) or person or organization because of such pending litigation, arbitration, or other dispute resolution proceeding, the Contractor shall submit an acceptable substitute at no additional cost to Owner.

Section 7.04. Change of Subcontractors. The Owner may require a change of any subcontractor. The Contract Price shall be adjusted accordingly due to the Owner's requiring a change of any subcontractor, sub-subcontractor, or material supplier previously approved in writing by the Owner, unless the change was required because the subcontractor, sub-subcontractor or material supplier was unable to timely or properly perform its work in accordance with the Contract Documents.

Section 7.05. No Substitution of Subcontractors. The Contractor shall not make any substitution for any subcontractor nor allow the substitution of any sub-subcontractor who has been accepted by the Owner, unless the substitution is required and previously approved by the Owner. Acceptable reasons for substitution (other than where required by the Owner) shall be limited to the following:

(a) Inability of the subcontractor or sub-subcontractor to provide bonds, if required; or

(b) Failure of the subcontractor or sub-subcontractor to perform according to approved schedules or other provisions of the Contract Documents; or

(c) Other reasons which would reasonably render the subcontractor or sub-subcontractor unable to perform its work according to the Contract Documents as evidenced in writing by the Contractor.

Section 7.06. Subcontract Terms. All portions of the Work performed by a subcontractor or sub-subcontractor shall be pursuant to an appropriate agreement between the Contractor and the subcontractor (and where appropriate between subcontractors and sub-subcontractors) which shall contain provisions that:

(a) Preserve and protect the rights of the Owner under the Contract Documents, including, but not limited to, the obligation to indemnify the Owner as set forth in Article 21 of this Contract with respect to the portion of the Work to be performed under the subcontract (or sub-subcontract) so that the subcontracting will not prejudice such rights; and

(b) Require that such Work be performed in accordance with the requirements of the Contract Documents; and

(c) Require submission to the Contractor of applications for payment under each subcontract to which the Contractor is a party; and

(d) Require that all requests for additional compensation, extensions of time or otherwise with respect to subcontracted portions of the Work be submitted to the Contractor (via any subcontractor or sub-subcontractor where appropriate) in sufficient time so that the Contractor may comply in the manner provided in the Contract Documents for like requests by the Contractor upon the Owner; and

(e) Name the Owner as an additional insured under all applicable insurance policies; and

(f) Require compliance with the federal Disadvantaged Business Enterprise ("DBE") requirements, including, but not limited to, the non-discrimination and prompt pay provisions.

Section 7.07. Subcontractor Relations Requirements. By appropriate written agreement, the Contractor shall require each subcontractor, to the extent of the Work to be performed by the subcontractor, to be bound by the obligations, terms and conditions of this Contract and the Contract Documents, and to assume toward the Contractor all the obligations, terms, conditions and responsibilities which the Contractor, by this Contract and the Contract Documents, assumes toward the Owner and the Engineer. Each subcontract agreement shall preserve and protect the rights of the Owner and the Engineer under this Contract and the Contract Documents with respect to the Work to be performed by the subcontractor so that subcontracting thereof will not prejudice the rights of the Owner or the Engineer. The Contractor shall require each subcontractor to enter into similar agreement with sub-subcontractors. The Contractor shall make available to each proposed subcontractor, prior to the execution of the subcontract agreement, copies of this Contract and the Contract Documents to which the subcontractor will be bound. Subcontracts shall similarly make copies of this Contract and the Contract Documents available to their respective proposed sub-subcontractors.

ARTICLE 8

PAYMENT TO SUBCONTRACTORS

Section 8.01. Payments to Subcontractors from the Contractor. The Contractor shall pay each subcontractor an amount equal to the percentage of completion allowed to the Contractor on account of the work of each subcontractor. The Contractor shall also require each subcontractor to make similar payments to its sub-subcontractors.

Section 8.02. Withholding of Payment by the Owner. If the Owner withholds monies for any cause which is the fault of the Contractor and/or the fault of a particular subcontractor, the Contractor shall pay all other subcontractors, in accordance with the terms of their applicable subcontract, if not in conflict with this Contract and applicable law, any time after the progress payment by the Owner should otherwise have been issued, for its Work to the extent completed. Notwithstanding this Section 8.02, Contractor may withhold funds from any subcontractor that is not performing its work in accordance with the Contract Documents.

Section 8.03. Independent Obligation to Pay. The obligation of the Contractor to pay its subcontractors (and their obligation to pay sub-subcontractors) is an independent obligation from the obligation of the Owner to make payment to the Contractor. The Owner shall have no obligation to pay or to see to the payment of any monies to any subcontractor or sub-subcontractor. The provisions of this Contract are solely intended for the benefit of the Owner and Contractor and not for any other person. Nothing in this Contract is intended to create any third party rights against the Owner.

Section 8.04. **Payments to Sub-Subcontractors**. This Contract is governed by federal prompt pay provisions where applicable and as set forth in Exhibit "E" to this Contract. To the extent that Tennessee statutes are not superseded by applicable federal statutes, Tennessee statutes also will apply. Contractor agrees to require each of its subcontractors (1) to pay their subcontractors for invoices submitted or normal progress payments for work completed satisfactorily pursuant to its contract with each subcontractor and (2) to make such payments to their respective subcontractors no later than ten (10) days after any such subcontractors receive payment from the prime contractor or their respective subcontractor, as applicable.

ARTICLE 9

CHANGES

Section 9.01. Changes in the Work.

(a) The Owner, without invalidating this Contract, may order extra work or make changes by altering, adding to or deducting from the Work by executing a Contract Amendment or a Construction Change Directive in a form provided by the Owner or Engineer. All Work performed pursuant to a valid Contract Amendment or a Construction Change Directive shall be performed under the conditions of this Contract and the Contract Documents.

(b) The Owner shall have authority to make changes in the Work not involving extra cost, not involving an extension to the Substantial Completion Date, and not inconsistent with the purposes of the Work, but otherwise, no extra Work or change in the Work shall be made unless pursuant to a Contract Amendment or a Construction Change Directive and no claim by Contractor for additional cost or fee or any extension of the Substantial Completion Date shall be valid unless so ordered in a written Contract Amendment or a Construction Change Directive.

(c) Engineer's Supplemental Instructions (ESI) are written instruments prepared by the Owner or Engineer to issue additional instructions or interpretations or to order changes in the Work not involving extra costs or fees, or any extension of the scheduled Substantial Completion Date. Contractor shall give prompt written notice to Owner if it believes that the contents of an ESI require the Contractor to incur extra costs or fees or affect the Substantial Completion Date.

Section 9.02. Construction Change Directive.

(a) A Construction Change Directive is a written order prepared by the Owner, Program Manager, or Engineer and signed by the Owner, Engineer or Program Manager directing a change in the Work and stating a proposed basis for adjustment, if any, in the Contract Price or the Substantial Completion Date, or both. The Owner may, by Construction Change Directive, without invalidating this Contract, order changes in the Work consisting of additions, deletions or other revisions.

(b) A Construction Change Directive shall be used in the absence of an agreement on the terms of a Contract Amendment.

(c) If the Construction Change Directive provides for an adjustment to the Lump Sum Price, the adjustment shall be based on one of the following methods:

(1) Mutual acceptance of a lump sum properly itemized and supported by sufficient documentation to permit evaluation; or

(2) Unit prices stated in the Contract Documents or subsequently agreed upon; or

(3) Cost to be determined in a manner agreed upon by the Parties and a mutually acceptable fixed or percentage fee; or

(4) As provided in paragraph (f) of this Section 9.02.

(d) Upon receipt of a Construction Change Directive, the Contractor shall promptly proceed with the change in the Work involved and advise the Owner of the Contractor's agreement or disagreement with the method, if any, provided in the Construction Change Directive for determining the proposed adjustment in the Contract Price or the Substantial Completion Date.

(e) A Construction Change Directive signed by the Contractor indicates the agreement of the Contractor therewith, including adjustment in the Contract Price, the Substantial Completion Date or the method of determining the adjustment. Such agreement shall be effective immediately and shall be recorded as a Contract Amendment.

(f) If the Contractor does not respond promptly or disagrees with the method for adjustment in the Contract Price, the method and the adjustment shall be determined by the Owner on the basis of reasonable expenditures and savings of those performing the Work attributable to the change, including, in case of an increase in the Contract Price, a reasonable allowance for overhead and profit. In such case, the Contractor shall keep and present, in such form as the Owner may prescribe, an itemized accounting together with appropriate supporting data. Unless otherwise provided in the Contract Documents, costs for the purpose of this paragraph shall be limited to the following:

(1) The actual cost for labor, including social security and unemployment insurance, fringe benefits required by agreement, and workers' or workmen's compensation insurance; and/or

(2) The actual cost of materials, supplies, machinery, and equipment, including cost of transportation, whether incorporated or consumed; and/or

(3) The actual cost of subcontractors and sub-subcontractors; and/or

(4) The actual cost of premiums for all bonds and insurance, permit fees and sales, use or similar taxes related to the Work; and/or

(5) The actual additional costs of supervision and field office personnel, if any, directly attributable to the change.

(g) Pending final determination of cost to the Owner, amounts not in dispute may be included in Certificates and Applications for Payment. The amount of credit to be allowed by the Contractor to the Owner for a deletion or change which results in a net decrease in the Contract Price shall be actual net cost, as confirmed by the Owner. When both additions and credits covering related Work or substitutions are involved in a change, the allowance for overhead and profit shall be calculated on the basis of net increase, if any, with respect to that change.

Section 9.03. Contract Amendment Procedure. If the Owner desires extra Work or changes in the Work, the Owner shall submit a Request for Proposal ("RFP") to the Contractor. The Contractor shall furnish to the Owner a statement setting forth in detail the proposal of the Contractor for performing the extra Work or changes and the effect of the extra Work or changes, if any, in the Contract Price and the Substantial Completion Date attributable to the extra Work or changes set forth in the request of the Owner. If the Owner approves in writing the proposal of the Contractor, a Contract Amendment in the form provided by the Owner shall be executed by the Parties and the Contract Price and the Substantial Completion Date shall be adjusted accordingly. In preparing Lump Sum quotes in response to an RFP, the Contractor shall provide a cost breakdown to the Owner that provides sufficient detail for the Owner or Engineer to determine that the quoted costs are reasonable and allowable and to verify that markups are properly calculated according to the terms of this Contract.

Section 9.04. Changes in the Contract Price. Any increase or decrease in the Contract Price attributable to a Contract Amendment performed by the Contractor or any of its subcontractors shall be governed by the provisions of Section 90-05 of the FAA's General Provisions.

Section 9.05. Time and Materials. In the event that the Owner and the Contractor cannot agree on the amount or time extension, if any due, to the Contractor for a Contract Amendment, the Owner may, in writing, direct the Contractor to proceed with the performance of such Work. The Contractor agrees to comply with any such directive issued by the Owner. If any additional compensation is due to the Contractor as a result of a directive, it will be calculated pursuant to the provisions of Section 150-90 of the FAA General Provisions Addendum.

Section 9.06. Unconditional Obligation to Proceed. Notwithstanding anything herein to the contrary, the Contractor will proceed with the Work so as to complete the Work on or before the Substantial Completion Date even if it has a dispute with the Owner concerning a Construction Contract Amendment, a Construction Change Directive or any extension of time which is or could be due to the Contractor pursuant to a Contract Amendment, a Construction Change Directive or otherwise.

Section 9.07. Request for Additional Compensation. If for any reason the Contractor believes that additional compensation is due for work not clearly provided for in the Contract Documents, the Contractor shall provide written notice to the Owner at least three (3) days before beginning the work which is not clearly provided for in the Contract Documents. If such notification is not given, then the Contractor hereby agrees to waive any claim for such additional compensation. Such notice by the Contractor shall not in any way be construed as proving or substantiating the validity of the request for additional compensation. When the work, which is the basis for the Contractor's request for additional compensation, has been completed, the Contractor shall, within ten (10) calendar days, submit evidence of costs incurred by the Contractor and a narrative which provides the basis for the request for additional compensation.

ARTICLE 10

THE UNDERSTANDING OF THE CONTRACTOR

Section 10.01. Examination of Work Site. The Contractor acknowledges that it has, by careful examination, satisfied itself as to the nature and location of the Work, the conformation of the ground conditions, the character, quality and quantity of the materials, equipment, supplies, machinery, and facilities needed preliminary to and during the performance of the Work, the general and local conditions, and all other matters which can in any way affect the Work.

Section 10.02. Sufficiency of Contract Documents and Representations of Contractor.

(a) The Contractor acknowledges that the Contract Documents are sufficient to enable it to determine the cost of all of the Work and that the Work can be completed in accordance with the Contract Documents for the Contract Price.

(b) The Contractor acknowledges that any observed errors, discrepancies, omissions, ambiguities, or conflicts in the Contract Documents will be brought to the attention of the Owner, as set forth in Section 2.04 of this Contract, and in a timely manner in order to ensure substantial completion of the Work by the Substantial Completion Date. The Contractor shall be responsible for using its best efforts to discover and observe errors, discrepancies, omissions, ambiguities, or conflicts in the Contract Documents. In addition, the Contractor acknowledges that the Owner has not made nor shall it be deemed to have made any warranties, guarantees, or representations of any kind whatsoever regarding the sufficiency of the Contract Documents or any conditions relating to the Work.

(c) Contractor represents that it has reviewed and checked all information and data shown or indicated on the Contract Documents with respect to existing underground use facilities at or contiguous to the Work Site and, subject to the provisions of Section 10.03 of this Contract, assumes responsibility for the accurate location of said underground use facilities. No additional examinations, investigations, explorations, tests, reports, studies or similar information or data in respect of said underground use facilities are or will be required by Contractor in order to perform and furnish the Work for the Contract Price and substantially complete the Work by the Substantial Completion Date. However, notwithstanding anything herein to the contrary, the Contractor may, at its sole expense after receiving written permission from the Owner, and subject to any limitations specified by the Owner or Engineer, conduct any additional testing it deems necessary.

Section 10.03. Differing Work Site Conditions. If conditions are encountered at the Work Site that are: (1) subsurface physical conditions, which differ materially from those indicated in the Contract Documents; 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 Documents, then notice by the observing Party shall be given to the other Party promptly before conditions are disturbed and in no event later than seven (7) days after the first observance of the conditions. The Owner or Engineer will promptly investigate such conditions and, if they differ materially and cause an increase or decrease in the Contractor's cost, or time required, for performance of any part of the Work; will recommend an equitable adjustment in the Contract Price or the Substantial Completion Date, or both. However, any equitable adjustment in the Contract Price shall not include additional general conditions costs. If the Owner determines that the conditions at the Work Site are not materially different from those indicated in the Contract Documents and that no change in the terms of this Contract is justified, the Owner shall so notify the Contractor in writing, stating the

reasons. Claims by the Contractor in opposition to such determination must be made within fourteen (14) days after the Owner has given notice of the decision.

Section 10.04. No Oral Modification. No oral agreement or conversation with any officer, agent or employee of the Owner or its representatives, including the Engineer, either before or after the execution of this Contract, shall affect or modify any of the terms or obligations contained in this Contract or the Contract Documents.

ARTICLE 11

SUPERVISION OF THE WORK; SAFETY AND SECURITY

Section 11.01. The Superintendent of the Contractor. The Contractor shall designate in writing to the Owner and keep on the Project during its progress a competent employee who has responsibility to oversee the Work ("Superintendent"). The Superintendent shall be satisfactory to the Owner. The Superintendent shall be changed upon written request of the Owner but shall not be changed by the Contractor except with the consent of the Owner, unless the Superintendent ceases to be in its employ. The Superintendent shall represent the Contractor, and all directions given to him by the Owner shall be as binding as if given to the Contractor directly. The Superintendent shall devote his full time to the Work and shall maintain an office on the Work Site. The Superintendent shall direct, coordinate and supervise all Work, inspect all materials delivered to the Work Site to ascertain whether or not they comply with the requirements of the Contract Documents, and reject all non-conforming materials or workmanship.

Section 11.02. Order and Discipline. The Contractor shall at all times be responsible for enforcing strict discipline and good order among its employees, and all employees of its subcontractors and sub-subcontractors. If any person on the Work Site shall appear to be incompetent, disorderly or intemperate, in any way disrupts or interferes with the Work, or is in any other manner not qualified for or unfaithful to the job entrusted to him, such person shall be discharged from the Project immediately and shall not again be employed on the Work Site without the prior written consent of the Owner.

Section 11.03. Cleaning Up.

(a) During the performance of the Work, the Contractor shall keep the Work Site clean and free of all rubbish, waste materials, debris and other materials in accordance with the instructions set forth in the Contract Documents. At the end of each working day, the Contractor shall remove all waste materials, rubbish, debris, and other materials from and about the Work Site as well as all surplus materials, and shall leave the Work Site clean in accordance with the Contract Documents.

(b) The Contractor shall establish an active ongoing program to eliminate any foreign objects from the Work Site that may cause damage to aircraft or cause personal injury to other persons.

(c) The Contractor shall pay particular attention to haul routes used to and from the Work Site to prevent any construction debris from being dropped or tracked that may present a hazard.

(d) The Contractor, upon written notice from the Owner, shall promptly cut the grass and clean debris around the Work Site. If the Contractor fails to clean up any debris which is deposited as a result of construction operations, the Owner will, after notice, immediately do so. The cost thereof will be charged to the Contractor at actual cost per hour, but not less than the minimum rate of Two Hundred Fifty Dollars ($250.00) per hour. The Contractor shall assume full responsibility for failure to perform cleanup operations required by this Section 11.03.

(e) All materials delivered to the Work Site shall be stored and handled so as to preclude inclusion of any foreign substances, and to prevent any discoloration or damage which might reduce its effectiveness as part of the Work.

Section 11.04. Safety and Security.

(a) The Contractor shall be solely responsible for and oversee all safety orders, precautions and programs necessary for the safety of the Work. The Contractor shall take the precautions set forth in the Contract Documents in order

to ensure the safety of all persons involved in the Work, all other persons whom the Work might affect, all equipment and materials incorporated in the Work, all property on the Work Site and adjacent to it, and the Owner's business operations which are functioning on the Work Site or in the vicinity of it.

(b) The Contractor shall keep an accurate record of all persons who are on the Work Site and shall provide a copy of such list to the Owner with each monthly Application and Certificate for Payment. The Contractor, its subcontractors, their sub-subcontractors and all employees of same, shall comply with all security rules made by the Owner and the Federal Aviation Administration. In addition, Contractor shall comply with the construction safety and health guidelines which are set forth in Exhibit D.

(c) The Contractor shall conform to Owner's rules and regulations for airport operations.

(d) Prior to the commencement of the Work, the Contractor shall provide to the Owner a list of all of its employees who will perform any portion of the Work.

Section 11.05. Observation of the Work.

(a) The Engineer, the Owner and persons designated by the Owner, shall at all times have access to the Work Site whenever it is in preparation or progress and the Contractor shall provide proper facilities for such access and for observation. If the Owner or the Engineer discovers any defective Work in connection with any observation, it shall be reported to the Contractor in writing and the Contractor shall correct it.

(b) If the Contract Documents, the written instructions of the Owner, laws, ordinances, rules or regulations, or any public authority require any of the Work to be specifically tested or inspected, the Contractor shall give the Owner timely notice of its readiness for inspection and testing, and of the date set for such test or inspection. Inspections by the Owner or Engineer shall be promptly made. If any of the Work should be covered up without the approval or consent of the Owner, the Engineer or any public authority, it shall be uncovered for examination, if required by the Owner, the Engineer, or such other public authority, at the sole expense of the Contractor.

(c) Re-examination of questioned Work that has been previously tested or inspected by the Engineer or the Owner may be ordered by the Engineer or the Owner and, if so ordered, the questioned Work shall be uncovered by the Contractor. If such Work is found to be in compliance with the Contract Documents, the Owner shall pay the actual cost of the re-examination. If such Work is found not to be in compliance with the Contract Documents, the Contractor shall bear the costs of the re-examination.

(d) The Contractor shall not be required to provide professional services which constitute the practice of architecture or engineering unless such services are specifically required by the Contract Documents for a portion of the Work or unless the Contractor needs to provide such services in order to fulfill the Contractor's responsibilities for construction means, methods, techniques, sequences and procedures. The Contractor shall not be required to provide professional services in violation of applicable law. If professional design services or certifications by a design professional related to systems, materials or equipment are specifically required of the Contractor by the Contract Documents, then the Contractor shall promptly and at its expense secure such services. The Contractor shall cause such services or certifications to be provided by a properly licensed design professional, whose signature and seal shall appear on all drawings, calculations, specifications, certifications, shop drawings and other submittals prepared by such professional. Shop drawings and other submittals related to the Work designed or certified by such professional, if prepared by others, shall bear such professional's written approval when submitted to the Owner or Engineer. The Owner and the Engineer shall be entitled to rely upon the adequacy, accuracy and completeness of the services, certifications or approvals performed by such design professionals.

ARTICLE 12

PERMITS, LICENSES, LAWS AND REGULATIONS

Section 12.01. Contractor to Secure All Permits. The Contractor shall secure and pay for all construction related permits, including the building permit. The Contractor shall be responsible for all inspections required by governmental authorities in conjunction with the issuance of said permits. Contractor shall secure and pay for all governmental fees, licenses and other permits necessary for the lawful and proper execution and completion of the Work.

Section 12.02. Compliance with Laws. The Contractor shall give all notices and shall comply with all laws, ordinances, rules, regulations and orders of any public authority having jurisdiction over the Work, which have any bearing on the execution of the Work. If the Contractor observes that any of the Contract Documents are at variance in any respect with any such laws, ordinances, rules, regulations and orders, it shall promptly notify the Owner and the Engineer in writing and any necessary changes shall be made by the Contractor. If the Contractor fails to give such notice or executes any of the Work in a manner contrary to any such laws, ordinances, rules, regulations or orders, the Contractor shall bear all resulting costs to correct said Work to comply with such laws and regulations and be liable for any resulting fines, penalties, judgments or damages imposed on or incurred by the Owner.

ARTICLE 13

TAXES AND OTHER FEES AND COSTS

Section 13.01. Payment of Taxes by Contractor.

(a) Any and all taxes, excises, duties and assessments in any manner levied, assessed or imposed by any government or subdivision or agency having jurisdiction over the Work shall be the sole responsibility and liability of the Contractor.

(b) The Contractor shall promptly pay and discharge when due, unless the validity or application is being contested by the Contractor in good faith, any and all taxes, excises, duties and assessments, together with any interest and penalties, if any, the responsibility and liability for which the Contractor has assumed pursuant to the provisions of paragraph (a) of this Section 13.01, unless any such tax, excise, duty or assessment is levied, assessed or imposed upon the Owner, in which case the Owner shall promptly give the Contractor notice of such levy, assessment or imposition, whereupon the Contractor shall promptly pay and discharge the same. Upon the written request and at the sole expense of the Contractor, the Owner shall assist the Contractor in contesting the validity or application of any such levy, assessment or imposition, and in the event a refund of all or any part of any tax, excise, duty or assessment (including interest and penalties, if any), said refund shall be refunded to the Contractor (less the amount of expenses associated with such contest not previously reimbursed by the Contractor to the Owner).

(c) The Contractor shall pay all applicable fees, and for all damage to sidewalks, streets, Owner's property, and other public property or to any public utilities caused by the performance of this Contract.

Section 13.02. Damage to Owner Property. Contractor agrees to promptly notify Owner of any damage caused to Airport property arising from Contractor's activities at the Airport. Contractor also agrees to comply with any request made by the Owner for reimbursement of costs associated with any damage to Airport property arising from work performed at the Airport by Contractor or any of Contractor's representatives, managers, employees, agents, contractors, subcontractors, licensees or invitees or from the conduct of same. This provision shall survive the termination of this Contract.

ARTICLE 14

SHOP DRAWINGS AND SAMPLES; MATERIAL TESTING

Section 14.01. Definitions.

(a) As used in this Contract, "shop drawings" are drawings, diagrams, illustrations, schedules, performance charts, brochures and other data which are prepared by the Contractor, any subcontractor, sub-subcontractor, manufacturer, supplier or distributor, and which illustrates some portion of the Work.

(b) As used in this Contract, "samples" are physical examples furnished by the Contractor to illustrate materials, equipment or workmanship.

Section 14.02. Submissions.

(a) Contractor shall submit to Owner all shop drawings in electronic format or as hard copies in accordance with the Technical Specifications. Contractor shall review, stamp with its approval and submit, in orderly sequence so as to cause no delay in the Work or the work of any other contractor, all shop drawings and samples required by the Contract Documents or subsequently by the Owner or Engineer. Shop drawings and samples shall be properly identified as specified in the Contract Documents or as the Engineer or Owner may require. At the time of submission, the Contractor shall inform the Engineer and the Owner by separate written correspondence of any deviation in the shop drawings or samples from the requirements of the Contract Documents.

(b) By approving and submitting shop drawings and samples, the Contractor represents that it has determined and verified all field measurements, field construction criteria, materials, catalogue numbers and other data, and that it has checked and coordinated each shop drawing and sample with the requirements of the Work and the Contract Documents.

Section 14.03. Review of the Engineer.

(a) The Engineer will review and act upon shop drawings and samples with reasonable promptness so as to cause no unreasonable delay in the Work, but only for conformance with the design concept of the Work and with the information given in the Contract Documents. The review of the Engineer or its agents of a given item shall not indicate approval of an assembly in which the item functions.

(b) The approval of the Engineer of shop drawings or samples shall not relieve the Contractor of its responsibility for any deviation from the requirements of the Contract Documents unless the Contractor has informed the Engineer and the Owner by separate written letter of such deviation at the time of submission and the Owner or Engineer has given written approval of the specific deviation, nor shall the approval of the Engineer relieve the Contractor from responsibility for errors or omissions in the shop drawings or samples.

Section 14.04. Corrections Made by Contractor. The Contractor shall make any corrections required by the Owner or Engineer and shall submit the required number of corrected copies of shop drawing or new samples until approved by Owner. The Contractor shall direct specific attention in writing or on resubmitted shop drawings or samples to revisions other than the corrections requested by the Engineer or the Owner on previous submissions.

Section 14.05. Prior Approval Required. No portion of the Work requiring a shop drawing or sample submission shall be commenced until the submission has been approved by the Owner or Engineer. All such portions of the Work shall be performed in accordance with approved shop drawings and samples and the Contract Documents.

Section 14.06. Submittal Schedule. Within seven (7) days after execution of this Contract, the Contractor shall provide the Owner and the Engineer with a preliminary submittal schedule of the dates that each shop drawing or sample will be submitted for approval. Within thirty (30) days after execution of this Contract, the Contractor shall provide the Engineer and the Owner with a final schedule of the dates that each shop drawing or sample will be submitted for approval.

The sequence of the submittals of the Contractor shall be scheduled so as to permit an orderly review by the Engineer. The schedule shall allow reasonable added time according to the number or complexity of shop drawings or samples in each submittal for the checking, correction and rechecking of corrections, as well as for return of approved or rejected shop drawings and samples to the Contractor. The submittal schedules shall allow not less than fourteen (14) calendar days for the Engineer to review any shop drawing or sample.

Section 14.07. Material Testing.

(a) If the Contract Documents, laws, ordinances, rules, regulations or orders of any public authority having jurisdiction require any portion of the Work to be inspected, tested or approved, the Contractor shall give the Owner timely notice of its readiness so the Owner or Engineer may observe such inspection, testing or approval. The Contractor shall bear all costs of such inspections, tests or approvals required by public authorities. Unless otherwise provided, the Owner shall bear all costs of other inspection, tests or approvals.

(b) If the Owner or Engineer determines that any Work requires special inspection, testing or approval which paragraph (a) of this Section 14.07 does not include, the Owner or Engineer will instruct the Contractor to order such special inspection, testing or approval, and the Contractor shall give notice as provided in paragraph (a) of this Section 14.07. If such special inspection or testing reveals a failure of the Work to comply with the requirements of the Contract Documents, the Contractor shall bear all costs thereof, including compensation for the Owner's or Engineer's additional services made necessary by such failure; otherwise, the Owner shall bear such costs and an appropriate Contract Amendment shall be issued.

(c) Required certificates of inspection, testing or approval shall be secured by the Contractor and promptly delivered to the Owner.

(d) If the Owner or Engineer is to observe the inspections, tests or approvals required by the Contract Documents, they will do so promptly.

ARTICLE 15

THE RIGHT OF THE OWNER TO INSPECT AND AUDIT

Section 15.01. Right to Audit. The Contractor shall keep full and accurate records of all costs incurred and items billed in connection with any Work which records shall be open to audit by the Owner, or any authorized representative of the Owner, including but not limited to the Federal Aviation Administration and the Comptroller General of the United States during the course of the Project and until four (4) years after the final payment by the Owner to the Contractor. In addition, the Contractor shall make it a condition of all subcontracts and sub-subcontracts entered into in furtherance of the Work that any and all subcontractors and sub-subcontractors will keep accurate records of costs incurred and items billed in connection with the subcontract (or sub-subcontract) and that such records shall be open to audit by the Owner, or any authorized representative of the Owner, including but not limited to the Federal Aviation Administration and the Comptroller General of the United States during the course of the Work and until four (4) years after final payment by the Owner to the Contractor.

Section 15.02. Review of Subcontracts. Upon request of the Owner or Engineer, the Contractor shall provide the Owner with an executed copy of all subcontracts, sub-subcontracts and purchase orders entered into in furtherance of the Work.

ARTICLE 16

SEPARATE CONTRACTS

Section 16.01. The Right of the Owner to Award Separate Contracts. The Owner reserves the right to award other contracts in connection with work at or in the vicinity of the Work and the Contractor agrees to cooperate fully and not to unreasonably interfere with the work of such other contractors.

Section 16.02. Cooperation. The Contractor shall afford the other contractors of Owner the opportunity for the introduction and storage of their materials and equipment to their work sites and for the execution of their work. The Contractor shall properly connect and coordinate the Work with work of any other contractors of the Owner.

Section 16.03. Inspection of Work of Other Contractors. If any part of the Work depends, for proper execution or result upon, the work of another contractor of Owner, the Contractor shall inspect and promptly report to the Engineer and the Owner any discrepancies or defects in such work that render it unsuitable for such proper execution or results. Failure of the Contractor to so inspect and report shall constitute an acceptance of the Work of the other contractor as fit and proper to receive the Work.

Section 16.04. Responsibility for Damage. Should the Contractor cause damage to the work or property of any other contractor of the Owner, including, but not limited to, delay, disruption, suspension of work and/or acceleration damages, the Contractor shall settle all claims with such other contractor if the other contractor will so settle. If such other contractor sues the Owner on account of any damage alleged to have been so sustained, the Owner shall notify the Contractor who shall defend such proceedings at the expense of the Contractor, or provide counsel of Owner's choice for Owner at the expense of Contractor, and if any judgment or award against the Owner results, the Contractor shall pay or satisfy it and shall reimburse the Owner for all attorney's fees and other litigation costs which the Owner has incurred.

ARTICLE 17

WARRANTIES OF THE CONTRACTOR

Section 17.01. Warranty of Title. The Contractor warrants and guarantees that title to all Work, materials and equipment covered by an Application and Certificate for Payment, whether incorporated in the Work or not, will pass to the Owner, free and clear of all liens, claims, security interests or encumbrances (hereinafter "Liens") and that none of the Work, materials or equipment covered by an Application and Certificate for Payment will have been acquired by the Contractor, or by any other person performing any part of the Work or furnishing materials and equipment for the Work, subject to an agreement under which a lien is retained by the seller or supplier.

Section 17.02. Special Warranties. When special guarantees or warranties are required by the Contract Documents for specific parts of the Work, the Contractor shall procure certified copies of such guarantees or warranties, countersign them and submit them to the Owner in triplicate. Delivery of such guarantees or warranties will not relieve the Contractor from any obligations assumed under any provision of this Contract or the Contract Documents.

Section 17.03. Assignment of Warranties. The Contractor hereby assigns to the Owner any and all existing assignable warranties, service life policies and patent indemnities of manufacturers of materials, equipment or items incorporated in the Work. Upon the request of the Owner or the Engineer, the Contractor shall give the Owner assistance in enforcing the rights of the Owner arising under such warranties, service life policies and patent indemnities. At the request of the Owner or the Engineer, the Contractor shall give notice (with copies to the Owner) to any such manufacturers of the assignment of such warranties, service life policies and patent indemnities.

Section 17.04. General Warranty and Correction of Work.

(a) In addition to any special guarantees or warranties contained in the Contract Documents, the Contractor warrants to the Owner that all materials and equipment furnished in performance of the Work will be new unless otherwise specified, and that all Work will be of good quality, free from faults and defects and in conformance with the Contract Documents. All work not so conforming to these standards shall be considered defective.

(b) The Contractor shall promptly correct all defective Work to comply with the Contract Documents whether observed before or after the substantial completion date and whether or not fabricated, installed or completed. The Contractor shall bear all costs of correcting defective Work.

(c) If, within one (1) year after the substantial completion date, or within such longer period of time as may be prescribed by law or by the terms of any applicable special guarantee or warranty required by the Contract Documents, any of the Work is found to be defective and not in accordance with the Contract Documents, the Contractor shall correct it promptly after receipt of a written notice from the Owner, or the Engineer, to do so.

(d) All defective or non-conforming Work shall be removed from the site of the Work if necessary, and the Work shall be corrected to comply with the Contract Documents without cost to the Owner. The Contractor also shall bear the cost of making good all work of other contractors destroyed or damaged by removal or correction of the defective Work of Contractor.

(e) If the Contractor fails to timely and properly correct defective Work, the Owner may correct it and hold the Contractor liable for all costs, expenses and damages, including attorney's fees and litigation costs incurred by Owner in correcting it.

(f) In addition to the foregoing warranty, a warranty period of one (1) year shall apply under the same terms and conditions as the original warranty, to any work, supplied in correction of defective work under warranty pursuant to the provisions of this Section 17.04 and the Contractor shall assign to the Owner any warranties, including extended warranties, which are available in connection with the performance of such correction of defective Work. The warranty period shall commence on the date the Owner accepts the corrective Work of the Contractor.

ARTICLE 18

RIGHT OF THE OWNER TO DO WORK

Section 18.01. Right of the Owner to do Work. If the Contractor should neglect to perform the Work properly or fails to do anything required by the Contract Documents, and the Contractor does not correct the untimely or improper performance within seven (7) days after written demand is made, the Owner may, without prejudice to any other remedy it may have under this Contract or at law or in equity, make good any deficiencies in the Work, including, but not limited to, supplementing the workforces of the Contractor and deduct all costs of doing so from the payment then due or thereafter due the Contractor. The Owner shall not be required to give multiple notices to the Contractor in order to exercise its rights under this paragraph.

Section 18.02. Deduction for Uncorrected Work. If the Owner deems it inexpedient to correct deficiencies in the Work pursuant to Section 18.01 of this Contract, the Owner may deduct the reasonable cost of correcting the deficiencies, including any attorney's fees and additional fees and expenses of the Engineer, from the payment then due or thereafter due to the Contractor, but the making of such a deduction shall in no way be deemed an election of remedies by the Owner.

Section 18.03. Correction of Work before Final Payment.

(a) The Contractor shall promptly remove from the Work Site all materials, equipment or other items rejected by the Engineer or the Owner as failing to conform to the Contract Documents, whether incorporated in the Work or not, and the Contractor shall promptly replace and re-execute its original work to comply with the Contract Documents without expense to the Owner. In addition, the Contractor shall bear the expense of making good all work of other contractors destroyed or damaged by such removal or replacement.

(b) If the Contractor does not remove rejected material, equipment or other items within a reasonable time (as fixed by written notice from the Owner, or the Engineer), the Engineer or the Owner may remove such items and store them at the expense of the Contractor, or dispose of such material, equipment or other items at the sole discretion of the Owner. If

the Contractor does not pay the expense of such removal or storage within ten (10) days, the Owner may, upon ten (10) days written notice, sell such items at auction or at private sale and shall account for the net proceeds of such sale, after deducting all the costs and expenses of removal that should have been borne by the Contractor.

ARTICLE 19

INSURANCE

Section 19.01. Insurance Requirements. The Contractor shall fully comply with all requirements relating to insurance for the Project as set forth in this Article 19.

Section 19.02. Owner Controlled Insurance Program. The Owner has established an Owner Controlled Insurance Program (OCIP). To the extent required by the Owner, Contractor shall fully participate in and comply with all requirements of the OCIP. A copy of the OCIP Manual is attached hereto as Exhibit C and incorporated herein by reference. However, if the OCIP is not used, Contractor agrees to meet the requirements for Insurance coverage referenced in Section 19.03. A copy of the Construction Safety and Health Guidelines is attached hereto as Exhibit D and incorporated herein by reference.

Section 19.03. Contractor Provided Insurance Coverage. During the Term of this Contract, Contractor shall comply with the insurance requirements set forth in Exhibit C ("Insurance Requirements").

Section 19.04. Survival. The insurance provisions of this Article 19 shall survive any termination of this Contract.

ARTICLE 20

SURETY BONDS

Section 20.01. Surety Bonds Required. The Contractor shall furnish and keep in force throughout the performance of the Work a separate performance bond and separate labor and material payment bond, each in the amount of the total of the Contract Price (as the same may be modified from time to time) conditioned upon the faithful performance of the Work by the Contractor and payment of all obligations arising in connection with the Work by the Contractor. The bonds shall also guarantee to the Owner that the Work shall be free of all liens. The bonds shall name the Owner as obligee and shall be in such form and with such sureties as the Owner may approve prior to commencement of the Work.

ARTICLE 21

INDEMNIFICATION

Section 21.01. Indemnification of the Contractor.

(a) Without limiting any insurance required herein and to the fullest extent permitted by law, Contractor, on behalf of itself, its subcontractors, their agents, their employees or any entity or person for which the Contractor is or may be responsible (hereinafter collectively referred to as "Indemnitors"), shall fully defend, indemnify, save and hold the Owner, the Board of Commissioners of the Owner, the Program Manager, the Engineer, their agents, employees, officers, directors, partners and related entities (hereinafter collectively referred to as "Indemnitees") harmless from and against all liability, damages, loss, claims, demands, actions and expenses of any nature whatsoever, including, but not limited to reasonable attorney's fees which arise out or are connected with: (1) any negligent act, error or omission by any Indemnitor, or (2) the failure of the Indemnitor to comply with any applicable laws, statutes, ordinances, rules or regulations of any governmental or quasi-governmental authority, or (3) the material breach of any term or condition of this Contract by any of the Indemnitors.

(b) Without limiting the generality of the foregoing, the indemnity set forth in this Article 21 shall include all liability, damages, loss, claims, demands and actions on account of personal injury, death or property loss to any third party,

any Indemnitees, any of the Indemnitees' employees, agents, licensees or invitees relating to the Project and which results from the negligent act, error or omission of Contractor.

(c) When the Contractor is obligated to provide the Owner a defense hereunder, it shall do so with qualified counsel that is selected by the Contractor and approved by the Owner. Such approval shall not be unreasonably withheld. In light of the Owner and Contractor's continuing relationship, however, the potential for conflicts of interests exists if the same counsel represents both the Owner and Contractor when the Contractor accepts the Owner's tender of defense under the indemnity provision of this Contract. Therefore, the Owner retains the right to select its own counsel from a list of qualified attorneys provided by Contractor or Contractor's insurer. The selected counsel's fees and expenses shall be paid for by Contractor or its insurer, and the counsel shall be different from that selected by Contractor to represent it in the same matter.

(d) The indemnity set forth in this Article 21 shall survive any termination of this Contract.

Section 21.02. Labor Indemnity. The Contractor shall indemnify, defend and hold harmless the Owner, the Board of Commissioners of the Owner, the Program Manager, and the Engineer, their agents, employees, officers, directors, partners and related entities, from any and all administrative and judicial actions (including reasonable attorney's fees related to any such action), incurred by the Owner, the Program Manager, or the Engineer in connection with any labor related activity arising from the wrongful acts or omissions of the Contractor or its subcontractors in the performance of the Work of the Contractor. As used in this Contract, "labor related activity" includes, but is not limited to, strikes, walk-outs, informational or organizational picketing, use of placards, or distribution of hand-outs or leaflets at or in the vicinity of any facility where the Owner conducts business. The Owner shall advise the Contractor if any labor related activity occurs and the Contractor shall arrange for the legal representation necessary to protect the Owner, the Program Manager, and the Engineer provided such representation is previously approved by Owner.

Section 21.03. Royalties and Patents. The Contractor shall pay all royalties and license fees in anyway relating to the Work, shall defend all suits or claims for infringement of any patent or copyrights, and shall indemnify and hold the Owner, the Board of Commissioners of the Owner, their agents, officers, directors, partners and related entities, harmless from loss on account of such suit or claim.

Section 21.04. Attorney's Fees. In the event it becomes necessary for Owner to employ an attorney to enforce any provision of this Contract or to defend against any claim or litigation initiated by the Contractor, then the Contractor shall be liable for all attorney's fees and litigation expenses of Owner.

ARTICLE 22

RIGHT TO OCCUPY BY OWNER

Section 22.01. Early Occupancy by Owner. The Owner has the right to occupy or use ahead of schedule, at no additional cost nor obligation to Owner, all or any substantially completed or partially completed portion of the Work when such occupancy and use are in its best interest, notwithstanding the time of completion for all of the Work. Maintenance of occupied portion will remain the Contractor's responsibility.

Section 22.02. Corrections after Occupancy. After the Owner has taken occupancy of all or any portion of the Work, the Contractor shall not disrupt the use and occupancy of the Owner to make corrections in the Work.

ARTICLE 23

DEFAULT: RIGHT TO TERMINATE BY OWNER

Section 23.01. Breach of Contract Terms. (Required by FAA) Any violation or breach of terms of this contract on the part of the contractor or its subcontractors may result in the suspension or termination of this contract or such other action that may be necessary to enforce the rights of the parties of this agreement.

Owner will provide Contractor written notice that describes the nature of the breach and corrective actions the Contractor must undertake in order to avoid termination of the contract. Owner reserves the right to withhold payments to Contractor until such time the Contractor corrects the breach or the Owner elects to terminate the contract. The Owner's notice will identify a specific date by which the Contractor must correct the breach. Owner may proceed with termination of the contract if the Contractor fails to correct the breach by deadline indicated in the Owner's notice.

The duties and obligations imposed by the Contract Documents and the rights and remedies available thereunder are in addition to, and not a limitation of, any duties, obligations, rights and remedies otherwise imposed or available by law.

Section 23.02. Default and Termination by Owner. (Required by FAA)

(a) The Contractor shall be considered in default of his or her Contract and such default will be considered as cause for the Owner to terminate the Contract for any of the following reasons if the Contractor:

(1) Fails to begin the Work under the Contract within the time specified in the Notice to Proceed, or

(2) Fails to perform the Work or fails to provide sufficient workers, equipment and/or materials to assure completion of Work in accordance with the terms of the Contract, or

(3) 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

(4) Discontinues the execution of the Work, or

(5) Fails to resume Work which has been discontinued within a reasonable time after notice to do so, or

(6) Becomes insolvent or is declared bankrupt, or commits any act of bankruptcy or insolvency, or

(7) Allows any final judgment to stand against the Contractor unsatisfied for a period of 10 days, or

(8) Makes an assignment for the benefit of creditors, or

(9) For any other cause whatsoever, fails to carry on the Work in an acceptable manner.

Should the Engineer consider the Contractor in default of the Contract for any reason above, the Engineer shall immediately give written notice to the Contractor and the Contractor's surety as to the reasons for considering the Contractor in default and the Owner's intentions to terminate the Contract..

(b) If the Contractor or surety, within a period of 10 days after such notice, does not proceed in accordance therewith, then the Owner will, upon written notification from the Engineer of the facts of such delay, neglect or default and the Contractor's failure to comply with such notice, have full power and authority without violating the Contract, to take the execution of the Work out of the hands of the Contractor. The Owner may appropriate or use any or all materials and equipment that have been mobilized for use in the Work and are acceptable and may enter into an agreement for the completion of said Contract according to the terms and provisions thereof, or use such other methods as in the opinion of the Engineer will be required for the completion of said Contract in an acceptable manner.

(c) All costs and charges incurred by the Owner, together with the cost of completing the Work under contract, will be deducted from any monies due or which may become due the Contractor. If such expense exceeds the sum which would have been payable under the Contract, then the Contractor and the surety shall be liable and shall pay to the Owner the amount of such excess.

Section 23.03. Termination for Convenience by Owner. **(Required by FAA)** The Owner may terminate this Contract without cause at any time by providing fifteen (15) days prior written notice to Contractor. Upon receipt of a written

notice of termination, except as explicitly directed by the Owner, the Contractor shall immediately proceed with the following obligations regardless of any delay in determining or adjusting amounts due under this clause:

(a) Contractor must immediately discontinue work as specified in the written notice;

(b) Terminate all subcontracts to the extent they relate to the work terminated under the notice;

(c) Discontinue orders for materials and services except as directed by the written notice;

(d) Deliver to the Owner all fabricated and partially fabricated parts, completed and partially completed Work, supplies, equipment and materials acquired prior to termination of the Work and as directed in the written notice;

(e) Complete performance of the Work not terminated by the notice; and

(f) Take action as directed by the Owner to protect and preserve property and work related to this Contract that Owner will take possession.

Owner agrees to pay Contractor for:

(1) Completed and acceptable Work executed in accordance with the Contract Documents prior to the effective date of termination;

(2) Documented expenses sustained prior to the effective date of termination in performing Work and furnishing labor, materials, or equipment as required by the Contract Documents in connection with uncompleted Work;

(3) Reasonable and substantiated claims, costs and damages incurred in settlement of terminated contracts with Subcontractors and Suppliers; and

(4) Reasonable and substantiated expenses to the Contractor directly attributable to Owner's termination action.

Owner will not pay Contractor for loss of anticipated profits or revenue or other economic loss arising out of or resulting from the Owner's termination action.

The rights and remedies this clause provides are in addition to any other rights and remedies provided by law or under this Contract.

Section 23.04. Suspension by the Owner.

(a) The Owner may order the Contractor in writing to suspend, delay, or interrupt the Work in whole or in part for such period of time as the Owner may determine (hereinafter referred to as "Suspension").

(b) Provided the Suspension lasts for more than ninety (90) days, an adjustment to the Contract Price ("Adjustment") shall be made as set forth in paragraph (c) of this Section 23.02. The Substantial Completion Date shall be extended by written Contract Amendment to the extent that substantial completion is actually delayed by this Suspension. No Adjustment 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 in full or in part responsible; or

(2) That an equitable adjustment is made or denied under another provision of this Contract.

(c) The amount of the Contractor's compensation for a Suspension pursuant to this Section 23.02 shall be limited to any properly documented costs of maintaining personnel and equipment in the field provided such costs are pre-approved

by the Owner in writing. The Owner shall not be liable at any time for home office overhead or consequential damages. At the Owner's option, the Contractor may be ordered to demobilize its forces because the Project is suspended. In such event, the Owner will reimburse the Contractor for the reasonable cost of demobilization and remobilization.

Section 23.05. Assignment of Subcontracts. In the event of termination by the Owner pursuant to this Article 23 or Exhibit E to this Contract, the Owner may require the Contractor to promptly assign to it all or some of the subcontracts, materials, tools, and equipment to be installed under this Contract, or rental agreements, and any other commitments which the Owner, in its sole discretion, chooses to take by assignment. In such event, the Contractor shall promptly execute and deliver to the Owner written assignments of such commitments.

ARTICLE 24

HAZARDOUS MATERIALS

Section 24.01. Hazardous Materials Covenants.

(a) Contractor hereby represents and warrants to and for the benefit of Owner that the Project or Work Site will not be used or operated in any manner that will result in the storage, use, treatment, manufacture or disposal of any Hazardous Materials (hereinafter defined) upon the Project or Work Site or any portion thereof or which will result in Hazardous Materials Contamination (hereinafter defined). For purposes of this Article 24, the term "Hazardous Materials" shall mean and refer to: (1) any "hazardous waste" as defined by the Resource Conservation and Recovery Act of 1976 (42 U.S.C. § 6901 *et seq.*), as amended from time to time, and regulations promulgated thereunder; (2) any "hazardous substance" as defined by the Comprehensive Environmental Response, Compensation and Liability Act of 1980 (42 U.S.C. § 9601 *et seq.*) ("CERCLA"), as amended from time to time, and regulations promulgated thereunder; (3) asbestos; (4) polychlorinated biphenyls; (5) urea formaldehyde; (6) any substance the presence of which on the premises is prohibited by any applicable environmental laws or regulations ("Laws") or by any other legal requirements affecting the Project or the Work Site; (7) petroleum based materials (with the exception of tires affixed to vehicles); and, (8) any other substance which is defined as hazardous, toxic, infectious or radioactive by any Laws or by any other legal requirements affecting the Project or Project site. For purposes of this Article 24, the term "Hazardous Materials Contamination" shall mean and refer to the contamination of the Project or Project site, soil, surface water, ground water, air, or other elements on, or of, the buildings, facilities, soil, surface water, ground water, air, or other elements on or of any other property as a result of Hazardous Materials at any time emanating from the Project or Work Site.

(b) In addition to and without limiting the generality of any other provision of this Contract, Contractor shall and hereby does indemnify and hold Owner, the Board of Commissioners of the Owner, the Program Manager, the Engineer, their agents, employees, officers, directors, partners and related entities harmless from and against any and all losses, damages, expenses, fees, claims, demands, causes of action, judgments, costs and liabilities, including, but not limited to, attorney's fees and costs of litigation, and costs and expenses of response, remedial and corrective work and other cleanup activities, arising out of or in any manner connected with: (1) the "release" or "threatened release" (as those terms are defined in CERCLA and the rules and regulations promulgated thereunder, as from time to time amended) by Contractor or Contractor's employees, agents, delegees, invitees, licensees, concessionaires, subcontractors or representatives, of any Hazardous Materials; or (2) any occurrence of Hazardous Materials Contamination affecting the Project or Work Site caused by or resulting from, in whole or in part, the operations of the Contractor or Contractor's employees, agents, delegees, invitees, licensees, concessionaires, subcontractors or representatives. The provisions of this paragraph shall survive any payment or satisfaction of this Contract and such provisions shall remain in full force and effect.

(c) When use or storage of hazardous materials or equipment or unusual methods of construction are necessary, the Contractor shall obtain prior written approval from the Owner. The use of explosives is strictly prohibited provided, however, powder activated fasteners are permitted.

(d) If Contractor encounters on the Work Site any substance or material reasonably believed by Contractor to be hazardous, Contractor immediately shall (i) stop work in the area affected, (ii) take measures appropriate to the condition to keep people away from the suspected Hazardous Material and, (iii) report the condition to Owner in writing. If the Work

is so stopped and Hazardous Material is found, the Work in the affected area shall not thereafter be resumed except by the issuance of a Construction Change Directive pursuant to Section 9.02 of this Contract. Any such Construction Change Directive shall be limited to, an adjustment to the Substantial Completion Date appropriate. If no Hazardous Material is found after the Work is stopped, no Construction Change Directive is required to resume the Work in the affected area.

ARTICLE 25

MISCELLANEOUS

Section 25.01. No Waiver. No consent or waiver, express or implied, by either party to this Contract or of any breach or default by the other in the performance of any of its obligations hereunder shall be deemed or construed to be a consent or waiver to or of any other breach or default by such party. Failure on the part of the Owner to complain of any act or failure to act of the Contractor or to declare the Contractor in default, irrespective of how long such failure continues, shall not constitute a waiver of the rights of Owner.

Section 25.02. Assignment. This Contract shall not be assigned, delegated or transferred in whole or in part by the Contractor nor shall the Contractor assign any monies due or to become due to it without the prior written consent of the Owner.

Section 25.03. Governing Law. This Contract is entered into in Tennessee and shall be governed by and construed according to the laws of Tennessee. Any and all disputes arising out of this Contract, and/or the Project shall be decided by a state or federal court of competent jurisdiction in Memphis, Shelby County, Tennessee.

Section 25.04. Execution of Contract. The parties hereby agree and express their intent to execute this Contract electronically if Owner has a designated information processing system. The parties also hereby agree that this Contract may be executed in counterparts, each of which shall be deemed to be an original, but all of which, taken together, shall constitute one and the same agreement.

Section 25.05. Article and Section Headings. Article and section headings contained in this Contract are for ease of reference only and shall not affect the interpretation or meaning of this Contract.

Section 25.06. Parties in Interest. This Contract shall inure to the benefit of and be binding upon the Parties and their respective successors, assigns and legal representatives. It is specifically agreed between the Owner and the Contractor that the Parties do not intend to create any third party beneficiary rights by the execution of this Contract.

Section 25.07. Severability. If any one or more of the provisions contained in this Contract shall for any reason be held invalid, illegal or unenforceable in any respect, such invalidity, illegality or unenforceability shall not affect any other provision of this Contract, but it shall be construed as if such invalid, illegal or unenforceable provision had never been contained herein.

Section 25.08. Written Notices. Whenever by the terms of this Contract notice shall be given either to Owner or to Contractor, such notice shall be in writing and shall be sent by regular United States Postal Service, by hand-delivery, by registered or certified mail, by a nationally recognized overnight delivery service or by electronic mail with a delivery receipt . Notice intended for Owner shall be addressed to the Vice President of Operations as follows with a copy to Owner's General Counsel at the address for regular mail:

If to the Owner, address to:

Regular Mail or Hand Delivery	Certified Mail or Overnight Delivery

Vice President of Operations
Memphis-Shelby County Airport Authority
2491 Winchester Rd., Suite 113
Memphis, Tennessee 38116-3856

4150 Louis Carruthers Drive
Memphis, TN 38118
(901) 922-8000

If to the Contractor, address to:

_____
_____
_____
_____

Either Party, from time to time, may change its address by giving written notice to the other Party.

Section 25.09. Exhibits. All exhibits described in this Contract shall be deemed to be incorporated into and made a part of this Contract. If there is any inconsistency between this Contract and the provisions of any exhibits, the provisions of this Contract shall control to the extent of the inconsistency.

Section 25.10. Entire Contract. This Contract, together with the exhibits and the other Contract Documents, constitutes the entire agreement between the Owner and the Contractor and supersedes all prior written or oral agreements, understandings, representations, negotiations and correspondence between the Parties. This Contract shall not be supplemented, amended or modified by any course of dealing, course of performance or usage of trade and may only be amended or modified by a written instrument duly executed by officers of both Parties.

Section 25.11. Non-Federally Assisted Projects. Regardless of the funding source for the Project, Contractor hereby agrees to comply with all nondiscrimination provisions of this Contract.

Section 25.12. Disadvantaged Business Enterprise Participation.

(a) The Project is subject to the requirements of Owner's Business Diversity Development Program (BDDP) and Small Business Participation Program (SBPP). It is the responsibility of the Contractor to see that all requirements of the BDDP and SBPP are met. The Disadvantaged Business Enterprise (DBE) participation goal for the Project is **PERCENT (17%).** This percentage is defined as the dollar value of subcontracts awarded to certified DBEs divided by the base bid or alternate amount. To qualify, a firm must be included on the Owner's list of certified DBE firms.

(b) Proposed changes to the designated participating DBEs during performance of the Work must be submitted to the Owner. Contractors must make every effort to replace a DBE subcontractor with another certified DBE, based on said DBEs' availability. All substitutes for DBE subcontractors or joint ventures require prior approval of the Owner, such approval not to be unreasonably withheld; and said approval may be granted for reasons including, but not limited to, the following: (1) subcontractor requests that its subcontract or joint venture agreement with the prime contractor be voided; (2) subcontractor is unable to perform the Work; and/or (3) subcontractor has consistently performed unacceptable work.

(c) A determination by the Owner that the Contractor has either failed to comply with this Section 25.12, to timely submit to Owner requested documentation related hereto, to cooperate with Owner, or to answer inquiries truthfully shall subject the Contractor to any or all of the following penalties:

(1) Withholding from the Contractor all future payments under this Contract until the Contractor is in compliance; and/or

(2) Cancellation, termination or suspension of this Contract, in whole or in part; and/or

(3) Payment by the Contractor to the Owner of an amount equal to the difference in the DBE dollar value achieved in documented DBE participation or any lesser amount or penalty as deemed appropriate by the Owner, which dollar value shall be considered liquidated damages for failure to perform the requirements of this Contract and for which the Contractor and all of its subcontractors agree to be bound.

(d) A violation of this provision shall be considered a material breach of this Contract. If, in the opinion of the Owner, the Contractor has made significant deviations from the DBE program commitments, such deviations shall be considered a breach of this Contract.

Section 25.13. No Financial Benefit. Contractor understands and agrees that no Owner employee or member of the Board of Commissioners, Memphis City Council or Shelby County Commission shall receive any financial benefit arising out of this Contract, either directly or indirectly. Further, any fees paid to any person or entity by Contractor for assistance in obtaining this Contract with Owner must be fully disclosed to Owner. Notwithstanding any term, condition, obligation or provision in this Contract, any other writing, any other agreement, any oral understanding or agreement, or any conduct or failure to act by the Owner, Contractor stipulates and agrees conclusively that Contractor has against the Owner no right, entitlement or claim for any payment, compensation, cost or remuneration of any type other than pursuant to the terms of this Contract.

ARTICLE 26

FEDERAL AVIATION ADMINISTRATION (FAA) REQUIRED CONTRACT PROVISIONS

Section 26.01. FAA Required Provisions. Federal laws and regulations require that specific contract provisions be included in certain contracts and subcontracts. All such provisions are set forth in Exhibit E, which is attached hereto and incorporated herein by reference. Contractor hereby agrees to insert these provisions in each contract and subcontract (to the extent applicable) related to the performance of this Contract and to require each of its subcontractors to do the same. Contractor also hereby agrees to incorporate these provisions by reference for work done under any purchase order, rental agreement or other agreement for supplies or services related to the performance of this Contract. Contractor further agrees to be responsible for compliance with these provisions by any subcontractor, lower-tier subcontractor or service provider. Contractor acknowledges that the FAA prevents any modification to these provisions that creates a conflict with federal laws and regulations or changes the intent of the required provision.

ARTICLE 27

STATE REQUIRED CONTRACT PROVISIONS

Section 27.01. State of Tennessee Laws and Regulations - Grant Contract Provisions. State laws and regulations require that specific contract provisions be included in certain contracts and subcontracts. All such provisions are set forth in Exhibit F, which is attached hereto and incorporated herein by reference.

The remainder of this page intentionally left blank.
[Signature page to follow.]

IN WITNESS WHEREOF, the Parties have made and executed this Contract as of the day and year first above written.

MEMPHIS-SHELBY COUNTY AIRPORT AUTHORITY	**CONTRACTOR**
By: _____	By: _____
Title: President and CEO	Title: _____

Approved as to Content:

By: _____

Title: Vice President of Operations

Approved as to Form and Legality:

By: _____

Title: General Counsel

Reviewed and Approved:

By: _____

Title: Director of Development

EXHIBIT A
TO
UNIT PRICE CONSTRUCTION CONTRACT
FOR
DEWITT SPAIN AIRPORT APRON REHABILITATION - CONSTRUCTION

BY AND BETWEEN
THE MEMPHIS-SHELBY COUNTY AIRPORT AUTHORITY
AND
(CONTRACTOR NAME)

SCOPE OF WORK

The scope of work for the base bid generally consists of full depth reclamation and mill/overlay of existing apron at the DeWitt Spain Airport in areas as documented on the drawings. Work efforts include, but are not necessarily limited to, earthwork, drainage improvements, asphalt paving, tack coat, seal coat, pavement markings, and other efforts as necessary.

The scope of work is more specifically described in the Contract Documents, as defined in Article 2 of this Contract.

EXHIBIT B
TO
UNIT PRICE CONSTRUCTION CONTRACT
FOR
DEWITT SPAIN AIRPORT APRON REHABILITATION - CONSTRUCTION

BY AND BETWEEN
THE MEMPHIS-SHELBY COUNTY AIRPORT AUTHORITY
AND
(CONTRACTOR NAME)

CONTRACT DOCUMENTS

EXHIBIT C
TO
UNIT PRICE CONSTRUCTION CONTRACT
FOR
DEWITT SPAIN AIRPORT APRON REHABILITATION - CONSTRUCTION

BY AND BETWEEN
THE MEMPHIS-SHELBY COUNTY AIRPORT AUTHORITY
AND
(CONTRACTOR NAME)

OWNER CONTROLLED INSURANCE PROGRAM

INSURANCE REQUIREMENTS (OCIP)

C.1. Owner Controlled Insurance Program

The Owner has elected to implement an Owner Controlled Insurance Program (OCIP) that will provide **Workers' Compensation, Employer's Liability, Commercial General Liability, Excess Liability and Builders' Risk insurance** for Contractors and Subcontractors of every tier who have been properly enrolled and are providing direct labor to the Project. A general summary of coverage provided by the OCIP is included in the MSCAA OCIP Manual, (hereinafter called the Manual), a copy of which is attached hereto and made a part of this Agreement and should be attached to and incorporated in every subcontract. All terms and conditions of Exhibit C will apply during the term of the contract. The Owner agrees to pay all premiums associated with the OCIP.
While the OCIP provides uniform coverages and reasonable limits, the OCIP is not intended to meet all the insurance needs of the Contractor and eligible Subcontractors who have been properly enrolled. In addition to any insurance provided by Owner, the Contractor and all Subcontractors working on the Project will be responsible for providing certain insurance as specified in paragraph C.2. Contractors and eligible Subcontractors should discuss the OCIP with their insurance agent or consultant to assure that other proper coverages are maintained. Contractor and eligible Subcontractors enrolled in the OCIP agree that the insurance company policy limits of liability, coverage terms and conditions shall determine the scope of coverage provided by the OCIP.

C.1.1. Applicability of the OCIP

Participation in the OCIP by the Contractor and all eligible Subcontractors is mandatory but not automatic. The Contractor and each eligible Subcontractor (as defined below) must follow the enrollment procedures shown in the Manual. The Contractor shall comply with all requirements of the OCIP as outlined in the OCIP Manual and shall require all eligible Subcontractors to comply with requirements of the OCIP manual. The Manual may be updated and revised during the course of construction to reflect any changes in State Law, Rules and/or Regulations or Procedures that may be necessary or appropriate, and said revisions will replace all previous versions. Copies of any revised Manual will be distributed by the OCIP Administrator.

- If the Contractor or any eligible Subcontractor fails to enroll any of its eligible Subcontractors of any tier, it will be subject to a penalty charge of the full and complete deduct as shown in C.1.2.c or 3% of the subcontract cost, whichever is greater. Note: Collection of the penalty charge of any non-enrolled contractor(s) of any tier does not provide automatic coverage in the program.
- If any Contractor or any eligible Subcontractor enrolls in the OCIP more than 30 days after its start date, it will have to provide a No Known Loss Letter to the Carrier along with the enrollment documentation.

Eligible Subcontractor includes all Subcontractors providing or subcontracting for direct labor on any Designated Project (see definition of ineligible Subcontractors below).

Ineligible Subcontractor includes (but is not limited to) subcontractors performing any type of environmental remediation work (example: asbestos or underground tank removal), consultants, suppliers (that do not perform or subcontract

installation), vendors, materials dealers, guard services, janitorial services, truckers (including trucking to any Designated Project where delivery is the only scope of work performed), employee leasing companies, temporary labor services and other temporary project services. However, such Employee leasing and temporary labor service companies can be insured by the OCIP but must be submitted for review to the OCIP administrator prior to acceptance.
A Designated Project is a project designated and approved by the Owner as a Designated Project and, enrolled by the OCIP Administrator with the insurance company. This project is a Designated Project. A Designated Project includes operations necessary or incidental to the Work. The Contractor's/Subcontractor's regularly established workplace, plant, factory, office, shop, warehouse, yard or other property even if such operations are for fabrications of materials to be used at the job site or training of apprentices will be considered off-site and not covered by the OCIP.
Unless otherwise directed by the Owner, the Contractor, eligible Subcontractors and all Subcontractors not enrolled in the OCIP, will be required to maintain at least the insurance coverages set forth in paragraph C.2 and are required to participate in the MSCAA OCIP Safety Program. Contractor will promptly furnish the Owner, or their designated representative, certificates of insurance giving evidence that all required insurance is in force.

C.1.2. Contractor Insurance Cost Identification

The Contractor and eligible Subcontractors will exclude their cost for all insurance coverages to be provided by the Owner for the work at any Designated Project from their bid. The Contractor and each Subcontractor of any tier warrant that all insurance premium calculations for work performed at the Designated Project Site have been correctly identified and removed from their bids.

C.1.3. Change Order Pricing

Contractor and all enrolled Subcontractors will price each change order to exclude the cost of insurance.

C.1.4. Assignment of Return Premiums

The Owner will be responsible for the payment of all premiums associated solely with the OCIP and will be the sole recipient of any dividend(s) and/or return premium(s) generated by the OCIP. In consideration of the Owner's provision of said coverages under the OCIP program, the Contractor and eligible Subcontractors agree to:

1) Exclude all applicable insurance costs for coverage provided by the Owner associated with their contract work and excluded from their bid; and cooperate with the OCIP Administrator in the administration of the OCIP.
2) Irrevocably assign to and for the benefit of the Owner, all return premiums, premium refunds, premium discounts, dividends, retentions, credits, and any other monies in connection with the OCIP insurance. Contractor also assigns its right of cancellation of all insurance policies provided by Owner. Contractor agrees to evidence such assignment by executing and delivering the Form-2. Contractor further agrees to require each eligible Subcontractor to execute the assignment on the Form-2, for the benefit of the Owner.

C.1.5 Audit of Contractor and/or Subcontractor Payroll

For insurance purposes, the Contractor and all tiers of Subcontractors agree to keep and maintain accurate and classified records of their payroll for operations at any Designated Project. Contractor and all eligible Subcontractors agree to furnish a copy of the Monthly Payroll Reporting Form, Form 5, to the OCIP Program Administrator by the 20th of each month and attach a copy of the Form-5, to their monthly pay application. If this report (Form-5) is not attached to the monthly pay application, payment may be held until the report is received.

The Contractor and all eligible Subcontractors will permit the Owner and its representative to examine and/or audit its books and records pertaining to any Designated Project. Contractor and eligible Subcontractor will also provide any additional information to the Owner or its appointed representatives as may be required. At the end of each contract, an audit may be performed of the reported payroll by the OCIP Carrier.

Upon Final Completion of each contract, the Contractor and eligible Subcontractors will furnish a completed and signed

Form-4 - Notice of Anticipated Completion Form (a copy of which is attached hereto as "Form-4") to the OCIP Administrator, together with all required documentation.

Demobilization payments will not be released until all closeout documentation has been received and approved.

C.1.6. OCIP Deductibles

General Liability:
If a claim arises under the Owner provided Commercial General Liability OCIP policy from the partial or sole negligence of a Contractor or Subcontractor, or for violation of any OCIP Safety Requirements, such Contractor or Subcontractor shall be responsible for reimbursing the Owner's deductible to the extent of their respective negligence, as determined solely by owner, up to a maximum of $10,000 per occurrence per Contractor.

Builders Risk:
The Contractor shall be responsible for a deductible of $25,000 for each and every loss.

C.1.7. Termination/Modification of the OCIP

The Owner reserves the right to terminate or to modify the OCIP or any portion thereof. To exercise this right, the Owner will provide thirty (30) days advance written notice of termination or material modification to the Contractor and all eligible Subcontractors covered by the OCIP. In such event, the Contractor will promptly obtain appropriate replacement insurance coverage acceptable to the Owner. Written evidence of such insurance will be provided to the Owner prior to the effective date of the termination or modification of the OCIP coverages. The reasonable cost of such replacement insurance will be reimbursed by the Owner to the Contractor.

SPECIAL NOTE: The Contractor and eligible Subcontractors who have completed their work at any Designated Project and whose insurance as provided by MSCAA OCIP has been terminated, and who returns to the site to perform warranty work does so under its own insurance coverages and not under those provided by MSCAA OCIP.

C.2 Contractor Provided Coverages

All insurance obtained by the Contractor pursuant to this Agreement shall be written by insurance companies licensed to do business in Tennessee and acceptable to Owner.
Prior to the commencement of any operations by or on behalf of the Contractor relating to the Project, and with respect to any and all such operations, the Contractor shall procure, maintain and provide to Owner and the Program Manager:

1) Evidence of Contractor's **Commercial Automobile Liability Insurance**. A certificate of insurance and copy of endorsement shall be provided as evidence of:
   a) Coverage for Owner, their officers, directors and employees as additional insureds.
   b) Coverage to apply to all liability arising out of the ownership or use of all vehicles owned by, hired by, or used on behalf of the Contractor.
   c) Waiver of Subrogation to be provided in favor of the Owner, the Design Professional, the Program Manager and their officers, directors, and employees.
   d) If hazardous materials or waste are to be transported, the policy will be endorsed with the MCS-90 endorsement in accordance with the applicable legal requirements.

   This insurance shall be for an amount not less than $1,000,000 combined single limit liability.

2) Evidence of Contractor's **Workers' Compensation and Employer's Liability Insurance**. A certificate of insurance or, at Owner's request, a certified policy copy shall be provided as evidence of:
   a) Coverage for claims for damages arising out of bodily injury, occupational sickness or disease or death of Contractor's employees under any applicable workers' compensation statute or any other applicable employers' liability law. Certificate of insurance or policy must clearly identify that coverage applies in the state of Tennessee.
   b) A waiver of subrogation by the insurer against the Owner the Design Professional, the Program Manager and their officers, directors and employees.

c) This insurance shall include Employer's Liability limits of not less than $1,000,000 bodily injury each accident, $1,000,000 bodily injury by disease each employee and $1,000,000 bodily injury by disease in the aggregate.
d) All Enrolled Contractors must provide Workers' Compensation and Employer's Liability insurance covering all employees for injuries that occur AWAY from the Designated Project Site or after OCIP termination, expiration, or cancellation.
e) Ineligible subcontractors or subcontractors not enrolled must provide coverage for ALL operations.

3) Evidence of Contractor's **Commercial General Liability Insurance**. Certificate of insurance and copies of endorsements to Contractor's primary commercial general liability policy and shall be provided as evidence of:
a) Coverage for Owner and the Design Professional, Program Manager, their officers, directors and employees as additional insureds as respects claims or liabilities arising from or connected with Contractor's work, operations and completed operations. The additional insured endorsements shall be at least as broad as the ISO CG 2010 (1001) during the course of construction and CG2037 (1001) until the expiration of the statute of repose, or its carrier equivalent.
b) Coverage shall be primary and non-contributing with any coverage Owner maintains in its own name and on its own behalf.
c) Coverage shall be written on an occurrence coverage form, with coverage at least as broad as that provided under the current edition of the ISO Commercial General Liability coverage form, CG 0001. Other than standard exclusions applicable to pollution, asbestos, mold, employment practices, ERISA and professional liability, there shall be no limitations or exclusions beyond those contained in the standard policy forms which apply to property damage, products and completed operations, contractual liability or construction defects. In addition to procuring and maintaining this insurance during the duration of the contract, contractor agrees to continue to procure and maintain products and completed operations liability insurance coverage for a minimum of six (6) year(s) after the date the contract is completed or terminated or in accordance with the applicable statute of limitations under state law, whichever is longer.
d) Waivers of subrogation by insurers against Owner, Design Professional, Program Manager and their officers, directors and employees.
e) Contractual Liability Insurance applicable to the indemnification agreement contained in Section 21.01 of this Agreement.
f) The required amounts of primary Commercial General Liability Coverage in the amount of:

$1,000,000	Bodily Injury and Property Damage Limit for each occurrence
$1,000,000	Personal & Advertising Injury
$2,000,000	General Aggregate (Annual)
$2,000,000	Products/Completed Operations Aggregate (annual)

The general aggregate limit shall apply separately to each project.

g) All Enrolled Contractors must provide General Liability insurance covering third-party losses that occur AWAY from the Project Site (including products liability for any product manufactured, assembled or otherwise worked upon away from the Designated Project Site) or after OCIP termination, expiration or cancellation.
h) Ineligible contractors or subcontractors not enrolled must provide coverage for ALL operations.
i) The policy will be endorsed to exclude any "Designated Project" for onsite coverage only, if you are a participant in the OCIP.

4) Evidence of Contractor's **Excess or Umbrella Liability Insurance**. Certificate of insurance and copies of endorsements to Contractor's Excess or Umbrella liability policy and shall be provided as evidence of this excess liability or umbrella insurance with an annual an aggregate amount of not less than $5,000,000 for the Contractor and $1,000,000 limits required of subcontractors unless otherwise stated in the Contract Documents, and shall be excess and follow form over primary coverages included herein. Such coverage will be excess and "drop down" for defense and indemnity in the event of exhaustion of the underlying insurances of Commercial, Automobile, Liability, Employer's Liability and the Commercial General Liability policies.

5) Evidence of **Professional Liability Insurance** (If Applicable):
Per Claim and in the Aggregate: $1,000,000

All professional services firms must provide professional liability insurance appropriate for their profession. Architectural and engineering firms must provide coverage for liability arising out of design errors and omissions. The policies shall provide a three (3) year extended reporting period.

6) Evidence of **Contractors Pollution Liability Insurance** (If Applicable):
Each Occurrence Limit and in the Aggregate: $1,000,000
Coverage applies to third-party bodily injury and property damage claims (including natural resource damage), and clean-up costs, caused by pollution conditions which result from covered operations performed by, or on behalf of, contractors and subcontractors of all tiers at the Designated Project Site. Coverage shall apply to claims for mold and fungus damage that result from the work as well as gradual and sudden and accidental pollution incidents arising from activities of the contractors working at the project site.
Coverage must be evidenced for on-site and off-site transportation which may result in a pollution incident/event and non-owned disposal site coverage (if applicable to the project).
The policy shall be endorsed to provide a Waiver of Subrogation in favor of the Owner, Design Professional and Program Manager. In addition, the Owner, their officers, directors and employees shall be included as Additional Insureds.

7) Evidence of **Contractor's Equipment Insurance**:
The Contractor is responsible for their tools and equipment including, but not limited to, construction trailers and their contents and temporary scaffolding at the project site, whether owned, leased, rented or borrowed. Contractor acknowledges and agrees that the Owner will not be responsible for any loss or damage to their tools and equipment. If insured, the Contractor's insurance policies covering tools and equipment will include a waiver of subrogation and any other rights of recovery in favor of the Owner. If uninsured, the Contractor will hold harmless the Owner, Program Manager and Design Professional for loss or damage to their tools and equipment.

8) **Aircraft/Aviation Liability Insurance** (If Applicable):
Each Occurrence Limit and in the Aggregate (including passenger liability): $1,000,000
The operator of an aircraft of any kind, whether manned or unmanned, must maintain liability insurance covering bodily injury and property damage on a Combined Single Limit basis. If non-employee passengers are carried, there cannot be a per-passenger sublimit.
Prior to commencing operations, the operator must provide the Owner with a certificate of insurance naming the Owner, their officers, directors and employees as additional insureds on a primary and non-contributory basis. Operator and their insurer(s) must hold the Owner harmless and waive subrogation with respect to damage to the aircraft
If aircraft is to be used to perform lifts at the Designated Project Site, a "slung cargo" endorsement must be included to cover the full replacement value of any equipment being lifted.

NOTE: If the Contractor and / or eligible Subcontractor participating in the OCIP choose(s) to have the policy endorsed to include any "Designated Project" site during the construction period, coverage should be Excess and/or Difference in Conditions (DIC) of the OCIP and this cost should not be passed back to the Owner. Inclusion of any "Designated Project" Site on such insurance policies shall not replace the OCIP coverage or otherwise affect the cost identification requirement in paragraph C.1.2.

C.2.2. Contractor's Insurance Primary.

Any coverage applicable to Owner under Contractor's insurance policies shall be primary and non-contributing with any insurance maintained by Owner in its own name and on its own behalf. Copies of endorsements to Contractor's policies shall be provided to Owner.

C.2.3. Cancellation.

All such insurance shall be in form and substance satisfactory to the Owner and shall provide that not less than thirty (30) days' notice of cancellation or non-renewal, other than non-payment of premium which shall be ten (10) days' notice, be provided to Owner. If unavailable, Contractor must provide Owner with thirty (30) days' advance written notice of cancellation, other than non-payment of premium, which shall be ten (10) days' notice. Contractor must notify Owner of

any material change or reduction in coverage to the Contractor's insurance policies.

C.2.4. Certificates of Insurance - Contractor Provided Insurance Coverage Requirements

As shown in Section C.2
Description of Operations for contractors participating in the OCIP shall read:
Workers' Compensation and Commercial General Liability coverages shown above do not apply to any Designated Project at the Memphis International Airport.

Additional Insured Wording for Contractors shall read:
Memphis-Shelby County Airport Authority, Program Manager, Design Professional and their officers, commissioners, agents and employees as now or hereafter exist as respect to the services / work to be performed under this Agreement, for coverages as required by contract MSCAA Project #20-1440-01.

Additional Insured Wording for Subcontractors shall read:
For Subcontractors participating in the OCIP
The Memphis-Shelby County Airport Authority, Program Manager, Design Professional and their officers, commissioners, representatives, agents and employees ATIMA are additional insureds for coverages as required by contract.
For Subcontractors not participating in the OCIP
The Memphis-Shelby County Airport Authority, Program Manager, Design Professional and their officers, commissioners, representatives, agents and employees ATIMA and Awarding Contractor are additional insureds as respect to the services / work to be performed under this Agreement for coverages as required by contract.

IN THE EVENT THAT THE LAW OF THE STATE IN WHICH THE PROJECT IS LOCATED (OR APPLICABLE LAW) LIMITS THE ADDITIONAL INSURED COVERAGE THAT OWNER MAY REQUIRE FROM CONTRACTOR AND SUBCONTRACTORS, THEN CONTRACTOR AND SUBCONTRACTORS SHALL BE REQUIRED TO OBTAIN ADDITIONAL INSURED COVERAGE TO THE FULLEST EXTENT OF COVERAGE AND LIMITS ALLOWED BY APPLICABLE LAW AND THIS CONTRACT SHALL BE READ TO CONFORM TO SUCH LAW.

Filing of Certificates
Certificates of insurance acceptable to the Owner shall be filed with the Owner by furnishing to the OCIP Administrator, prior to commencement of the Work. If any of the foregoing insurance coverages are required to remain in force after final payment and are reasonably available, an additional certificate evidencing continuation of such coverage shall be submitted with the final Application for Payment.

A sample is provided of a certificate of insurance is provided in the OCIP Manual.

MSCAA OCIP
c/o Willis Towers Watson National Project Insurance Practice.
Attn: OCIP Administrator
15305 North Dallas Parkway, Suite 1100
Addison, TX 75001

C.2.5. The Right of the Owner to Maintain Insurance.

In the event the Contractor fails to furnish and maintain the required insurance or to furnish certificates of insurance, the Owner shall have the right, at its option, to terminate this Agreement or to take out and maintain such insurance, and hold the Contractor liable for the cost. Compliance by the Contractor with the requirements of this Article shall in no way relieve the Contractor from liability under any provision of this Agreement or the Contract Documents.

C.2.6. Other Insurance

Any type of insurance or any increase of limits of liability not described in this section which the Contractor or any

Subcontractor requires for their own protection or on account of any statute will be their own responsibility and their own expense. Any type of insurance or any increases of limits of liability not described herein that the Contractor or any Subcontractor requires for its own protection or on account of statute shall be its own responsibility and its own expense. If the Contractor or the Subcontractors maintain any insurance policies covering owned, leased or borrowed, equipment, such policies shall contain a waiver of subrogation against the Owner. Each item must be shown as a line item and approved by the Owner.

C.2.7. Deductibles

The Contractor shall be responsible for the payment of the deductible amounts for any insurance in force pursuant to this Agreement whether such insurance is furnished by the Owner or the Contractor.

C.2.8. Insurance for Project Property While outside the United States and Canada.

If any project property is in transit or is located outside the continental United States or Canada for any reason, Contractor shall arrange to insure such property for its full replacement value separate from the other insurance described herein.

C.2.9. Subcontractors Flow-Down Clause.

Subcontractors of all tiers are subject to the same insurance requirements as Contractor. Contractor shall cause each Subcontractor employed by Contractor to purchase and maintain such insurance and upon request, must promptly furnish Owner with copies of certificates of insurance evidencing coverage for each Subcontractor.

C.2.10. No Representation of Coverage Adequacy.

In specifying minimum Contractor insurance requirements, Owner does not represent that such insurance is adequate to protect Contractor for loss, damage or liability arising from its work. Contractor is solely responsible to inform itself of the types or amounts of insurance it may need beyond these requirements to protect itself. The insurance requirements set forth in minimum amounts shall not be construed to relieve Contractor for liability in excess of such coverage, nor shall it preclude Owner from taking such other actions as is available to it under any other provision of the contract.

C.2.11. Contractor Responsibilities

The Contractor will cooperate with and will require all eligible Subcontractors to cooperate with The Owner and/or the OCIP Administrator with regards to the administration and operation of the OCIP. The Contractor and eligible Subcontractors responsibilities will include, but not be limited to:

1) Compliance with all rules and regulations of the applicable State Insurance Bureau/Board; failure to meet state requirements may result in fines being assessed, and, if this occurs, the Owner shall deduct from monies due or to become due under the provisions of this contract for any applicable fines that are assessed against the Owner, the Contractor or any eligible Subcontractor;
2) Compliance with applicable Construction Safety Program;
3) Provision of necessary contract, operations and insurance information, including verification of current Worker's Compensation Experience Modifier;
4) Cooperation with any insurance company or OCIP Administrator with respect to requests for claims, payroll or other information required under the program;
5) The Contractor and all eligible Subcontractors shall adhere to and perform all reporting requirements as set forth in the Claims Procedures portion of the OCIP Program Manual.

C.2.12. Contractor's Responsibility for its Subcontractors.

The Contractor will include this Exhibit and the Manual with the bid documentation. The Contractor will require that all eligible Subcontractors participate in the OCIP and comply with all rules and procedures as outlined in MSCAA Enrollment Process Summary. It will be the Contractor's responsibility to submit to The Owner and its designated representative all

bid documentation for approval. If Contractor fails to comply with this section and any eligible Subcontractors do not enroll in the program, the Owner has the right to retain the 3% of subcontracted work as a penalty from the awarding Contractor/Subcontractor as set out in C.1.2.c.

C.2.13. Approval of Forms and Companies

All insurance described in this Section will be written by an insurance company or companies satisfactory to the Owner and licensed to do business in Tennessee and will be in a form and content satisfactory to the Owner. No party subject to the provisions of this contract will violate or knowingly permit to be violated any of the provisions of the policies of insurance described herein.

C.2.14. Coverage to be provided by Contractor during Warranty Period

During the period following the final acceptance date and prior to expiration of the warranty period hereunder, Contractor will maintain in full force and effect all insurance as specified in paragraph C.2 covering all Work performed during such period.

C.3. Waiver of Subrogation and Waiver of Rights of Recovery

Owner Controlled Insurance Program
Except as respects any deductibles identified above, Owner waives all rights of subrogation and recovery against the Contractor and all Subcontractors of all tiers to the extent of any loss or damage, which is insured under the OCIP. Except as respects the deductibles identified above, Contractor waives all rights of subrogation and recovery against the Owner, Design Professional and Program Manager, other Contractors and Subcontractors of all tiers to the extent of any loss or damage, which is insured under the OCIP. The Contractor and each Subcontractor will require all Subcontractors to similarly waive their rights of subrogation and recovery in each of their respective construction contracts with respect to their work on any Designated Project.

Contractor Provided Coverages
Contractor waives all rights of subrogation and recovery against the Owner, Design Professional and Program Manager, to the extent loss or damage is insured under the Contractor's policies. The Contractor and each Subcontractor will require all Subcontractors to similarly waive their rights of subrogation and recovery in each of their respective construction contracts with respect to their work on any Designated Project.

C.4. Project Safety Administration
It is the responsibility of the Contractor to maintain total control of safety to ensure that its employees and the general public will be provided an environment free of recognized hazards during construction activities. In carrying out this policy it is clear the only accepted level of performance is to be "Incident Free" on this project each and every day.

A. Project Safety Manual
The safety requirements of any Designated Project Safety Manual are a supplementary document to all Government rules, codes and regulations. It is understood that the ultimate responsibility for providing a safe place to work rests with each individual Contractor. All Contractors are responsible for full compliance with the requirements and standards referenced in the manual.

B. New Employee Orientation
Each new Contractor or Subcontractor employee will be required to attend an orientation program. This orientation is designed to communicate all project specific safety policies, procedures, and expectations of "the Safety Team" in regard to the construction of any Designated Project.

C. Contractor Safety Program Review
To proactively monitor the safety, health and environmental performance of Contractors and Subcontractors the Owner and/or his Representative, will be conducting a periodic review of Contractor or Subcontractor safety programs. This will

be a formal process, which will be done with or without advanced notice. Upon completion of the Safety Program Review, a list of recommendations will be provided to the Contractor or Subcontractor. There will be a timeline developed and agreed upon for the purpose of abating any deficiencies in the Contractor or Subcontractor safety program.

C.5. No Release

The provision of the OCIP by The Owner will in no way be interpreted as relieving the Contractor or any Subcontractor of any other responsibility or liability under this agreement or any applicable law, statute, regulation or order.

C.6. CIP Exclusion Limitation

If any party's insurance includes an exclusion tied to Controlled Insurance Programs (a.k.a. "wrap-ups" or "CIPs") or other project-specific insurance, it may apply only to the extent of coverage available to that party under the CIP or other Sponsor-provided insurance. Such exclusion may not be broader than what the CIP or such other Sponsor-provided insurance actually covers.

MSCAA OCIP V

An Owner Controlled Insurance Program Manual for Construction Projects

MSCAA OCIP – ENROLLMENT SUMMARY

Contract Bid – All Contractors/Subcontractors

Bid package will be furnished to bidders
1. All eligible Contractors/Subcontractors of every tier will exclude their cost of insurance for coverage provided by the Owner from their bid. Contractors and eligible Subcontractors should discuss the OCIP with their insurance agent or consultant to assure that the OCIP insurance identification cost is accurate.
2. Contractors and Subcontractors at any tier shall not charge any eligible Subcontractor for its participation in the OCIP.
3. Workers' Compensation – Tennessee Payroll Rules are applicable to WC payroll. First dollar coverage is given to all Contractors on WC.
4. General Liability – Mandatory deductible not to exceed $10,000 will apply to any loss as described in the OCIP manual. 5% credit will be applied to Contractor's premium for this deductible

Contract Award

Once notification of contract award has been received, all eligible Contractors/Subcontractors of every tier will complete and submit Form 2 with the required certificate of insurance. Any Contractors or Subcontractors who enroll in the OCIP 30 days after their start date will have to provide a No Known Loss Letter to the Carrier along with the enrollment documentation. The OCIP Administrator will:

1) Assign a location code for this contract, forward the **Form 2** to the insurance carrier for enrollment into program
2) Issue a certificate of insurance which will reflect all OCIP coverages. The original copy will be sent to the enrolled contractor/Subcontractor with a copy to their awarding contractor.

Change Order

Contractor and all enrolled Subcontractors will price each change order to exclude the cost of insurance provided by the Owner.

Monthly Payroll Reporting

The Enrolled Contractor/Subcontractor will receive a Payroll Request e-mail from the following email address On behalf of Willis Admin at the beginning of each month during construction reminding them to complete their payroll report via the link in the email by the payroll due date. The payroll link will expire in 30 days. If the payroll link expires please contact your Willis Towers Watson CIP Administrator to receive an updated link.

If Contractor/Subcontract receives additional contracts

Once the contractor/Subcontractor has enrolled in the OCIP, all additional contract bids must also exclude the Contractor's cost of insurance for coverage provided by the Owner. **Form 2** must be submitted to the OCIP Administrator to receive confirmation of enrollment in the OCIP for the additional contract. (Contact the OCIP Administrator if you have questions). The OCIP Administrator will:

1) Assign a location code for this contract, forward the **Form 2** to the insurance carrier for enrollment into program
2) Issue a certificate of insurance which will reflect all OCIP coverages. The original copy will be sent to the enrolled contractor/Subcontractor, a copy to their awarding contractor.

When Contractor/Subcontract reaches Substantial Completion

Notice of Anticipated Completion - **Form 4** – Prior to completion of all work being performed under the contract. This will initiate Closeout Procedures. Payroll and Receipts may be audited.

When Contractor/Subcontractor has completed the Work

Contractor should notify their insurance agent/broker to remove any exclusion for this Designated Project from their primary policies.

Claims

All Contractors/Subcontractors must follow claims rules and procedures outlined in the MSCAA OCIP Manual.

Safety

All Contractors/Subcontractors must follow safety rules and procedures outlined in the MSCAA OCIP Site Specific Safety Plan.

Notice to All Contractors/Subcontractors

Failure to follow the Enrollment or Claims procedures outlined in MSCAA OCIP Manual may result in fines being assessed by the State Bureau/NCCI, State's Workers' Compensation Commission or the Owner against the Contractor or Subcontractor. If the Owner or Carrier is assessed fines due to Contractor's or Subcontract's failure to follow State rules or regulations, the Owner will deduct from monies due or to become due for any applicable fines.

CHANGES TO ANY OCIP REQUIREMENT OR PROCEDURE MUST BE APPROVED BY THE OWNER AND OCIP ADMINISTRATOR. NO CONTRACTOR OR SUBCONTRACTOR HAS THE AUTHORITY TO AMEND THE OCIP REQUIREMENTS.

INTRODUCTION

This manual identifies, defines, and assigns responsibilities related to the administration of the Memphis-Shelby County Airport Authority (MSCAA) Owner Controlled Insurance Program (OCIP).

This manual:

- Describes the OCIP and details the insurance-related responsibilities of the various parties involved.
- Provides a basic description of the OCIP structure and operation, with an overview of coverage provided by the OCIP and guidelines for carrying out specific administrative and audit procedures.
- Provides answers to questions that are likely to arise during the course of the project.

Because it is impossible to anticipate every question or situation that may arise, the directory lists those involved in the administration of the OCIP and their areas of expertise. Please feel free to call with any questions.

This Manual will be updated as changes dictate during the course of this project.

NOTE

- This Manual does not, and is not intended to, provide coverage interpretations or complete information about coverages.
- The terms and conditions of the insurance policies govern how coverage is applied.
- The information herein is not intended to alter any provisions of the actual contract documents of the Contractors, and if any such conflict occurs, the contract documents will govern.

CHANGES TO ANY OCIP REQUIREMENT OR PROCEDURE MUST BE APPROVED BY THE SPONSOR AND OCIP ADMINISTRATOR. NO CONTRACTOR OR SUBCONTRACTOR HAS THE AUTHORITY TO AMEND THE OCIP REQUIREMENTS.

ADMINISTRATION

Program Management

OCIP Program Coordinator

Willis Towers Watson
John Shorten
8285 Tournament Drive, Suite 130
Memphis, TN 38125

Phone: (901) 248-3102
Fax: (901) 248-3101
E-mail: john.shorten@willistowerswatson.com

OCIP Program Unit Manager

Willis Towers Watson
Nancy Jarmon
500 North Akard St., Suite 4300
Dallas, TX 75201

Phone: (972) 973-2394
Fax: (972) 386-5561
E-Mail: nancy.jarmon@willistowerswatson.com

OCIP Administration

Willis Towers Watson
Starla Lacey
Five Course Parkway, Suite 1800
Atlanta, GA 30328

Phone: (404) 224-5000
Cell: (404) 536-8567
E-Mail: starla.lacey@willistowerswatson.com

On-Site Safety

Willis Towers Watson
Wes Shelby
4225 Airways Blvd.
Memphis, TN 38116

Phone: (901) 344-1659
Cell: (901) 604-2136
Fax: (901) 345-6636
E-Mail: wes.shelby@willistowerswatson.com

Claims Management

Zurich North America

PO Box 968077
Schaumburg, IL 60196-8077

FAX NUMBER FOR REPORTING CLAIMS: **(877) 967-2567**
GENERAL CLAIMS FAX NUMBER: **(615) 872-1303**
GENERAL PHONE NUMBER: **(800) 366-8366**

Leadership	Title	Phone	Email
Tammy Fike	GL Sr. Specialist	(404) 851-3616	tammy.fike@zurichna.com
Ginny Howard	WC Team Manager	(615) 872-1315	ginny.howard@zurichna.com
Karen Kingo	WC Pension Manager	(847)413-5868	karen.kingo@zurichna.com
Vea Storey	WC Claims Specialist	(615) 872-1241	veatrice.storey@zurichna.com
Patricia Painter	WC Claims Specialist	(615) 391-7501	patricia.painter@zurichna.com
Nat Woodruff	Claims Customer Service Executive	(404) 851-3278	nathaniel.woodruff@zurichna.com

Insurance Policy References

Workers Compensation

Insurance Company: Zurich American Insurance Company
Master Policy Number: WC 6675835-00

Each Contractor and/or Subcontractor will be issued their own Workers' Compensation Policy

Part One - Workers' Compensation	TN State Limits
Part Two - Employers' Liability	
Bodily Injury by Accident – Each Accident	$1,000,000
Bodily Injury by Disease – Policy Limit	$1,000,000
Bodily Injury by Disease – Each Employee	$1,000,000
Part Three – Other States Insurance	
All States except those listed in Part One and Monopolistic States (OH,ND,WA,WY)	

Commercial General Liability

Insurance Company: Zurich American Insurance Company
Master Policy Number: GLO 6675834-00

General Aggregate Limit (Other than Products – Completed Operations)	$4,000,000
Product-completed Operations Aggregate Limit	$4,000,000
Personal and Advertising Injury Limit (Any One Person or Organization)	$2,000,000
Each Occurrence Limit	$2,000,000
Fire Legal Liability (Any One Fire) *	$250,000
Medical Expense Limit (Any One Person)	$10,000

Umbrella Liability

Insurance Company: ACE Property and Casualty Insurance Company
Master Policy Number: XCQ G46622029 001
Limits: $25,000,000 excess of primary

Excess Liability – Layer 1

Insurance Company: Allied World National Assurance Company
Master Policy Number: 0313-3804
Limits: $10,000,000 excess of $10,000,000

Excess Liability – Layer 2

Insurance Company: ACE Property and Casualty Insurance Company
Master Policy Number: XCQ G7257896A 001
Limits: $15,000,000 excess of $15,000,000

Excess Liability – Layer 3

Insurance Company: Great American Security Insurance Co.
Master Policy Number: EXC 4051403
Limits: $12,500,000 excess of $12,500,000

Excess Liability – Layer 4

Insurance Company: Starr Indemnity & Liability Company
Master Policy Number: 1000587787221
Limits: $15,000,000 excess of $15,000,000

Insurance Company:	Endurance Risk Solutions Assurance Co.
Master Policy Number:	XSC30019604800
Limits:	$15,000,000 excess of $15,000,000

Insurance Company:	Westchester Surplus Lines Insurance Company
Master Policy Number:	G72578387001
Limits:	$20,000,000 excess of $20,000,000

Program Definitions

Owner Controlled Insurance Program (OCIP)	The Insurance Program under which Workers' Compensation, Employer's Liability, Commercial General Liability and Excess Liability are procured or provided on a project "wrap-up" basis for Contractors/Subcontractors(s) of any tier, who have been properly enrolled, while performing operations on a designated Project Site for Memphis-Shelby County Airport Authority.
Insured	The Memphis-Shelby County Airport Authority, Contractors(s) and Subcontractors of any tier who are enrolled in the OCIP and who have been named in a policy, certificate of insurance, or advice of insurance.
Enrolled Contractors	"Enrolled Contractors", mean "Eligible Contractors" who, prior to the commencement of their work on the covered project, have completed the appropriate enrollments documents for the "designated project site".
Insurer	Insurance Company, as identified in the Insurance Policy Reference section.
OCIP Coordinator and Administrator	The firms responsible for the insurance broker and administration of the OCIP.
OCIP Safety Consultants	These representatives are employees of the Insurer and Willis Towers Watson who will provide safety consulting services to MSCAA and its contractors enrolled in the OCIP.
Project Description	All Designated Projects identified and approved by the Owner and on file with the Insurance Company.
On-Site Activities/ Designated Project	Zurich's designated project means: "The project shown in this Schedule, including operations on the project site or location that are necessary or incidental to the project as described in contract documents. "Designated Project" includes the work site(s) associated with such "designated project(s)" and any offsite staging areas, as long as they are dedicated solely to the "designated project(s)" and the sponsor agrees to provide coverage. Also included are those areas immediately adjacent to the "designated projects", including boundaries of local streets or public easement, in which the enrolled subcontractors at any tier perform work under their respective contracts." The OCIP does not provide insurance coverage for permanent yards or other locations of any Contractors/Subcontractors, except as specifically requested by Contractors and, if accepted by insurer, endorsed to the policy.
Eligible Contractors	**Insured by the OCIP**: Eligible Contractors include all contractors providing direct labor on the Designated Project (see definition of ineligible contractors below). Temporary labor services and leasing companies are to be treated as subcontractors.

Ineligible Contractors	**Not insured by the OCIP**: Includes (but is not limited to) contractors performing any type of environmental remediation work (example: asbestos or underground tank removal), consultants, suppliers (that do not perform or subcontract installation), vendors, materials dealers, guard services, janitorial services, truckers (including trucking to any Designated Project where delivery is the only scope of work performed), Blasting Contractors or Any Person or organizations that manufactures or fabricates products or components outside the designated project that does not also install the product or component at the designated project, employee leasing companies, temporary labor services and other temporary project services. However, such Employee leasing and temporary labor service companies can be insured by the OCIP but must be submitted for review to the OCIP administrator prior to acceptance.
Certificate of Insurance	Written evidence of the existence of coverage terms of a particular insurance policy.

COVERAGE SUMMARY

The OCIP coverage applies only to work performed under the Agreement at any Designated Project Site for eligible enrolled contractors. Contractor and Subcontractors must provide their own insurance as detailed in the contract.

Through a combination of insured and self-insured insurance programs the Owner, at its sole expense, will provide and maintain in force the types of insurance listed in subsection (1) through (4) below as a part of the OCIP for Contractor and eligible Subcontractors who have been enrolled. Contractor and eligible Subcontractors enrolled in the OCIP agree that the insurance company policy limits of liability, coverage terms and conditions shall determine the scope of coverage provided by the OCIP.

This section provides a brief description of the coverages provided under the OCIP. The Contractor shall refer to the actual policies for details concerning coverages, exclusions and limitations. Policies are available for review upon request.

While the OCIP is intended to provide uniform coverages and reasonable limits, the OCIP is not intended to meet all the insurance needs of the Contractor and all eligible Subcontractors who have been properly enrolled. Contractor and eligible Subcontractors enrolled in the OCIP agree that they will discuss the OCIP with their insurance agent or consultant to ensure that proper coverages are maintained. It is the contractors' responsibility to notify their agent that the work performed on-site will be insured under an OCIP.

1) **Workers' Compensation and Employers' Liability Insurance** (Off-site operations are excluded unless locations are scheduled & approved by the Owner and OCIP insurance carriers) with Statutory Limits with All States Endorsement and minimum Employer's Liability Limits will be provided as follows:
   a) $1,000,000 Bodily Injury with Accident - Each Accident;
   b) $1,000,000 Bodily Injury by Disease - Policy Limit
   c) $1,000,000 Bodily Injury by Disease - Each Employee; and

   Each Enrolled Contractor will be issued a separate Workers' Compensation policy. The premium and loss experience on the Project Site will be reported to the appropriate rating authorities in the normal manner for use in calculating Enrolled Contractors' future experience modifiers. OCIP loss experience will impact Contractor's future insurance costs and, therefore, compliance with the project safety guidelines will directly benefit all Contractors.
2) **Commercial General Liability Insurance**, (Off-site operations are excluded unless locations are scheduled & approved by the Owner and OCIP insurance carriers) will be provided on an "occurrence" form under a single liability policy. Certificates of insurance will be provided to the Contractor and all tiers of eligible Subcontractors reflecting the following Limits of Liability, Coverages, and Terms:
   a) Limit of Liability: Limits of Liability Shared by all Enrolled Contractors

General Aggregate Limit (Other than Products – Completed Operations)	$4,000,000
Product-completed Operations Aggregate Limit	$4,000,000
Personal and Advertising Injury Limit (Any One Person or Organization)	$2,000,000
Each Occurrence Limit	$2,000,000
Fire Legal Liability (Any One Fire)	$250,000
Medical Expense Limit (Any One Person)	$10,000

   b) Coverage and Terms:
      i) Occurrence Basis;
      ii) Products;
      iii) Contractual Liability specifically designating the indemnity provision of this agreement as an insured contract;
      iv) Completed Operations (Six Year Term);
      v) Independent Contractor/Subcontractor's Liability;
      vi) Personal Injury; Explosion, Collapse, and Underground (X, C, U) exclusion deleted;
      vii) Coverage limited to any Designated Project;
      viii) General Aggregate Limits will apply per project and annually;

ix) Products and Completed Operations Aggregate Limit applies once or all projects and applies once for the policy period and extended completed operations period combined; and
x) Policy Exclusions include (but are not limited to) asbestos, pollution, mold, professional liability, employment practices, EIFS, impaired property and work or operations performed away from any Designated Project Site.

c) If a claim arises under the Owner provided Commercial General Liability OCIP policy from the partial or sole negligence of a Contractor or Subcontractor, or for violation of any OCIP Safety Requirements, such Contractor or Subcontractor shall be responsible for reimbursing the Owner's deductible to the extent of their respective negligence, as determined solely by owner, up to a maximum of $10,000 per occurrence per Contractor.

d) The limits of liability detailed under 2) a) apply to construction operations within the property boundary of the applicable Airport under the management of MSCAA and as per the issued policies' definitions.

3) **Umbrella and Excess Liability Insurance** (Off-site operations are excluded)
   a) Limits of Liability Shared by all Enrolled Contractors
      i) $100,000,000 per Occurrence
      ii) $100,000,000 Aggregate
      iii) $100,000,000 Products / Completed Operations Aggregate

4) **Builder's Risk Insurance** will be provided on "All-Risk" coverage on a replacement cost basis, subject to the limits of the insurance policy. This insurance will include the interests of the Owner the Contractor and all tiers of Subcontractors in the Work. The Builders Risk policy will not provide coverage against loss by theft or disappearance of any materials (unless the materials are to be incorporated into the Project), tools, or equipment of the Contractor or any tier of Subcontractor, or any other person furnishing labor or materials for the Work. The Contractor shall be responsible for a deductible of $25,000 for each and every loss.

ACCIDENT REPORTING AND CLAIMS PROCEDURES

When accidents happen, everyone needs to work together. Even though the Contractors and each Subcontractor has instituted tough safety measures, work-related accidents are bound to occur. When they do, the OCIP Insurers stand ready to serve the Contractors and Subcontractors, but they need help if they are to perform this service in the most effective and efficient manner.

Each Contractor/Subcontractor should have the claims procedures and emergency numbers posted on the jobsite and in all vehicles.

The Insurer will have a claims adjuster available to handle all Commercial General Liability and Workers' Compensation claims.

The Insurer will arrange for legal counsel to handle all lawsuits emanating from the project.

Never discuss any accident or claim with anyone except authorized representatives of MSCAA, Contractor, the Insurer(s), and the Owners Insurance Broker or Law Enforcement agencies.

MSCAA Emergency Procedures (Serious Injuries)

1. Contact MSCAA Emergency Dispatch at **(901) 922-8333 (DO NOT call 911)**. Specific directions should be given to the accident scene. If the accident occurred in the SIDA area, give location in relation to an active taxiway/runway. If outside the SIDA, give location relative to a street or construction gate. Explain the extent of injuries.
2. Notify the on-site OCIP Safety Coordinator, Wes Shelby, (901) 604-2136 (cell).
3. Methodist South Hospital Emergency Room, 1300 Wesley Drive, Memphis, TN, will be used (901) 516-3700, the decision on the treating medical facility will be made by the EMT, in serious cases, the Med Trauma Center may be used.
4. Contractors must have currently qualified First Aid personnel on site at all times. First Aid supplies must be readily available and maintained, including rubber gloves to protect First Aid personnel against blood borne pathogens, etc.
5. After the call for emergency unit is made to MSCAA, the contractor should send escorts to all locations where the emergency unit could enter the site.
6. If the injured employee does not speak English, send a good interpreter to the treating medical facility.
7. The Contractor should provide the Medical Facility with a completed Authorization For Treatment form (sample provided in the OCIP Manual).

A. Workers' Compensation Claims

1. Seek immediate medical attention for the injured person(s).
2. Immediately notify your supervisor and project manager of the situation.
3. Notify the on-site OCIP Safety Coordinator, Wes Shelby, (901) 604-2136 (cell). If you cannot reach Wes, please leave a voice mail message.
4. Complete a **First Report of Injury form** and the **Claim Reporting Cover Sheet** (include appropriate Location Code) and forward to **Zurich Insurance Company** via fax **877-967-2567** or email usz_carecenter@zurichna.com immediately. If not possible, then send before the end of the business day.
5. MSCAA the Contractor's safety representative or designated person will transport the injured worker to

Concentra Medical Center
2831 Airways Boulevard
Suite 102
Memphis, TN 38132
Phone: (901) 348-0200
Hours: 8a.m. to 8p.m. (Mon. – Fri.)

If accident occurs and Concentra Medical Center is not open:

Methodist South Hospital
1300 Wesley Drive
Memphis, TN 38116
Phone: (901) 516-3700
24 Hours, 7 days per week

Or

Baptist Memorial Hospital DeSoto
7601 Southcrest Parkway
Southaven, MS 38671
Phone: (662) 349-4000
24 Hours, 7 days per week

6. Complete the **Accident Investigation Form** and forward it along with the **Claim Reporting Cover Sheet** to Wes Shelby, OCIP Safety Coordinator (e-mail: Wes.Shelby@willis.com, fax: (901) 345-6636, or mail: 4225 Airways Blvd., Memphis, TN 38116 before the end of the day.
7. Receipt of Acknowledgement of Claim and claim number from Zurich Insurance Company will be sent to the contact person provided on the Claim Reporting Cover Sheet and to Wes Shelby, OCIP Safety Coordinator. The claim number should be used for future reference.
8. All medical bills, hospital bills, etc. should be forwarded to Zurich Insurance Company identifying the injured employee and claim number.

After Hours / Close of Business Claims Reporting

1. Call Zurich Insurance Company at (800) 987-3373.
2. Tell the Zurich representative that an injury just occurred and that you need to be routed to the on call specialist to authorize treatment.
3. You will either be placed directly in touch with the on-call person or the on-call person will be paged and will return your call within two hours.
4. If hospital needs to speak with Zurich directly, the contractor will have to supply the hospital name and phone number to Zurich and they will call the hospital directly.

B. Commercial General Liability Claims

Any occurrence involving Bodily Injury or Property Damage to members of the public that is NOT caused by an automobile accident.

1. Seek immediate medical attention for any injured person(s).
2. Immediately notify your supervisor and project manager of the situation.
3. Notify the on-site OCIP Safety Coordinator, Wes Shelby, (901) 604-2136 (cell). If you cannot reach, please leave a voice mail message.
4. Complete the **Claim Reporting Cover Sheet** (include appropriate Location Code) and forward to Zurich Insurance Company via fax **(866) 691-7068** or email usz_carecenter@zurichna.com immediately. If not possible, then send before the end of the business day.
5. Complete the Accident Investigation Form and Claim Reporting Cover Sheet (include appropriate Location Code) and forward to Wes Shelby, OCIP Safety Coordinator, (e-mail: wes.shelby@willis.com, fax: (901) 345-6636, or mail: 4225 Airways Blvd., Memphis, TN 38116.
6. Receipt of Acknowledgement of Claim and claim number from Zurich Insurance Company will be sent to the contact person provided on the Claim Reporting Cover Sheet and to Wes Shelby, OCIP Safety Coordinator. The claim number should be used for future reference.
7. All investigation reports, pictures, medical bills, hospital bills, etc should be forwarded to Zurich Insurance Company identifying the injured individual, claimant and claim number.

C. Duties in the event of a claim or suit

1. Follow the claims reporting procedures above.
2. You must see to it that the OCIP Safety Coordinator, Wes Shelby, is notified promptly of an “occurrence” which may result in a claim. Notice should include:
    a. How, when and where the “occurrence” took place, and;
    b. The names and addresses of any injured persons and witnesses.
3. If a claim is made or “lawsuit” is brought against any insured, you provide written notice of the claim or “lawsuit”.
4. You and any other involved insured must:
    a. Cooperate with the Insurer in their investigation, settlement or defense of the claims or “suit”; and
    b. Assist the Insurer, upon their request, in the enforcement of any right against any person or organization which may be liable to the insured because of injury or damage to which this insurance may also apply.
5. No Insureds will, except at their own cost, voluntarily make a payment, assume any obligation or incur any expense, other than for first aid, without Insurer’s consent.

D. Automobile Claims

Even though no Automobile Liability or Physical Damage coverage is provided under the OCIP, the Contractor/Subcontractor must notify Wes Shelby, OCIP Safety Coordinator, in writing of any automobile accident which could be related to the project. This should be done as soon as possible following the accident.

E. Contractor's Equipment Claims

Even though no coverage is provided under the OCIP for loss of or damage to Contractor's or Subcontractor's owned equipment the Contractor/Subcontractors must notify Wes Shelby, OCIP Safety Coordinator, in writing, of any loss or damage to their equipment at the project. This should be done as soon as possible, following first knowledge of loss or damage.

F. Miscellaneous Claims Notes

1. Any incident that involved injury to persons or property is to be reported to Wes Shelby, OCIP Safety Coordinator's office immediately.
2. Any claims adjuster representing a Contractor/Subcontractor's normal insurer who seeks to come onto Any Designated Project site must obtain written authorization from Wes Shelby, OCIP Safety Coordinator, prior to coming on the site. There will be no exceptions to this stipulation.

FORMS

Zurich Claim Reporting Cover Sheet

Incident Investigation Report

Workers' Compensation Referral Slip for Injured Employees

Authorization to Treat

Form 1 – Notice of Sub-contract Award

Form 2 – Enrollment Form

Form 4 – Notice of Anticipated Completion

Certificate of Insurance

ZURICH CLAIM REPORTING COVER SHEET

Email to: USZ_CARECENTER@ZURICHNA.COM

OR

Fax to: (866) 691-7068

Account Name: **Memphis Shelby County Airport OCIP V**

Master WC policy #: **WC 6675835-00**
Master GL Policy #: **GLO 6675834-00**

Project Location:_____

Subcontractor/Employer:_____

Subcontractor/Employer Policy Number:_____

Contact Name:_____

Contact Phone Number:_____

Contact Fax Number: _____

Location Code:_____

Injured Worker:_____

Attention Zurich Representative – Please fax the receipt and claim number immediately to the contact above.

Incident Investigation Report

(To be completed within 24 hours by Supervisor at time of incident)

INJURED EMPLOYEE INFORMATION

Employee Name _____ Male ___ Female ___ Date of Birth _____ Ht. ___ Wt. ___

Employee Address _____

Street City State Zip Code Home Phone

Employer Name _____ Address _____

Date of Incident _____ Time _____ AM/PM Jobsite/Area _____

Employee Job Title _____ Length of Employment _____

Weather Condition _____ Shift _____ Supervisor _____

UNSAFE ACTS

What actions caused or contributed to the incident?

- ___ Operating equipment without authority
- ___ Failure to warn/signal
- ___ Failure to secure/lock out/tag out
- ___ Reaching into/servicing equipment in operation
- ___ Making safety devices inoperable
- ___ Used defective equipment
- ___ Took unsafe/improper position
- ___ Horseplay, disruptive actions
- ___ Improper lifting or movement
- ___ Other: _____
- ___ No unsafe action

What actions caused or influenced above unsafe acts?

- ___ Unaware of job hazards
- ___ Inattention to hazards
- ___ Unaware of safe method/procedure
- ___ Tried to gain or safe time
- ___ Influence of fatigue/illness
- ___ Influence of emotions/stress
- ___ Defective vision/bodily defects
- ___ Under influence of alcohol or drugs
- ___ Failure to enforce procedures/rules
- ___ Other:

UNSAFE CONDITIONS

What conditions of tools, equipment, or environment contributed to incident?

- ___ Inadequate guard/barrier/safety device
- ___ Inadequate/improper protective equipment
- ___ Inadequate warning system
- ___ Defective or work tools/equipment materials
- ___ Congestion or restricted area
- ___ Fire or explosion hazard
- ___ Hazardous storage method
- ___ Unsecured against movement
- ___ Lighting/noise/visual obstruction
- ___ Environmental/atmospheric conditions
- ___ Other:
- ___ No unsafe condition

What caused or influenced above unsafe condition?

- ___ Defective/worn from normal use
- ___ Defective/worn from abuse/misuse
- ___ Housekeeping/cleaning failure
- ___ Lack of preventative maintenance
- ___ Inadequate maintenance
- ___ Exposure to environment
- ___ Inadequate purchasing
- ___ Safety inspection failure
- Other:
- ___ Unknown

INJURY/ILLNESS DATA

Describe the nature and extent of injury/illness (body part affected, type of injury, etc.) _____

Was first aid administered? Yes ___ No ___ | If yes, what type and by whom _____

Was employee taken to hospital/clinic? Yes ___ No ___ | If yes, list name, address and phone number of hospital/physician/nurse attending

List any eyewitnesses to the incident and others who might provide information about the incident _____

INCIDENT/ILLNESS EVALUATION

How did the incident occur? Describe in detail the task the employee was doing when injured or became ill. Include specifics such as equipment, structure tools, materials, objects (size, shape, and weight), people involved in the task, positions, distances, rate of movement, sequence of events, etc.

(Attach any additional information comments, documentation of interviews, sketches, pictures, etc. as necessary)

Incident Investigation Report

Incident/Illness Evaluation (continued)

Type of exertion/body motion during injury: Pull ____ Lift ____ Bend ____ Reach ____ Twist ____ Other ____

Was this the employee's regular job? Yes ____ No ____ How much experience does this employee have on this job? ____

Was the employee trained in this job or task? Yes ____ No ____ When was last training on this task? ____

Was this the employee's first job-related injury or illness? Yes ____ No ____ If no, briefly describe previous injuries (date, nature, extent, etc.) ____

Hours of overtime worked in last 24 hours ____ Did this possibly contribute to incident? If so, describe ____

Does a safety rule or policy apply to this task? Yes ____ No ____ If yes, describe rule and how employee followed or violated

Does a specific procedure for task exist? Yes ____ No ____ If yes, describe procedure briefly and if it was followed ____

Is protective equipment required for this task? Yes ____ No ____ If yes, describe equipment, if it was used, if it was adequate/functioned properly, and if the employee(s) were trained on it. ____

Is there possibly any third party which contributed to the incident? (Other contractors, employee, etc.) Yes ____ No ____ If yes, describe. ____

Did any unsafe physical/environmental conditions exist? Yes ____ No ____ If yes, describe conditions (physical , mechanical, electrical, etc.) which contributed to the incident

Is material handling equipment required for this task? Yes ____ No ____ If yes, was it used and did it function properly? ____

Possible actions to be taken to prevent reoccurrence

____ Reinstruction of employee(s) involved	____ Do/revise Job Safety Analysis	____ Repair/replace/modify equipment
____ Preventative instruction of others who do job	____ Revise/establish safety rule	____ Improve clean-up procedure
____ Training of employee(s)	____ Reassign employee to another job	____ Improve inspection procedure
____ Action to improve enforcement	____ Require/replace protective equipment	____ Eliminate/reduce congestion
____ Reprimand/discipline of employee(s) involved	____ Install safety guard device	____ Improve design/construction
		____ Improve environmental conditions

CORRECTIVE ACTION(S) TAKEN OR PLANNED

What was/will be done	By Whom	Estimated Completion Date	Completion Confirmed Date	Completion Confirmed Initials

Incident discussed with employee to prevent reoccurrence? Yes ____ No ____ Date ____

Any disciplinary action taken? Yes No If yes, describe what type.

FOLLOW UP COMMUNICATION

YES _____ NO _____ Incident site reviewed by supervisor with employee (and safety coordinator if applicable.)
YES _____ NO _____ Incident review meeting conducted. Attended by _____
YES _____ NO _____ Employee or supervisor reviewed incident with work group.
YES _____ NO _____ Employee reviewed injury with safety committee
YES _____ NO _____ Project Safety informed of incident

Date of Report _____ Prepared by _____ Title _____
Signature

Reviewed by _____ Superintendent _____

MSCAA OCIP V

4225 Airways Blvd.
Memphis, TN, 38116

WORKER'S COMPENSATION REFERRAL SLIP
FOR INJURED EMPLOYEES

On-Site EMT: **(901) 922-8333**

Authorized Clinic: *Concentra Medical Center*
2831 Airways Boulevard
Suite 102
Memphis, TN 38132
(901) 348-0200 (Phone)
(901) 348-0046 (Fax)

Clinic Hours: **8 a.m. to 8 p.m. (Mon. – Fri.)**

Authorized After-Hours Clinics:

Methodist South Hospital
1300 Wesley Drive
Memphis, TN 38116
(901) 516-3700

Baptist Memorial Hospital DeSoto
7601 Southcrest Parkway
Southaven, MS 38671
(662) 349-4000

Employee Name: _____ Date:_____

Employer: _____ Employer Policy Number: _____

Location Code (if known): _____ Claim Number (if known): _____

Account Name: **Memphis Shelby County Airport Authority OCIP V**
Insurer: **Zurich**
Master Policy Number: **WC 6675835-00**

Instructions for medical facility:
The person listed above has been injured on the job. Please provide the employee with medical treatment per OCIP protocol.

MSCAA OCIP V
Authorization to Treat

Local Office Information
Company Name: _____
Designated Representative: _____
Address: _____
Phone: _____ **Fax:** _____ **E-mail:** _____

Billing Information for Drug Screens

Company Name: ***Zurich North America***
Address: PO Box 968077
Schaumberg, IL 60196-8077

Phone: (800) 366-8366 Fax: (615) 872-1303

Insurance Information for Work Comp Carrier

Company Name: Zurich American Insurance Company **Master Policy #: WC 0183275-00**
Address: PO Box 968077
Schaumberg, IL 60196-8077

Phone: (877) 928-4531 Fax: (866) 691-7068

Services Required

Worker's Comp Injuries _____

Drug Screen Required For (employer to check necessary testing):

____ Pre-Employment
____ Probable Cause
____ Urine (collection only)
____ Test Cup (Cocaine, PCP, etc.)
____ Random
____ Post Accident
____ Breath Alcohol

Treating Medical Center: Please be advised if negative, DO NOT send out. Be sure to mark on the Chain of Custody (COC) the information for the employer:

Employer: _____ Fax: _____

Special Instructions: Use TEST CUP. Do NOT send out unless the test reads positive.

Fax results to designated employer listed above.

Company Authorized Signature: Date:

MSCAA OCIP V
Notice of Subcontract Award and Request for Insurance

Send this Form to:

Willis Towers Watson
Starla Lacey, CSS
Copy: Nancy Jarmon, CSS
500 N. Akard St., Suite 4300
Dallas, TX 75201

Phone: (972) 715-6303
Email: starla.lacey@wtwco.com
Email: nancy.jarmon@wtwco.com
Phone: (404) 536-8567

RE: Project Name: _____

This is to inform you that we have awarded the following subcontract to the following Subcontractor:

Name of Firm: _____

Address: _____City: _____ State: _____ Zip:

_____

Phone: (____)_____ Fax: (____)_____

Office Contact: _____E-Mail: _____

Type of Work: _____Job #_____Contract Value: $_____

Award Date: _____ Estimated Start Date: _____

Awarding Contractor: _____

By: _____

Title: _____

Date: _____

Prime Contractor (if different) _____

DO NOT complete this form for your own company.

A Form-1 should be completed on each of your Subcontractors.

- **Award Date – date Notice to Proceed was given (Verbally or in Writing)**

- **Start date is mandatory – date shown will be the effective date of coverage.**

Any Contractors or Subcontractors who enrolls in the OCIP 30 days after their start date will have to provide a No Known Loss Letter to the Carrier along with the enrollment documentation.

☐ New Award
Additional Contract
☐ Time & Material Contract
Short Term (< 30 days)
Small Contract (< $30,000)
☐

MSCAA IV - FORM 2

MSCAA OCIP V ENROLLMENT FORM

Project: _____

CONTRACTOR'S INFORMATION

Contractor: _____ Indv _____ Ptshp_____ Corp _____ J/V _____
Address: _____FEIN:_____
Office Contact: _____Phone: _____ Email: _____
Site Contact: _____Phone: _____Email:_____
Safety Contact: _____Phone: _____Email:_____
Insurance Contact: _____Phone: _____Email:_____
Payroll Contact: _____Phone: _____Emai:_____
Address (if different): _____

CONTRACT INFORMATION

Contract Value: $ _____

Job Name/Description:_____ Contract/JOB #: _____
Awarding Contractor: _____ Prime Contractor: _____
Award Date: _____Start Date: _____ Est Completion Date: _____
Self Performed: _____%, Est. CV $: _____ Subcontracted _____%; Est. CV $:_____
Est. # of Subcontractors _____ Est. Man hours _____DBE/MBE/WBE: _____

CURRENT INSURANCE INFORMATION;

Contractors' Insurance Broker or Agent: ***PLEASE PRINT***

Company Name:_____ Contact:_____
City/State/Zip: _____ Phone: (_____)_____

WORKERS' COMPENSATION

Current Experience Modifier: ___ (Provide documentation confirming)

W.C. Classification	W.C. Class Codes	Estimated Payroll
1.		
2.		
3.		
4.		

It is each Contractor's responsibility to notify its own insurance carrier to exclude all work to be done under this contract from your current insurance program. Any Contractors or Subcontractors who enrolls in the OCIP 30 days after their start date will have to provide a No Known Loss Letter to the Carrier along with the enrollment documentation.

Contractor warrants that the insurance costs for coverages provided by the Owner have been removed from the bid and no eligible Subcontractor has been charged by the Contractor for its participation in the OCIP. The OWNER, or their Agent, is granted permission by Contractors to inspect the insurance and payroll records. At completion of the Work, Owner's Agent shall have the right to audit the project payroll records of Contractors. Any and all returns of premiums, dividends, discounts or other adjustments to any OCIP policy, including rights of cancellaltion,is assigned, transferred and set over absolutely to OWNER. This assignment is valid for insurance policies whose premiums have been paid by the OWNER on behalf of such Contractors.

Signed _____Title _____Date_____

Send this Form to:

Willis Towers Watson
Starla Lacey, CSS
Copy: Nancy Jarmon, CSS
500 N. Akard St., Suite 4300
Dallas, TX 75201

Phone: (972) 715-6303
Email: starla.lacey@wtwco.com
Email: nancy.jarmon@wtwco.com
Phone: (404) 536-8567

MSCAA IV- FORM

MSCAA OCIP V

NOTICE OF ANTICIPATED COMPLETION

(to be submitted with Final Pay Request)

Send this Form to:

Willis Towers Watson
Starla Lacey, CSS
Copy: Nancy Jarmon, CSS
500 N. Akard St., Suite 4300
Dallas, TX 75201

Phone: (972) 715-6303
Email: starla.lacey@wtwco.com
Email: nancy.jarmon@wtwco.com
Phone: (404) 536-8567

Please be advised, we, _____ are scheduled to complete our work

for:Awarding Contractor: _____ Prime Contractor:_____

Project Description: _____ Actual Start Date: _____ Completion Date: _____

Reported Contract Value: _____ Final Contract Value: _____

Self Performed Work: _____ Subcontracted Work: _____

Estimated WC On Site Payroll: _____Final WC On Site Payroll: _____

We used the following enrolled subcontractors, who will also complete their work on the date shown above:

Subcontractors	Reported Contract Value	Final Contract Value

This is our contract: YES ☐ NO ☐

We are still working on the following contracts:

Location Code	Awarding Contractor	Prime Contractor

Your Company's Name: _____ Date: _____

By: _____Title:_____

Final insurance audits may be made under the applicable policies. Please show who in your office (or another location if applicable) is responsible for this information:

Name: _____ Phone: _____ Fax: _____ E-Mail: _____

Address: ____ _____ City: _____ State: _____ Zip _____

CERTIFICATE OF LIABILITY INSURANCE

DATE (MM/DD/YYY)

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 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 Agent Company Name Address City, State ZIP Attn:	CONTACT NAME: PHONE (A/C, No. Ext): FAX (A/C, No): E-MAIL ADDRESS:	
	INSURER(S) AFFORDING COVERAGE	NAIC#
INSURED OCIP Enrolled Contractor	INSURER A : AM BEST Rating A- VII or better	
	INSURER B :	
	INSURER C :	
	INSURER D :	
	INSURER E :	
	INSURER F:	

COVERAGES CERTIFICATE NUMBER: 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 INSR	SUBR WVD	POLICY NUMBER	POLICY EFF (MM/DD/YYY)	POLICY EXP (MM/DD/YY)	LIMITS	
	GENERAL LIABILITY Applies to Off Site Risks X COMMERCIAL GENERAL LIABILITY CLAIMS-MADE X OCCUR GEN'L AGGREGATE LIMIT APPLIES PER: POLICY X PRO-JECT LOC	X	X				EACH OCCURRENCE DAMAGES TO RENTED PREMISES(Ea occurrence) MED EXP (Any one person) PERSONAL & ADV INJURY GENERAL AGGREGATE PRODUCTS-COMP/OP AGG	$1,000,000 $ $ $1,000,000 $2,000,000 $2,000,000
	AUTOMOBILE LIABILITY Applies to Off and On Site Risks ANY AUTO X ALL OWNED AUTOS SCHEDULED AUTOS X HIRED AUTOS X NON-OWNED AUTOS	X	X				COMBINED SINGLE LIMIT (Ea accident) BODILY INJURY(Per person) BODILY INJURY(Per accident) PROPERTY DAMAGE (Per accident)	$1,000,000 $ $ $
	X UMBRELLA LIAB X OCCUR EXCESS LIAB CLAIMS-MADE DED RETENTION $	X	X				EACH OCCURRENCE AGGREGATE	$1,000,000 $1,000,000 $
	WORKERS' COMPENSATION AND EMPLOYERS ' LIABILITY Applies to Off Site Risks Y/N ANY PROPRIETOR/PARTNER/EXECUTIVE OFFICER/MEMBER EXCLUDED? **(Mandatory in NH)** If yes, describe under DESCRIPTION OF OPERATIONS below	N/A	X				X WC STATU-TORY LIMITS OTH-ER E.L. EACH ACCIDENT E.L. DISEASE – EA EMPLOYEE E.L. DISEASE – POLICY LIMIT	$1,000,000 $1,000,000 $1,000,000
	OTHER							

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

Workers' Compensation and Commercial General Liability coverages shown above do not apply to any Designated Project at the Memphis International Airport – only for off-site activities/operations. The Memphis-Shelby County Airport Authority, its officers, commissioners, representatives, agents and employees ATIMA and [AWARDING CONTRACTOR] are additional insureds applicable to the Auto Liability Insurance and off-site Commercial General Liability insurance policies including Excess Umbrella. 30 Day Notice of Cancellation or Non-Renewal other than 10 days for non-payment of premium is provided to MSCAA. Waiver of Subrogation in favor of MSCAA is provided by all policies.

CERTIFICATE HOLDER **CANCELLATION**

MSCAA OCIP c/o Willis Towers Watson . Attn: OCIP Administrator 500 North Akard St., Suite 4300 Dallas, TX 75201	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

EXHIBIT D
TO
UNIT PRICE CONSTRUCTION CONTRACT
FOR
DEWITT SPAIN AIRPORT APRON REHABILITATION - CONSTRUCTION

BY AND BETWEEN
THE MEMPHIS-SHELBY COUNTY AIRPORT AUTHORITY
AND
(CONTRACTOR NAME)

CONSTRUCTION SAFETY AND HEALTH GUIDELINES

OCIP CONSTRUCTION SAFETY AND HEALTH GUIDELINES

Memphis-Shelby County Airport Authority

Construction Safety and Health Guidelines

Revision	Date
1	11/30/2012
2	05/02/2016
3	02/06/2017

Confirmation of these Project Safety & Health Guidelines

It is the responsibility of the Contractor to maintain total control of safety to ensure that employees and the general public are provided with an environment free of hazards during construction and renovation activities. This program does not relieve the Contractor of their responsibilities regarding the safety of their employees, the employees of their Subcontractors and sub-subcontractors, protection of the general public and the preservation of property.

Contractors shall develop their own written site-specific safety and health plans for the Memphis-Shelby County Airport Authority. At minimum, the safety and health plan shall meet the requirements of 29CFR1926 – Federal OSHA Construction regulations and the requirements established in the **Memphis-Shelby County Airport Authority** Construction Safety Guidelines. In short, as required by law, each Contractor is responsible for protecting the health and safety of its employees and the employees of each subcontractor and sub-subcontractor while ensuring they have a safe and healthful place to work. The site-specific safety and health program shall be submitted for approval within fifteen (15) days after the Notice to Proceed for approval to the Project Safety Manager, Wes Shelby, 4225 Airways Blvd., Memphis, TN.

The Safety Requirements of these safety guidelines are a supplementary document to all Government rules, codes and regulations. It does not negate, abrogate, alter or otherwise change any provisions of these rules, codes and/or regulations, and is intended to supplement and enforce the individual program of each contractor and the overall safety effort. It is understood that the ultimate responsibility for providing a safe place to work rests with each individual Contractor.

In the event of a conflict between the provisions of these guidelines and applicable local, State or Federal safety and health laws, regulations and/or standards, contract documents or the Contractor's Safety Plan the more stringent shall apply.

By Signature, each individual confirms their understanding of the contents of this manual and shall conform to the standards of safety outlined in this manual.

_____	_____
Contractor – Project Manager	Contractor – Field Supervisor
_____	_____
Date	Date

POLICY STATEMENT

Memphis-Shelby County Airport Authority is committed that all construction workers have the best possible working environment while working on this project. It shall be the responsibility of each Contractor/Subcontractor to abide by the Safety and Health Provisions listed in OSHA 29 CFR 1926.

In addition, each Contractor, Subcontractor and Sub-Subcontractor shall abide by **Memphis-Shelby County Airport Authority** Construction Safety Guidelines, Federal Regulations, State laws and regulations, local and county laws and regulations which are applicable.

The primary goal established for the **Memphis-Shelby County Airport Authority** is to safely perform work with **"ZERO ACCIDENTS"**; totally free from lost time injuries for the mutual benefit of the worker, environment, and community.

The safety goals and objectives established for the Project can only be achieved when everyone commits to perform their tasks safely and efficiently. This commitment to achieve these goals will result in both increased productivity and the PREVENTION of job related injuries and illnesses. This will be considered as *safe construction.*

Definitions

OCIP Team – Means the Owner **Memphis-Shelby County Airport Authority**, Willis Towers Watson and all applicable insurance carrier representatives or the representative of defined such agencies and firms working together to implement the OCIP insurance program.

Construction Managers – Means the Management Group or General Contractor that has direct contract with the Owner **Memphis-Shelby County Airport Authority** to provide the overall control of the construction at the project.

General Contractor – Means the Contractor that has direct contract with the owner or Construction Managers as bid for the project. The General Contractor is also the controlling contractor on the construction site when a Construction Manager is not present.

Subcontractor – Means the contractor and or contractors that carry contracts with the General Contractor or Construction Managers. Subcontractors bid portions of the scope of work to be completed.

Sub-Subcontractors – Means any subcontractors of a subcontractors working or contracted to do work on the project.

Critical Lift – A lift that exceeds 75% of the rated capacity of the crane or requires the use of more than one crane. Also, relates to the installation of equipment and or materials that are critical to the completion of the project and damage to such equipment and/or material could result in delays to the project.

The General Public – Is defined as all persons not employed by or under contract, subcontract or sub-subcontract to the **Memphis-Shelby County Airport Authority**.

PREFACE

From the inception of **Memphis-Shelby County Airport Authority** there has been a determination and commitment to provide a safe environment for all workers and for the public from hazards associated with the construction of the Project.

All Contractors shall implement measures that will create safety awareness, promote safe work practices at the job site and pursue the contract objectives in the safest possible manner. Each Contractor shall bear sole and exclusive responsibility for safety in all phases of their work. Nothing contained herein shall relieve such responsibility.

Each Contractor shall be responsible for all its subcontractors' and sub-subcontractors' compliance with the project safety requirements.

Contractors shall develop their own written site-specific safety and health plan for the MSCAA OCIP. At minimum, the safety and health plan shall conform to the requirements addressed in the Occupational Safety and Health Act of 1970 and all additions and revisions thereto, and the requirements established in the **Memphis-Shelby County Airport Authority** Construction Safety Guidelines. In short, as required by law, each Contractor is responsible for protecting the health and safety of its employees while ensuring they have a safe and healthful place to work.

Contractor developed plans/program(s).
Programs will be reviewed and approved by OCIP Team. Example(s) of such OSHA mandated plans/programs are shown below.

Site Traffic Control Plan	Fall Protection Plan
Fire Protection Plan	Trench Safety Plan
Respiratory Protection Plan	Hazard Communication Program
Confined Space Entry	Scaffold Safety Program
Hearing Conservation Program	Ladder Safety Training
Dust Control Plan	

Emergency Procedures shall be made part of the Contractor's Safety Program. The following provisions shall be included in the emergency plan:

a. Highest ranking supervisor automatically becomes responsible for the handling any emergency that occurs during his working hours; they may call upon the assistance of any available worker. A responsible supervisor must be designated for each shift.
b. On a regular basis, at both supervisory and "weekly tool box meetings" instruct and update all employees in any course of action for emergencies.
c. Establish teams to handle each of the various emergencies.
d. Following an emergency, ranking personnel shall secure the area as expediently as possible and provide access and an account of the emergency to authorized representative(s) of MSCAA. Questions from the media should be referred to MSCAA.

Emergency procedures that may occur during any 24-hour period in the following categories must be established by each contractor:

a. Fire
b. Employee injury
c. Pedestrian injury due to work activity of any kind
d. Property damage and damage to above ground and buried utilities
e. Public demonstrations

f. Bomb threats

On a regular basis, the Contractor shall review and, when necessary, update Emergency Procedures for maximum effectiveness. The contractor should provide MSCAA, the Construction manager, and the on-site safety rep a telephone list of key management personnel, for after-hours emergency contact.

Should a serious accident or emergency occur, the contractor shall contact the Construction Manager immediately. If an emergency requires the presence of an ambulance or the Fire Department, including nights, weekends and holidays, the contractor shall call MSCAA emergency dispatch at (901)922-8333. Non injury accidents need to be reported to the airport police at (901)922-8298. **DO USE 911**

Site Access

1. ***Use only designated haul routes/crossings.***
2. ***Stay in assigned work area as identified on plans and as defined by fences and barricades. Barricades/fences must not be crossed.***
3. ***Instructions from guards and escort personnel must be obeyed.***

Contractors, Subcontractors, and Sub-Subcontractors will be monitored for implementation and application of their respective safety programs at the work site. Members of the OCIP Team shall have the authority to stop work when either site conditions and/or work practices present an imminent danger until those conditions and/or practices are corrected. Contractors will be notified of any non-compliance and corrective action required. This notice, when delivered to the contractor or their representative at the site of the work, shall be deemed sufficient notice of non-compliance and corrective action required. After receiving the notice, the contractor shall immediately take corrective action. If the contractor fails or refuses to take corrective action promptly, a stop work order may be issued. The cost to bring the work activity into compliance shall be incurred by the Contractor, Subcontractor or Sub-subcontractor. The Contractor, Subcontractor or Sub-Subcontractor shall not submit a request for extension of time or increased costs as a result of any such stop work order. Members of the OCIP Team shall not be liable for any damages experienced by the Contractor due to the work stoppage. Progress payments may also cease until the Contractor and/or its Subcontractor and Sub-Subcontractors is in full compliance with all applicable safety and health rules, standards and regulations.

Each Contractor and their subcontractors and sub-subcontractors shall establish and enforce an effective disciplinary program (Appendix B). Contractors shall discipline and/or dismiss employees who violate established rules and regulations. This includes immediate termination for serious violations, repeated violations, or the refusal to follow safety and health rules.

OCIP Team members shall have the authority to effectively remove from the site, any person (employees including supervisors and management of any contractor) who is regarded as a frequent violator of safe work practices, or who fails to ensure persons working under their supervision or in a work place they control are not exposed to serious work hazards. Any Competent Person assigned to identify existing and predictable hazards and authorized to eliminate them, which fails to perform this duty for any reason shall be replaced by the employer.

The Contractor shall not receive additional payment or reimbursement for safety items and procedures which have been identified as required by the Project Safety and Health Guidelines.

Failure to comply with the contract safety requirements will be considered as non-compliance with the contract and may result in remedial action including withholding of progress payments due the Contractor and/or termination of the Contractor from the site.

In the event the work or any portion thereof is shut down by either an outside agency or because of an unsafe condition as determined by the OCIP Team, the responsible Contractor shall bear the total cost caused by that shut down.

In no case shall the Contractor be relieved of overall responsibility for compliance with the requirements of federal, state and local safety and health laws for all work to be performed under the contract

For any construction equipment working near operating right of way and in aircraft safety areas that could encroach into MSCAA's operating right of way and air craft safety areas shall submit to MSCAA (and obtain approval from the MSCAA) a plan describing the use of such equipment, and the necessary precautions to be taken to preclude any accidental encroachment unto the right of way or aircraft safety area.

INTRODUCTION

Construction Safety and Health Guidelines, Purpose and Scope

These guidelines are established to aid in the prevention of job-related accidents and health problems during the construction of the **Memphis-Shelby County Airport Authority**. These guidelines set forth elements which all Contractors, subcontractors and sub-subcontractors shall include in their safety plan. This manual is not all-inclusive. Other elements may be added, or conveyed individually to Contractors to whom they expressly apply. There are other essentials which some Contractors, by nature of the specific type of work being performed, must integrate within their own safety plan.

These guidelines set forth basic rules and regulations for all personnel involved in the construction of the Project. The intent of these guidelines is to enhance and supplement the safety and health standards which are required by law, in contract documents, and are applicable to the construction projects for which it is applied. These guidelines do not cover the full spectrum of published safety and health standards mandated by law, and Contractors shall not assume that they are responsible only for those which are referenced in this manual, nor that they are current and quoted as published. It is the responsibility of the Contractor and its employees to ensure that they are in compliance and their safety plan is in compliance with all safety directives required by law.

In the event of a conflict between the provisions of these guidelines and applicable local, State or Federal safety and health laws, regulations and/or standards, contract documents or the Contractor's Safety Plan the more stringent shall apply.

RESPONSIBILITIES

General

Each participant involved in the construction of the Project is individually responsible for conducting their activities to ensure compliance with all applicable safety and health requirements. Construction activities of the Contractor and their Subcontractors and sub-subcontractors will be monitored for compliance with FAA, MSCAA, Federal, State, County, and local safety and health regulations and contract safety and health requirements.

Contractors

The Contractor shall be responsible for the safety and health of employees, subcontractors, sub-subcontractors, visitors, and vendors in accordance with State, Local and Federal regulations, and the Contract Documents. Each Contractor shall establish and submit for review a written Safety and Health Plan which includes details commensurate with the work to be performed. The Contractor's Safety and Health Plan shall clearly describe the contractor's commitments for meeting its obligations to provide a safe and healthful work environment for its employees and subcontractor employees, to protect vendors, visitors, and members of the general public. The Contractor's Safety and Health Plan shall reference Federal OSHA standards, and any other rules or regulations applicable to construction activities.

Each Contractor shall designate an on-site Safety Representative who is charged with the responsibility of on-site safety management. The Safety Representative's sole duty shall be safety management and shall not have other collateral duties.

At minimum the safety representative shall meet the requirements of a "competent person" as defined by OSHA for all phases of construction and have a minimum of three (3) years construction safety experience. A resume shall be provided that outlines such items as: work experience, education, training completed and professional organizations, etc. The safety representative shall remain on the Project until contract acceptance (full-term of contract). Safety representative must be knowledgeable on SC-230, SC-240, and other safety requirements as outlined in GP-200, the safety plan and site safety manual. The safety representative shall be interview by the OCIP Team.

As a condition of this contract, a safety improvement team shall be established for this project. The following guidelines (Appendix H) shall be followed.

As a condition of their contract, all Contractors shall submit to the Project Safety Manager or designee:

- A site-specific safety plan within fifteen (15) days after receipt of Notice to proceed and prior to start of any construction activities.
- The name and qualifications (resume) of designated on-site safety person;
- An immediate copy of all citations and/or warning of safety violations received from any state or federal jurisdiction, agency, insurance company, or by any of its subtier contractor.

The Contractor shall:

- Ensure that all employees, subcontractors' and sub-subcontractors' employees are given a comprehensive Safety and Health orientation. This orientation shall include general Safety and Health procedures and policies as well as the project specific rules, regulations and specific hazards. Employees shall be advised that disregard for these rules, or any other applicable Safety and Health regulations shall be subject to company disciplinary action and/or removal from the project. All workers shall complete an acknowledgment that indicates the worker has read, understood, and will abide by the rules and regulations. The following information shall be obtained from all employees: worker's name, date of orientation, Contractor's name and project name (Appendix A).
- Investigate all accidents and incidents that result in personal injury or illness to workers, damage to buildings or equipment and any incident with the general public.
- Conduct daily job inspections, identify unsafe conditions or work practices and assure they are corrected, and maintain documentation.
- Conduct weekly, documented, safety meetings with Contractor supervisory personnel.
- Attend monthly Safety committee meetings and participate
- Assure that employees acting in a supervisory capacity understand and enforce all safe work practices. **Foreman and supervisors are required to have completed a 10-hour OSHA Outreach hazard recognition course within Two (2) years prior to directing work on the project.** Documentation must be made available for review
- Assure that employees acting in a supervisory capacity understand and enforce all safe work practices. **Foreman and supervisors are required to have completed a 10-hour OSHA Outreach hazard recognition course within Two (2) years prior to directing work on the project.** Documentation must be made available for review.
- Assure a Competent Person is provided at work locations where required by OSHA.
- Assure that all Personal Protective Equipment (PPE) is available and being used as required.
- Assure all construction equipment and motor vehicles certification, inspection, repair and controls are in compliance with the safety requirements of the project and OSHA. Annual crane certification shall be available for review for each to a crane on the project.
- Prior to making critical crane lift, detailed lift plan shall be submitted. (See Appendix C, "Critical Lift Checklist")
- Assure that all hand and power tools are in safe working order.
- Assure that all work areas are kept clear of debris and trash and that adequate trash barrels are placed throughout the work area and emptied frequently.
- Provide the appropriate number and types of sanitary facilities for employees.
- Assure that fall protection equipment is provided and used. Inspections of this equipment shall be documented and on file for review.
- Assure that all perimeter cables, barricades, or any other safety-related items are installed correctly and maintained. If another Contractor must remove a safety item, coordinate this activity with the Contractor who installed the device and

other Contractors who may be exposed. **Safety devices shall be replaced by the Contractor removing them.** Warning signs, tags, or barricades shall be installed if other safety devices are removed.

- Assure that employees receive adequate training as required by the Project and OSHA. Additional training for foreman and safety representative may be required based on unique hazards involved in a task.

WORKPLACE SUBSTANCE ABUSE POLICY

The contractor shall submit as a part of their overall Safety and Health Plan a copy of their company Workplace Substance Abuse policy. This policy shall at minimum comply with Appendix D, "Substance Abuse".

The Contractor shall ensure that all subcontractors and sub-subcontractors are in compliance. The Contractor shall submit a monthly notarized letter stating they and their subcontractors are in compliance with the Project's Substance Abuse Policy.

Contractors should contact the State of Tennessee, at 1-800-332-2667, if there are questions concerning the Tennessee Drug Free Workplace Program. Contractors should also consult their own legal counsel.

INSTRUCTION AND TRAINING

Safety Orientation Program

Newly employed, promoted, and/or transferred personnel shall receive an orientation regarding the general safety and health rules and regulations as well as the site specific policies and hazards prior to starting work on the construction site. The Contractor shall be responsible for the orientation of their employees, Subcontractors and sub-subcontractors, and visitors. Documentation of this orientation shall be maintained on file for review (Appendix A). Hard hat stickers (provided by the Project) are to be issued to an employee following their orientation, and then documented on training Log Sheet. It is the responsibility of the contractor to ensure that non-English speaking employees receive these same instructions in a language they understand. Safety orientation of all personnel shall include at a minimum the following topics Safety orientation of all personnel shall include at a minimum the following topics:

- Unique hazards of the project
- Employer/personnel responsibilities under OSHA Standards – location of required posters
- Personal protective equipment, including appropriate work attire
- Confined space entry
- 6-Foot fall rule - 100% continuous fall protection ***(including steel erection and scaffolds)***
- 100% eye protection, 100% hard hat protection
- Appropriate guarding and other warning devices
- Housekeeping
- Fire protection
- Accident reporting procedures - First-aid facilities - Emergency procedures
- Crane and lifting hazards
- Scaffolding tagging requirements
- Hazard communication/ Right-to-Know, location of MSDS's
- Substance abuse policy
- Disciplinary procedures
- Trenching & excavation
- Electrical hazards

PROTECTION OF THE PUBLIC

All necessary precautions to prevent injury to the public or damage to property of others shall be taken. The "Public" is defined as all persons not employed by or under contractor or subcontractor to **Memphis-Shelby County Airport Authority**. Installation of temporary barriers and/or fencing designated to protect the Public shall be reviewed and approved by the Owner and/or their representative. Precautions shall include but not be limited to the following:

1. Work shall not be performed in any area occupied by the Public unless specifically permitted according to the terms of the contract or in writing.
2. When necessary to maintain public use of work areas involving vehicular roadways, etc., the contractor shall protect the Public in accordance with the applicable regulations.
3. Appropriate warnings, signs and instructional safety signs shall be conspicuously posted where necessary. In addition, a signal person shall control the moving of motorized equipment in areas where the public might be endangered. All signage warnings and traffic control shall comply with the particular agency that takes judicial precedence.
4. Each project work area shall be protected by a fence constructed and erected per MSCAA requirements.
5. Barricades for the general public or public roadways shall be secured against accidental displacement and in place at all times, except when temporary removal is required. As such times, a flag person shall be assigned to control the unprotected area. Barricades used on the airfield will be reconstructed erected and maintained per MSCAA/FAA requirements.
6. Required signs and symbols shall be visible at all times when work is being performed and shall be removed or covered promptly when the hazards no longer exist.

Group Tours and Site Visitors

It is particularly important that a high degree of protection be afforded to all persons on the authorized tours of construction work-sites. The following instructions shall be complied with, as applicable, by the Contractor and those responsible for arranging such tours. The following procedures shall be followed:

a) Group tours shall be cleared through the site **Memphis-Shelby County Airport Authority** office, allowing maximum advance notice.
b) If visitors to the site will be on foot or out of the vehicle/bus, the individual or organization requesting the tour shall ensure that:
   - In all cases, the Construction Manager, MSCAA and the contractor shall advised of any tour in a timely manner prior to the tour taking place.
   - Release and Hold Harmless Agreement – Each visitor shall be required to sign a release and hold harmless agreement prior to the commencement of the tour.
   - MSCAA will coordinate the tour arrangements and ensure notification to the Construction Manager
   - Tour groups are limited to no more than (25) twenty-five persons.
   - Visitors are required to wear appropriate clothing and shoes.
   - Children under 18 years of age are not be permitted on the Project tours.
   - All visitors shall comply with Contractor safety requirements.
   - Site **Memphis-Shelby County Airport Authority** or designee personnel will escort Tours.

HARASSMENT-FREE WORK POLICY

Employee Harassment

It is the policy of **Memphis-Shelby County Airport Authority** to provide a workplace free from employee harassment on the basis of race, color, religion, sex, national origin, age, handicap, disability, etc. Improper interference with the ability of an employee to perform their work activities will not be tolerated. Harassment can appear in many forms, including derogatory comments, jokes, slurs, unwanted physical contact, derogatory drawings or threats.

Sexual Harassment

Unwanted sexual advances, requests for sexual favors and other verbal physical conduct of a sexual nature will not be tolerated. Sexual harassing conduct includes, but is not limited to:

- ❑ Unwelcome sexual flirtation, touching, advances or propositions
- ❑ Verbal abuse of a sexual nature, including graphic or suggestive comments about an individual's dress or degrading words used to describe and individual
- ❑ The display in the work place of sexually suggestive objects or pictures, including nude photographs
- ❑ Other verbal or physical conduct of a sexual nature can affect an employee's work performance

Reporting of Harassment

It is the policy of **Memphis-Shelby County Airport Authority** to actively investigate any alleged incidence of harassment. Anyone who believes they have been harassed should contact the project manager. Any allegation or compliant will be held in the strictest confidence.

Any employee who commits a wrongful act of harassment shall be subject to disciplinary action, up to and including termination.

REPORTING, ACCIDENT INVESTIGATION, AND RECORDKEEPING

Contractors shall provide an American Red Cross and CPR Certified First Aid representative and designate an appropriate area for the first aid and medical care to treat injured employees at the job site. A copy of the First Aid Representative's qualifications shall be submitted to the Project Safety Manager.

The contractor must designate an individual to coordinate injury treatment with the workers' compensation carrier. The contractors' designated representative should also coordinate return to work and availability of modified work.

To coordinate medical services, the contractor will complete "Employee Medical Data Sheet" and "Company Drug Screen Request: forms.

Reporting

All accidents resulting in employee injury, property damage, or involving the general public shall be reported immediately to the designated project representative and the Project Safety Manager.

The Contractor and their subcontractors and sub-subcontractors shall complete a Supervisor's Incident Report Form (See Appendix E) and submit the report to the Project Safety Manager for all job-related accidents involving any of the following:

1. Any employee injury of the contractor, any subcontractor or sub-subcontractor.

2. Any injury and/or incident with the general public (including any alleged injuries reported by a member of the general public).
3. Equipment
4. Property

A formal accident investigation report and "First Report of Injury" shall be submitted within 24 hours. Pertinent facts that are not available within the above time shall be submitted as soon as available in a supplemental report.

A drug and alcohol test shall be administered to employee(s) injured and/or any employees in a work crew involved in an accident involving bodily injury.

Record-Keeping and Files

The Contractor and all Subcontractors and sub-subcontractors shall maintain a master or central file for safety and health related documentation on the jobsite. Files shall be maintained in such a manner that distinguishes each contractor and their subcontractors from other subcontractors and sub-subcontractors.

See Insurance manual for claim reporting procedures.

Accident Investigation

All accident/incidents shall be investigated by the contractor's safety supervisor and/or their safety designee. An accident investigation report must be submitted to the Designated Project Representative, OCIP Administrator/Willis Towers Watson and OCIP Insurance Carrier within twenty-four (24) hours of the occurrence.

The accident investigation should generate appropriate recommendations for corrective actions to prevent recurrence of similar accidents. Depending upon severity of the accident, the foreman of the injured worker may be requested to appear at the job safety and coordination meeting to:

1. Describe the cause of accident.
2. Report as to what corrective action has been initiated to avoid future accidents.

The Contractor and all Subcontractors shall maintain a current OSHA 300 log. The log shall be available for review by any OCIP team member at any time.

The Contractor and all Subcontractors and Sub-Subcontractors shall submit on a monthly basis a monthly summary of accident/incidents for the project. The summary shall follow the format contained within (Appendix G).

Under the direction of MSCAA AD HOC Committee may be appointed for investigation of serious accidents that result in loss of life, injury to several workers on pedestrians or major property loss. The committee will submit a report to MSCAA at the conclusion of the investigation.

RETURN-TO-WORK

Under the OCIP Program, every effort shall be made to **return employees to work as soon as possible** after an accident and under the direction of the physician. The insurance carrier will be in contact with the physician to determine the employee's physical demands and limitations.

A return-to-work program shall be developed and implemented by each Contractor to assist workers who are temporarily

disabled due to an injury or illness. The Contractor and all subcontractors shall participate in the return-to-work program.

The Contractor, Subcontractor or Sub-subcontractor shall agree that their injured employees shall be treated by an authorized medical treating facility. The medical facility shall be utilized for initial treatment and evaluation of all injured employees. Follow-up care will be provided in accordance with applicable Workers' Compensation statutes.

When employees report a work related illness or injury, they shall be taken to the approved medical facility for examination and/or treatment. If the doctor determines that the employee qualifies for "Return to Work" ("light-duty"), the doctor will complete appropriate forms indicating the restrictions and conditions for transitional work.

The Contractor, Subcontractor or Sub-subcontractor shall provide modified work until the employee is able to resume regular duties. All modified work is temporary in nature and is designed to facilitate a return to regular duties as soon as possible. Modified duty positions may be offered at any location of the project or on any shift. Modified work can also be provided at other work locations of the Contractor with approval from the OCIP Team.

In no case shall an injured employee be laid-off or terminated from a "alternative work" position, unless first discussed with the Owner and it's representatives.

WORK PRACTICE CONTROL

Overview

The primary focus of these Safety and Health Guidelines is to provide guidance for Contractors. Each Contractor shall have on site and available for employee review a written safety and health plan. This plan shall cover work exposures the contractors work operations. It is a project requirement that each and every employee conduct their operations in accordance with OSHA and all other applicable standards for all project operations

Memphis-Shelby County Airport Authority prohibits the use, possession, concealment, transportation, promotion or sale of the following controlled items:

a. Firearms, weapons, and ammunition – except when authorized for security reasons.
b. Switchblades.
c. Unauthorized explosives, including fireworks.
d. Stolen or contraband.

Hazard Communication Program

The Contractor shall develop a written Hazard Communication Program that contains at minimum the following elements:

- The name of the program coordinator.
- A list of hazardous substances present within the Contractor’s workplace.
- A written system that ensures MSDS’s are obtained and made readily accessible to all employees, including lower tier subcontractor personnel, on each shift. In the event of an emergency, MSDS’s shall be made available on an immediate basis.
- A labeling program that ensures that containers of hazardous substances in the workplace are properly labeled with the name of the substance and any applicable hazard warnings.
- A training program regarding hazards of substances that are used in the workplace and the protective measures that must be taken by the empl0oyee or any other persons potentially exposed to the hazardous substances.

The Contractor shall ensure that each employee, prior to working with, or being potentially exposed to hazardous substances, receives initial training on the Hazard Communication Program and the safe use of the hazardous substances. Additional training shall be provided to employees whenever new substances are introduced to the workplace.

Permanent records shall be maintained by the Contractor, describing all Hazard Communication Program training.

Record-Keeping and Files

The Contractor and all Subcontractors and sub-subcontractors shall maintain a master or central file for safety and health related documentation on the jobsite. Files shall be maintained in such a manner that distinguishes each contractor and their subcontractors from other subcontractors and sub-subcontractors.

Contractors shall submit and/or have available on site:

REPORT NAME	Annual	Immediately	24 Hr.	Weekly[1]	Monthly[2]	Per Occurrence	Per Request
Annual Crane Inspection	x						x
Chemical Inventory					x		x
Contractor Weekly Inspection				x			x
Critical Lift Checklist						x	x
First Report of Injury		x				x	
Incident Investigation		x				x	
MSDS's					x		x
OSHA 300 Log					x		x
OSHA Citations		x				x	
Safety Observation				x			
Safety Plan of Action or JSA[3]				x		x	x
Safety Statistics					x		x
Safety Training					x		x
Substance Abuse Policy compliance notarized letter					x		x
Toolbox Safety Meetings				x			x
Daily equipment / Vehicle Inspections							x

Daily -- Daily inspections are required on all equipment / vehicles.
[1] Weekly – Weekly reports are due the following Tuesday morning
[2] Monthly – Monthly reports are due by the 6th of the following month.
[3] Safety Action Plan or JSA – As required by contract or specification

The Owner and it's Representatives shall have the right to review all documentation at any time upon request. The Contractor shall give full cooperation during these reviews.
The following documentation shall be in the safety files:

- A written project site specific Safety & Health Plan
- Hazard Communication Program, including current MSDS's. A project specific MSDS file shall be maintained on-site for employee review
- Site emergency plans
- All required safety & health permits
- Weekly safety meeting reports - including meeting topic(s) and employee attendance sheets
- Specific job hazard worker training
- Daily jobsite safety inspection reports - including documentation of corrective measures

- Equipment inspection reports
- Crane inspection reports - daily and monthly (annual certification reports required prior to equipment operation)
- Employee orientation training records
- Accident investigation reports, including near-misses
- Job hazard analysis
- Competent person qualifications
- Written safety violations
- Noise and air quality monitoring

Job Safety Analysis (JSA)

In order to provide Contractor employees with a safe workplace through pre-planning hazardous work, a Job Safety Analysis (JSA) shall be prepared. JSA's shall be required when thorough pre-job planning, it is determined that the process, equipment or procedure indicates potential for serious injury and/or property damage. The Contractor shall also prepare a JSA upon request by an OCIP Team member. . JSA's will be done daily. JSA's should be kept in the work area, possibly at the tool box and/or where they are readily available to the workers. JSA's will be also be on file with the contractor.

The JSA shall be used by Contractors to analyze the jobs they perform, to identify the existing and potential hazards associated with each job step and establish controls for them. These JSA's shall be used as a task specific training tool to instruct employees, inspectors, and visitors of potential hazards and required safety precautions. Each employee working on the project shall sign a training log indicating that they understand the hazards of the project as indicated on the JSA.

Examples of activities that may require a JSA:

- Potential for collapse, (work-in trenching, tunneling. This may include demolition, etc).
- Potential release of stored energy, (electrical, pressure, explosive, etc).
- Crane supported work plate form use.
- Critical crane lifts (two cranes used to lift one load).
- Unusual crane operation as defined by the CIP Team.
- Potential exposure to uncontrolled hazardous materials or wastes.
- Blasting operations
- Abrasive /Sandblasting, Hydro blasting, etc.
- Potential injury from burns, both chemical and thermal.
- Respirator use.
- Potential oxygen-deficient environments.
- Entry into confined space.
- Potential of entanglement in, on, or between objects.
- Work in public streets and highways.
- Lockout/Tagout.
- Operations involving fall exposure.
- Structural Steel Erection.
- Use of new or Hazardous Materials, procedures, equipment.
- Material Storage & Handling.
- Powder actuated tool use.
- Suspended scaffolds.
- Scaffold erection.
- Scaffold dismantlement
- Rock drilling.
- Work on live electrical systems.

SPECIFIC PROJECT SAFETY REQUIREMENTS

Controls for possible conflicts between construction operations and aircraft

1) Contractor must request that a notice to Airmen (NOTAM) be issued prior to start of any construction that might affect navigable airspace or surface movement.
2) Barricades and temporary lighting must be installed and maintained per specs.
3) Operators of equipment/vehicles must be instructed on routes and haul procedures.
4) All personnel must stay in defined work areas. Fences/barricades are not to be crossed.
5) No access to active taxiways/runways will be allowed without prior authorization and direction/escort by MSCAA personnel.

Scaffolds, Stair Towers and Work Platforms

The Project requires ***100% continuous fall protection*** during the erection and dismantling of scaffolds where employees may be exposed to a fall greater than (6) six feet. A competent person must be present during erection, dismantling or moving of scaffold. The Contractor/Subcontractor shall develop and use a scaffold tagging system similar to the following:

Tagging

The tagging procedure, at minimum, shall consist of three (3) tags. The appropriate tag will be placed on a scaffold approved by the competent person. Each tag must have at least the following information and be visible by all employees:

- Date tag was placed - date of the last inspection.
- Name of person inspecting. All tags must be weather resistant.

A **GREEN** tag means the scaffold complies with federal OSHA regulations and can be used by any person.
A **YELLOW** tag indicates the scaffold is complete but does not meet all federal OSHA specifications. This tag will be used only in special circumstances. Special precautions, such as wearing a safety harnesses may be required because any accessory, such as a handrail, could not be installed due to the location of the scaffold.
A **RED** tag shall be placed on a scaffold that is being erected, dismantled, damaged and/or defective. No employees except members of the erection/dismantling crew shall work from a red tagged scaffold.

Employees will be instructed to read tags before using scaffolds. If a tag is not attached to the scaffold, **DO NOT USE** the scaffold.

Exceptions: Single buck or Baker scaffolds need not be tagged.

Walking and Working Surfaces

Barrier Identification Tape

Barrier identification tape is strictly prohibited from being used for any form of personnel fall protection. Barricade tape around excavations can be used for short term (24-hours), after this period physical barriers are required.

- **YELLOW** barricade tape shall be used for **CAUTION/WARNING**

- **RED** barricade tape shall be used for **DANGER DO NOT ENTER**

Note: Once the area barricaded is free of the hazard(s) for which it was erected the tape will be removed and properly discarded.

Fall Protection

Employees shall not be exposed to fall hazards. When an employee observes a fall hazard, they will notify their supervisor of the hazard. The responsible Contractor will immediately correct the hazard. **100% continuous fall protection, *for fall hazards greater than six (6') feet,* shall be implemented on this Project - including steel erection and scaffold use, erection and dismantling.**

Each Contractor shall be responsible for meeting fall protection requirements in their overall safety and health program.

Each Contractor shall evaluate ALL fall exposure conditions or tasks and must develop a Fall Protection Plan which outlines what methods, procedures and/or devices will be used in their program.

Each Contractor shall be responsible for implementing the requirements to achieve fall protection in accordance with all Federal, State, local rules, regulations, and the OCIP Safety and Health Guideline.

All fall protection systems used on this project shall comply with OSHA regulations and the project safety guidelines. Fall protection shall provide a positive means of protection. **Controlled Access Zones and Safety Monitoring Systems are not considered positive means of fall protection and shall not be permitted**. Any employee exposed to a fall greater than six (6) feet shall use approved fall protection equipment or devices. Fall protection systems shall be designed and installed under the direction of a Registered Professional Engineer or Qualified Person. Fall protection is required, as a minimum, under the following examples:

- Formwork and reinforcing steel. Each employee on the face of formwork or reinforcing steel shall be protected from falling 6 feet or more to lower levels by Personal Fall Arrest Systems, safety net systems, or positioning device systems.
- When working from a telescoping, articulating, or rotating type lifts and scissors lifts, personnel shall wear a safety harness with shock absorbing lanyard, secured to an approved anchorage point.
- When working on a ladder higher than six (6) feet from a solid surface, if the employee's torso extends past the side rails or if a vertical ladder extended a total of 20' or greater.
- When working on a platform or other support not equipped with an adequate guardrail, which is higher than six (6) feet from a solid surface.
- When working from a crane-suspended work platform, a safety harness with shock absorbing lanyard is mandatory.
- When an employee may have to be lowered into or raised from a confined space, a personal fall arrest system will be worn. The employee will be supported by an approved platform or a boatswain's chair, with certified hoisting device and fall arrest device.
- When working adjacent to an unguarded floor opening or sloped roof, a lifeline system is desirable for mobility. A positive means of fall protection must be provided unless it can be proven infeasible.
- When working adjacent to a deep excavation, pit or trench. Employees will be instructed on the proper wearing and use of personal Fall Protection Arresting Device Systems.
- **Barricade tape is not adequate fall protection.**

The Fall Protection Plan shall detail in writing when fall protection is required and exactly how this protection is to be provided. This written plan is required for any Contractor exposing workers to falls six (6) feet or greater.

The Contractor shall prepare a written training program to ensure that each employee who might be exposed to fall hazards is knowledgeable of the Fall Protection Plan requirements. The program shall enable each employee the ability to recognize

the hazards of falling and shall train each employee in the procedures to be followed in order to eliminate or minimize these hazards.

The Contractor shall assure that each employee has been trained.

Personnel, who have been trained, then re-trained and continue to violate the established fall protection plan/regulations shall be removed from the project IMMEDIATELY.

Confined Space Entry

All employees required to enter a confined space shall be knowledgeable of the hazards involved with confined space entry. Prior to the start of such an entry the Contractor involved in the work will develop a Confined Space Entry Procedure. The Contractor shall train all personnel who will enter the confined space. No one shall enter a confined space area until properly instructed. Contractors shall identify all confined spaces within their work area with a sign identifying the area as a confined space.

A Confined Space Entry procedure shall be used to:
- Prevent inadvertent operation of equipment and/or work process while people are working in the confined space.
- Eliminate unexpected exposure to hazardous materials, oxygen deficient or inert/toxic gaseous atmosphere while working in confined spaces.
- Plan for a timely and effective response to an emergency during a confined space entry.

Confined Spaces are considered to be areas with limited entry and exit, or poor natural ventilation, and not intended for human occupancy. Examples of a confined space include: tanks, covered basins, vaults, columns, mixers, manholes, pipelines, sumps, ditches or excavations. All spaces shall be considered permit-required confined spaces until the pre-entry procedures demonstrate otherwise.

Safety considerations include but are not limited to: atmosphere testing for gaseous conditions/lack of oxygen, appropriate personal protective and emergency equipment, and additional personnel as needed to assure communications and assist the individual conducting the entry.

A Permit Required Confined Space means confined space that has one or more of the following:
- May or may not potentially contain a hazardous atmosphere;
- Contains a material that has potential for engulfing entrant;
- Has internal configuration that could trap the entrant;
- Contains any other recognized serious health or safety hazard;

Contractors shall provide their own permit.

A Non-Permit Required Confined Space is a confined space that does not contain or with respect to atmospheric hazards, the potential of causing death or serious physical harm.

Employee Ground Transportation

The purpose of this section is to establish minimum acceptable guidelines for the safe transportation of all personnel traveling within the Project confines. Eliminate personal accidents and injuries resulting from improper equipment use.

Contractors are responsible for assuring that all personnel follow the requirements of this section and prohibit improper transportation of employees and visitors. Transporting employees in cargo beds of pick-ups, vans, etc. is prohibited, unless

approved seats and seat belts are provided and used.

- Operators must be qualified. Vehicle operators must have valid state operator's license
- All equipment/vehicles must be identified (company logo) per specifications.
- Safe speed must be maintained and adjusted to site conditions.
- Use flashers/headlamps as directed.
- Mobile cranes, forklifts, winch trucks, front-end loaders, tractors and other materials handling equipment are not permitted to transport passengers.
- Trucks
  - A maximum of three passengers are permitted to ride inside of the truck cab unless the cab is specifically designed to accommodate additional passengers.
  - Passengers shall ride with all portions of their bodies inside the truck body or frame.
  - Passengers shall be in the seated position, with the seat belts secured and adjusted properly, before the vehicle is set in motion.
  - Riding on a vehicle's bumper or tailgate is prohibited.
  - Tailgates will be closed and latched before the vehicle is operated.
  - Passengers are not permitted to ride in the body of a dump truck, in the bed of a pickup truck or in trailers.
  - Passengers are not permitted to ride on top of the load or to hold materials from shifting.
  - Vehicles must be designed to accommodate passenger transportation or the vehicle shall not be used for that purpose.
  - Drivers transporting passengers shall follow the posted speed limit and Project traffic rules.
  - The Contractor shall establish a designated employee parking area. Employee vehicles shall not be allowed on the construction project.

Housekeeping - MUST BE A CONTINUING PROCESS

The purpose of this section is to incorporate into the day-to-day work activity a good housekeeping action plan that will be followed by all Contractors working on the project.

- Contractors, through inspection and example, are responsible for assuring that trash and debris remain out of the work areas. Contractors are responsible for all of their work areas and the work areas of their subcontractors and sub-subcontractors. If poor housekeeping practices are observed, corrective action will be discussed with the appropriate Contractor to remind them that cluttered work areas will not be tolerated and that their work area(s) pose a hazard to his employees and other personnel.
- Should the Contractor fails to address and correct their poor housekeeping upon 24 hour written notification, the "owner" may at its option, cause the same to be removed and charge the expense of such removal to the appropriate Contractor.
- Specific attention is needed for operations to the Aircraft Operation Area (AOA).
- Contractors shall monitor their work areas daily or more frequently if needed to assure that all debris is removed to minimize hazards.
- Immediately available vacuum sweeper for cleaning taxiway/runway crossings.
- Personnel immediately available for taxiway and runway cleanup. (Provide brooms to supplement cleanup by sweeper.)
- Access to taxiway/runway crossings for cleanup only at the direction of MSCAA guard.
- Loading of haulage vehicles to minimize spillage.
- Maintenance of vehicles/equipment so that no fluids will leak.
- Provide waste containers at the direction of the Construction Manager.

Project Electrical Requirements

- The Contractor shall implement an electrical safety program. This safety program element shall include safe installation, work practices, maintenance, and special equipment considerations. All electrical installations, either temporary or

permanent, shall be in conformance with the National Electrical Safety Code, NFPA-70, ANSI-C1, and low and high voltage electrical safety orders OSHA code requirements. Only qualified employees shall install electrical tools and equipment, defective and/or improperly installed equipment shall be repaired immediately.

- Only qualified electricians familiar with code requirements shall be allowed to perform electrical work.
- Extension cords used with portable electrical tools and appliances shall be heavy duty (minimum 12 AWG) and of the three-wire type. Cords shall be covered, elevated or otherwise protected from damage that would create a hazard to construction site personnel.
- Electrical cords and equipment shall be visually inspected before each shift for external defects. All damaged and defective cords shall be removed from service immediately (this includes cords with the ground prong missing). Cords shall be repaired with approved heat-shrink methods, electrical tape is not permitted.
- All temporary electrical tools, cords and equipment shall be properly protected by ground fault circuit interrupters (GCFI). All portable generators shall have properly functioning GFCI outlets. GFCI receptacles shall be tested monthly with a multi-range GFCI tester (the tests shall be documented) to insure the GFCI is properly functioning and protecting the worker.
- A "task-specific" lockout/tagout safety plan shall be established to ensure power sources to equipment and/or machinery are isolated and de-energized. This plan shall establish minimum steps necessary to disable equipment and machinery to prevent the unexpected release of potentially hazardous energy. Lockout/Tagout shall be performed in accordance with 29 CFR 1910.147.

Cranes and Hoisting Equipment

- Cranes and hoists shall not be used without a current annual certificate of examination and testing issued by an accredited crane examiner**. Annual inspection certificates shall be available when cranes arrive on-site. Operators manual shall be in the cab of each crane prior to crane operation.**
- Only qualified and designated personnel shall operate cranes or hoisting equipment. Crane operators must have current (Certified Crane Operator) CCO certification and/or local or state certification.
- Rated load capacities and recommended operating speeds, special hazard warnings, or instructions, shall be conspicuously posted on all equipment; they shall be visible to the operator from his/her control station, and an accessible fire extinguisher of 10:ABC rating, shall be available at all operator stations or cabs of equipment. Crane operations position shall be kept clear of loose tools or material.
- Outrigger cribbing shall be used for all crane operations. The size of the cribbing shall be determined by taking the cranes capacity and dividing by 5 (example: 40 to crane divided by 5 = 8 sq. ft. per outrigger).
- All cranes working over shafts or lifting personnel platforms shall have anti-two block devices installed and operating properly.
- Radio or other positive means of communication shall be used to direct the operator when the point of operation is not in direct view of the operator.
- The operator shall respond to signals from only one person. The operator shall not follow any signal which is not understood, but shall always obey a stop signal.
- The operator shall be responsible for the operations and load under their control at all times. Whenever there are doubts about the safety of movement, the operator shall stop operations until safety is assured.
- A warning signal, such as a horn, shall be sounded to alert personnel to proximity of moving loads. Loads should not be passed over personnel, and personnel should not be permitted to work in the area directly under a suspended load.
- Concrete buckets - Employees shall be permitted to work under concrete buckets while the buckets are elevated.
- **Employees shall keep out from under suspended loads at all times**.
- Employees shall not ride on loads, slings, hooks, buckets or other load handling attachments.
- All repairs, adjustments, modifications, rigging assembly or dismantling shall be conducted only by qualified and authorized personnel.
- The swing radius shall be barricaded or other positive means shall be taken to prevent personnel from entering the area between the counter weight/swing radius and any stationary and/or outside obstructions.
- A critical lift checklist will be completed and submitted anytime:
    - 2 cranes are used to make a lift
    - when a lift exceeds 75% of the load chart

- or any unusual conditions are encountered
  (See Appendix C, "Critical Lift Checklist")

- Crane suspended work platforms shall only be used if there is no other safe means to reach the work area. The Contractor shall complete a JSA prior to the lift.
- Any overhead wire shall be considered to be energized unless and until the person owning such line or operating officials of the electrical utility supplying the line assures that it is NOT ENERGIZED and it has been visibly grounded at the work site.
- Taglines shall be used to control all loads
- Daily inspection of all cranes shall be completed and documented prior to crane use

Rigging

- Major rigging operations shall be planned and supervised by Competent Personnel to ensure that the best methods and most suitable equipment and tackle are employed. This should be the superintendent or foreman in charge.
- Job site management shall ensure that:
  - Proper rigging equipment is available.
  - All rigging is inspected before use. Documented inspections are required.
  - Correct load ratings are available for the material and equipment used for rigging.
  - Rigging material and equipment are maintained in proper working condition.
- The supervisor of the hoisting operation shall be responsible for:
  - Proper rigging of the load.
  - Supervision of the rigging crew.
  - Ensuring that the rigging material and equipment have the necessary capacity for the job and are in safe condition.
  - Ensuring correct assembly of rigging material or equipment as required during the operation, such as the correct installation of lifting bolts.
  - Safety of the rigging crew and other personnel as they are affected by the rigging operation.

Excavation (Any process which disturbs soil)

A. Contact MSCAA/FAA thru the Construction Manager at least 72 hours prior to proposed work for location of underground hazards (cables, ducts, fuel lines, etc.). A request form will be provided to the contractor.
B. The contractor must contact Tennessee one call at least 72 hours prior to proposed excavation for location of utilities. Contractor must make arrangements to have personnel at the site when utilities are located. Documentation of the control number must be maintained on site.
C. **Utilities must be located/marked prior to any process that disturbs the soil.**

Earthmoving Equipment and Trucks

- All earthmoving equipment shall be maintained in safe working condition and shall be appropriate and adequate for the intended use.
- Only authorized personnel shall operate equipment. Operators of equipment, machinery or vehicles shall be qualified and properly licensed for the operation involved.
- Equipment maintenance shall be performed only by qualified mechanics.
- Equipment operators and truck drivers shall make a documented pre-shift safety inspection of their equipment. Any conditions that effect safe operation will be corrected before use.
- Equipment shall not be operated unless all required safety devices are in place and functioning properly.

- Careless, reckless or otherwise unsafe operation or use of equipment shall result in discipline and may constitute grounds for dismissal.
- Before performing any service or repair work, all equipment shall be stopped and positively secured against movement or operation, locked and tagged out of service, unless it is designed to be serviced while running, following the manufacturer's instructions.
- When equipment is serviced or repaired, the operator shall dismount until the service or repair is completed and then make a complete walk-around safety check before remounting.
- All heavy equipment including: cranes, forklifts, dozers, end-loaders, skid-steers, etc., shall have a reverse signal/back-up alarm audible above surrounding background noise.
- All off-highway earthmoving equipment and trucks such as loaders, dozers, scrapers, motor graders, rock trucks, tractors, rollers and compactors shall be equipped with roll-over protective structures (ROPS) and seat belts.
- Seat belts shall be used and adjusted properly by operators of all heavy equipment.
- Mobile equipment shall not be left unattended unless parked securely to prevent movement, with all ground engaging tools lowered to the ground, brakes set and the engine off.
- Equipment parked at night shall be lighted, barricaded or otherwise clearly marked when exposed to traffic. Keys shall not be left in equipment overnight.
- Personnel shall not be transported or ride on equipment or vehicles that are not equipped with seats for passengers.
- When fueling equipment or vehicles with gasoline or liquefied petroleum gas (LPG) the engine shall be shut down.
- All equipment and vehicles shall be equipped with appropriate fire extinguisher or fire suppression system.
- Haul roads shall be designed, constructed and maintained for safe operation consistent with the type of haulage equipment in use. Standard traffic control signs shall be used where necessary.
- Elevated roadways shall have axle high beams or guards maintained on their outer banks.
- Equipment, tools, and materials hauled on pickups and flat bead trucks must be secured to prevent them from falling onto the road.

Welding & Cutting

- Welding leads and cutting hoses shall be kept clear of walkways and stairways.
- Flash arrestors shall be installed provided in both oxygen and acetylene hoses at the regulator connection.
- Welders shall wear approved eye and head protection when welding. Personnel assisting the welder shall also wear approved eye protection.
- Prior to welding or cutting a "20-ABC" rated fire extinguisher shall be within easy reach of the worker. A fire watch shall be stationed at all locations where sparks and/or flames may fall to a lower floor/work area or to another side of a wall.
- A suitable cylinder truck, with chain shall be used to keep cylinders from being knocked over while in use.
- Spent welding rods shall be picked up and disposed of daily.
- When practical all welding and cutting operations shall be shielded by non-combustible or flame-proof screens.
- Oxygen and acetylene cylinders shall not be stored inside buildings.
- Rubber boot protectors shall be provided on all welding leads were they make connections at the welding machine

Personal Protective Equipment

Eye and Face Protection

All employees shall wear safety glasses 100% of the time while on the construction site. Minimum eye protection shall include approved safety glasses **with side shields** which meet the standards specified in ANSI Z-87.1-1989 (this shall also include prescription eye wear).

Additional eye and face protection in combination shall be worn when:
- Welding, burning or cutting with torches
- Using abrasive wheels, portable grinders or files

- Chipping concrete, stone or metal
- Working with any materials subject to scaling, flaking or chipping
- Drilling or working under dusty conditions
- Using explosive actuated fastening or nailing tools
- Working with compressed air or other gases

Only clear safety glasses shall be worn inside any building(s).

Head Protection

All construction workers shall wear hard hats which meet ANSI Z 89.1-1986, 100% of the time while on the construction site. Hard hats shall display the company decal where the employee works.

All delivery personnel, vendors and visitors shall wear approved hard hats while on the project.

Hearing Protection

Work areas shall be monitored to identify areas of high noise exposure (85 dBA and higher). All work areas identified as high noise exposure shall be properly posted to warn employees of the exposure.

Appropriate hearing protection shall be worn in work areas where noise levels are 85 dBA or greater.

Respiratory Protection

Contractors whose work activities warrants that employees wear respiratory protection, shall establish and implement a respiratory protection program. The program shall meet the requirements set forth in 29 CFR 1926.134.

Foot Protection

All personnel on the construction site shall wear leather hard-soled work boots. No one is permitted to wear sneakers (including ANSI approved), tennis shoes or athletic shoes of any type, sandals, high heels or thongs on the construction site.

Clothing

Suitable clothing for construction shall be worn on the construction site. Shirts with sleeves (at least t-shirt (4 inches) in length), full length pants and reflective safety vests shall be required. Shorts, sweat pants or tank-tops are not allowed.

Appendix A - Safety Orientation

Check each box when completed - To be completed by all employees on the jobsite. To be completed by site supervision and employee prior to beginning work.

- ❑ Alcohol and/or drug use, fighting or horseplay are prohibited and will result in immediate termination
- ❑ 100 % eye protection, hard hats and reflective safety vests are required when on the construction project
- ❑ Review potential hazards on the project and the precautions to be taken to prevent injury
- ❑ Disciplinary Policy:

  Non-serious violation
  First violation - Verbal warning
  Second violation - Verbal & written warning
  Third violation - Verbal & written warning and three day suspension without pay
  Fourth violation - Employee discharge from company

Serious violation - (see disciplinary policy)
First violation - Verbal & written warning
Second violation - Employee discharge from company

- ❑ Hazard Communication Program - location of MSDS's and written program on the project
- ❑ All accidents, injuries and unsafe conditions shall be reported to supervisor immediately
- ❑ Medical treatment protocols for injuries requiring off-site medical treatment with a doctor
- ❑ Safety meetings are held on a weekly basis (attendance is mandatory)
- ❑ All employees shall dress properly while working. Minimum attire is long pants, shirt with at least 4 inch sleeves and sturdy above the ankle work boots
- ❑ Ground fault circuit interrupters (GFCI) are required on all tools. All extension cords and power tools shall be properly grounded. Notify supervision immediately if defective equipment exists.
- ❑ All employees exposed to a fall exposure of six or greater, shall be protected by the means of fall protection. Specific training is required for fall protection.
- ❑ Employee are not allowed to work in excavations 4 feet or more in depth, unless they are properly sloped or protected by shielding or shoring
- ❑ Lockout/tagout is required when working on equipment or tools where unexpected start-up may occur or the release of energy may result in injury
- ❑ Before any employee is allowed to wear a respirator (including paper masks) they must be medically approved by a doctor and fit-tested
- ❑ Scaffolds shall be inspected and tagged prior to use by any personnel. Red tag means DO NOT USE; Yellow Tag means section of scaffold does not meet OSHA standards and Green Tag means SAFE FOR USE.
- ❑ Other hazards discussed related to the construction project:

_____

_____

Equipment Issued

- ❑ Hardhat
- ❑ Safety Glasses
- ❑ Orange vest
- ❑ Fall Protection Harness & Lanyard
- ❑ Respirator
- ❑ Other _____

To be completed by supervisor in the field with the employee

- ❑ Show employee around the project and discuss potential hazards
- ❑ Introduce employee to crew members
- ❑ Assign new employee to experienced work crew
- ❑ Specify work duties
- ❑ Where to eat lunch

This is to acknowledge that I have completed new employee orientation and understand that failure to comply with the Safety Program may be grounds for dismissal.

Employee Print Name: _____ Date: _____

Emergency Contact: _____

Employee Signature: _____

Supervision Signature: _____ Date: _____

Appendix B – Employee Disciplinary Guideline

The discipline policy is intended to encourage compliance with the requirements of the Federal Occupational Safety and Health Act of 1970 (OSHA) and all additions and revisions thereto, as well as other applicable federal, state and local requirements and this Safety and Health Guideline. Workers performing work in an unsafe manner that would endanger the employee, other workers or the public shall be subject to discipline or termination.

The Project Representative in conjunction with the Project Manager and Project Foreman will determine the course of action best suited to the circumstances. The steps to be taken shall be progressive, except in the most egregious circumstances and shall include:

a) **Non-Serious** – Initial, isolated, or rare instances of violation, that do not result in danger to the employee, property, or others, should be corrected through non disciplinary discussion and instruction. Safety violations of a less serious nature will be handled as follows:

First Offense	Verbal Warning
Second Offense	Written Warning
Third Offense	Employee given three-day suspension without pay
Fourth Offense	Employee Discharge

b) **Serious** – One which could result in serious injury or loss of life or serious loss of property, shall be subject to:

First Offense	Employee given three-day suspension without pay
Second Offense	Employee Discharge

c) **Supervisor Accountability** – If two or more employees working for the same supervisor are found in serious violation as described above, that subcontractor supervisor is also subject to disciplinary action up to and including immediate discharge.

Documentation - Notice of safety violation (written) shall be given to the employee, and a copy sent to the Project Safety Representative.

Appendix C - Critical Lift Checklist

Project: _____ Date: _____

Description of Lift: _____

_____

_____

_____

Name of supervisor in charge of lift: _____

Name of crane operator(s): _____

Name of signal person(s): _____

Crane Data:

Make and Model: _____

Boom Length: _____

Counterweight: _____

Capacity: _____

Load Data:

Gross Load Weight: _____

Rigging Weight:

Load block & line Weight: _____

Max. Load Radius: _____

Min. Load Angle: _____

Max. Boom Angle: _____

Min. Boom Angle: _____

Net Load Weight: _____

Pre-Lift Requirements:

_____ Load is within chart limits.

_____ Has the Center of Gravity of the Load been established and marked?

_____ Is rigging adequate and in good condition?

_____ Load chart utilized is for exact crane model; boom type, length, tip; counterweight.

_____ Competent person in charge of lift: Name

_____ Competent signal person identified: Name

_____ Pre-pick meeting held with crew

_____ Written crane inspection completed within 1 day of critical pick

_____ Swing path not over personnel

_____ Footing is sound and level (soil conditions/compaction, underground tunnel or utilities).

_____ Pre-planning for radio or hand signal communications.

_____ Minimum clearances from power lines can and will be maintained.

_____ The load radius has been measured with tape measure.

_____ Weather conditions have been checked, including wind speed.

_____ Load will not touch boom at any time.

_____ For dual crane lift – diagrams have been prepared.

_____ Pad blocking is adequate and substantial.

_____ Outriggers are fully extended.

Signed: _____
Supervisor in Charge

Appendix D – Substance Abuse

Policy Statement

The Owner **Memphis-Shelby County Airport Authority** and the OCIP Team are committed to providing project employees with a drug-free and alcohol-free workplace. It is our goal to protect the health and safety of these employees and visitors to our job site, promote a productive workplace, and protect the reputation of our project.

Consistent with those goals, the use, possession, distribution or sale at project sites of drugs, drug paraphernalia or alcohol is prohibited. A program of drug and alcohol testing will be instituted to monitor compliance with this policy.

Contractors / Subcontractors refusing to comply with this Drug and Alcohol Policy will not be permitted to work on this OCIP project and will be noted as being in violation of their contract with the DEWITT SPAIN AIRPORT APRON REHABILITATION - CONSTRUCTION / or other contractors & subcontractors working on this project.

This Policy does not represent a contract between the Owner **Memphis-Shelby County Airport Authority**, Design and Development, the OCIP Team, Owners of project, Construction Managers, General Contractors, Subcontractors, employees or perspective employees of the project.

Policy Administration

It is our combined goal to protect the health and safety of personnel, craft workers, and visitors to our job site; to promote a productive workplace, and protect the reputation of this OCIP.

Prohibited Substances

1. Drugs or Drug is defined as any substance which may impair mental or motor function including but not limited to illegal drugs, controlled substances, designer drugs, synthetic drugs, look alike drugs, and under circumstances described in this policy -prescription drugs.

2. Alcohol is defined as any beverage or substance containing alcohol, ethyl alcohol or ethanol. “Alcohol Testing or Alcohol test means testing by certified breath-alcohol technician using a DOT approved initial screening device or urine alcohol testing conducted by a certified laboratory and confirmed by gas chromatography/mass spectroscopy (GC/MS)”. Test levels must not meet or exceed.04 grams per 210 liter of breath.

Pre-Project Testing

Prior to the beginning work on this Project, employers will be required to insure that all employees have met the requirements of this policy with a negative (passing) test result. Employers and employees not meeting the requirements will not be allowed to work on this OCIP job site.

Additional Testing of Employees

1. **Post-Accident**: It is agreed that drug and alcohol testing of employees shall be required after each and every work related incident. This testing shall take place at the medical facility providing treatment for the injury. A work related accident is defined as an accident resulting in an injury requiring treatment by a physician to the employee or other employees injured and / or resulting in damage to property or equipment.

2. **Reasonable Suspicion**: Is defined as supervision having a reason to suspect employee drug or alcohol use. The employer will bear the cost of this test.

Points of Understanding Regarding Substance Abuse Testing

1. The employer, the medical facility and the testing laboratory agree that the results of the described tests are to be held in strictest **CONFIDENCE** between the employer, the OCIP Workers Compensation Carrier and the medical facility (MRO). This is an issue of employee – employer relationship (employment) and falls under the requirements within the employers program.

2. This statement is noted for the purpose of adjudicating a workers compensation claim. The OCIP Workers Compensation Carrier requires the employer to report all accident related drug and alcohol test results to them immediately.

Testing Procedures

1. At a minimum pre-project and post-accident testing is required.
2. Testing shall include the following drugs at a minimum:
   Marijuana, Cocaine, Opiates, Amphetamines, Phencyclidine, Barbiturates, Benzodiazepines, Methadone, Propoxyphene
3. For reasons of safety, any employee subject to a reasonable suspicion test shall be suspended until test results are available.

Prescription Drugs

The use of current valid prescription Drugs that may impair an Employee's ability to safely perform his or her duties must be reported to the safety director, supervisor and management personnel.

Alcoholic Beverages

Under no circumstances are alcoholic beverages allowed on the project site.

Disciplinary Action

1. A positive pre-project or post-accident test will result in worker dismissal from this project site

2. Employees found using, selling, possessing or manufacturing drugs shall be removed from this project and may be reported to local law enforcement.

Confidentiality

All actions taken under this policy will be in conformance with the Local Drug Testing Act

Subcontractors and Vendors

Subcontractors, sub-tiered contractors, vendors and their employees shall cooperate with this policy in achieving a drug-free and alcohol-free workplace.

Amendments to Policy

Amendments to this policy may be issued to comply with project owner requirements, state or local laws, or federal

contract requirements.

Company Name _____

DRUG AND ALCOHOL POLICY
ACKNOWLEDGMENT AND ACCEPTANCE STATEMENT

I certify that I have read and understand the statement and policy. I further understand that prior to employment and during employment, I am subject to drug and alcohol screening tests. I agree to provide the specimen appropriate to such drug or alcohol test(s) as may be required. I further understand that my property and I may be subject to search under the terms of this policy while I am on the Owner's premises. Failure to provide the appropriate specimen, or to permit a search, will subject me to removal from this site.

I also understand that I will not be allowed to go to work prior to the reporting of my pre-employment drug test results.

If I am an employee of a subcontractor company, an employee of an affiliate company assigned to the job site, or a contract staff, I understand that I am subject to pre-employment drug testing and all testing conditions of this Policy. Failure to provide the appropriate specimen or to permit a search or a positive test result will result in my immediate removal from this job site.

_____ _____

Signature Date

_____

Print Name and Title

_____

Witness

Guidelines for Reasonable Suspicion

Observation Checklist

1.	**Walking**	___ Stumbling ___ Swaying	___ Staggering ___ Unsteady	___ Falling ___ Holding On	___ Unable to Walk ___ Normal
2.	**Standing**	___ Swaying ___ Staggering	___ Rigid ___ Sagging at Knees		___ Unable to Stand ___ Feet Wide Apart
3.	**Speech**	___ Shouting ___ Rambling ___ Incoherent	___ Silent ___ Mute ___ Confused	___ Whispering ___ Slurred ___ Normal	___ Slow ___ Slobbering
4.	**Demeanor**	___ Cooperative ___ Silent ___ Sarcastic	___ Polite ___ Talkative ___ Fighting	___ Calm ___ Crying	___ Sleepy ___ Excited
5.	**Actions**	___ Resisting Communications ___ Drowsy ___ Calm	___ Fighting ___ Profanity	___ Threatening ___ Hyperactive	___ Erratic ___ Hostile
6.	**Eyes**	___ Bloodshot ___ Droopy	___ Watery ___ Closed	___ Dilated ___ Normal	___ Glassy
7.	**Face**	___ Flushed	___ Pale	___ Sweaty	___ Normal
8.	**Appearance/ Clothing**	___Unruly ___ Body Excrement	___ Messy ___ Stains	___ Dirty ___Neat	___ Partially Dressed ___ Normal
9.	**Breath**	___ Alcoholic Odor	___ Faint Alcohol Odor	___ No Odor	
10.	**Movement**	___ Fumbling ___ Nervous	___ Jerky ___ Normal	___ Slow	___ Hyperactive
11.	**Eating/ Chewing**	___ Gum	___ Candy	___ Mints	___ Other – identify

12. Other observations: (Visible drug use, possession, sale, etc.: attendance; poor work performance or accident; tampering with drug test; credible reports, etc.)

_____

_____

Observed by: _____ Observed by:_____

Date:_____ Time: _____ Location: _____

Appendix E - Supervisor's Report of Bodily Injury

Date of Accident_____ Date Returned to Work:_____

Location of Accident_____ Time of Accident _____ am/pm

Contractor/Subcontractor Involved_____

First Aid: _____ Recordable _____ Lost Time _____ Fatality _____

Damage*_____ Fire _____ Property _____

Equipment _____

Injured Person:_____ SSN:_____

Address: _____ Occupation: _____

_____ Home Phone:_____

Male _____ Female _____ Age _____

Nature of Injury: _____

First Aid Administered By: _____

Hospital _____

Physician _____

Witnesses: _____

_____

Equipment and/or Materials Involved: _____

Cause Of Accident: _____

_____

_____

Superintendent's Corrective Action:_____

_____

Employee's Signature: _____

Supt. Signature_____

Date of report: _____

*Attach a list of damaged property and/or equipment excluding motor vehicles. Indicate owner's names and addresses. Complete "Report of Damage to Equipment or Property" (Appendix F).

Appendix F - Report of Damage to Equipment or Property

Date _____

Contractor/Subcontractor _____

Location of Accident _____

Equipment Involved _____

Personal injuries Yes_____ No _____

Damage Estimate $_____

Witness to Accident	Statement Obtained		Statement Attached	
	Yes	No	Yes	No
_____	Yes	No	Yes	No
_____	Yes	No	Yes	No
_____	Yes	No	Yes	No

Remarks _____

_____

_____

_____

Time of Accident _____ AM_____ PM_____ Date _____

Weather Conditions _____ Temperature _____

Roadway or surface type _____ Wet _____ Dry_____ Other _____ *

*If other, explain _____

_____

_____

If more space is required, use back of this sheet for additional information and sketches.

Signed_____

Title _____

Employee Name _____

Appendix G - Contractor Monthly Report of Safety Statistics

MONTHLY ACCIDENT EXPERIENCE SUMMARY	CONTRACT NO:		
	CONTRACTOR/SUBCONTRACTOR NAME:		
	MONTH YEAR		
	REPORTING PERIOD: THROUGH:		
	THIS MONTH	YEAR TO DATE	PROJECT TO DATE
HOURS WORKED			
PAYROLL			
A. FIRST-AID CASES B. OSHA RECORDABLE CASES C. LOST TIME CASES (list each under comments) D. TOTAL LOST WORK DAYS E. PROPERTY DAMAGE F. EQUIPMENT G. GENERAL PUBLIC			
OSHA Recordable Incidence Rate* Lost Time Incident Rate*			
COMMENTS:			
Prepared By: Date		PM/Superintendent Date	

Appendix H – Safety Improvement Team Guidelines

The Owner recognizes that a cooperative effort is required to insure a safe construction project. Therefore, the Contractor shall establish a Safety Improvement Team to facilitate the proper cooperative attitude.

The Safety Improvement Team shall be composed of an equal number of employee and management representatives. The management personnel (4) will consist of one Owner representative, one person from the Contractor, one from the workers' compensation/general liability insurance carrier and a representative of subcontractor supervision. The employee members (4) shall be selected from the various subcontractor trades on a voluntary basis or by nomination to serve a minimum of one year each.

The Contractor's Safety Manager shall serve as the Safety Improvement Team advisor and is responsible for providing meeting agendas and minutes, giving assignments to the committee, and publicizing committee accomplishments. Safety Improvement Team meeting minutes and attendance roster shall be maintained.

The Contractor's Safety Manager is responsible for assuring that Committee members are adequately trained to perform their duties and responsibilities.

The Contractor's Safety Manager is responsible for assuring that subcontractors with 25 or more employees establish their own Safety Improvement Team commensurate with the NRS requirements.

The primary purpose of the Safety Improvement Team is to evaluate safety and health program effectiveness, suggestions, hazard reports, hotline reports, etc., and to provide suggestions and recommendations to improve workplace safety.

Additional duties include advising and educating employees in safe working practices, investigating accidents and their causes, recommending preventative measures, inspecting work areas, and other duties as assigned

Meetings shall be held at least monthly, discussion items shall include:

- Inspection Reports
- Accident Reports
- The safety of construction methods and practices
- Review and make recommendations on employee hazard reports, hotlines, etc.

The Safety Improvement Team members will receive their regular rates of pay while performing Safety Improvement Team duties. Time spent performing Safety Improvement Team duties shall be documented using normal time reporting procedures.

TO
UNIT PRICE CONSTRUCTION CONTRACT
FOR
DEWITT SPAIN AIRPORT APRON REHABILITATION - CONSTRUCTION

BY AND BETWEEN
THE MEMPHIS-SHELBY COUNTY AIRPORT AUTHORITY
AND
(CONTRACTOR NAME)

FAA REQUIRED CONTRACT PROVISIONS

EXHIBIT E

FAA REQUIRED CONTRACT PROVISIONS – ALL CONTRACTS

Federal laws and regulations require that recipients of federal assistance (Sponsors) include contract provisions in certain contracts, requests for proposals, or invitations to bid. The provisions are as follows:

1. Title VI Clauses for Compliance with Nondiscrimination Requirements (FAA Provision A6.4.1). (Reference: 49 USC § 47123)

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:

Compliance with Regulations: The contractor (hereinafter includes 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 by reference and made a part of this contract.

Non-discrimination: 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 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.

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 will 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.

Information and Reports: The contractor will provide all information and reports required by the Acts, the Regulations, and directives issued pursuant thereto and will permit access to its books, records, accounts, other sources of information, and its facilities as may be determined by the sponsor or the Federal Aviation Administration to be pertinent to ascertain compliance with such Nondiscrimination Acts And Authorities and instructions. Where any information required of a contractor is in the exclusive possession of another who fails or refuses to furnish the information, the contractor will so certify to the sponsor or the Federal Aviation Administration, as appropriate, and will set forth what efforts it has made to obtain the information.

Sanctions for Noncompliance: In the event of a contractor's noncompliance with the Non-discrimination provisions of this contract, the sponsor will impose such contract sanctions as it or the Federal Aviation Administration may determine to be appropriate, including, but not limited to:

a. Withholding payments to the contractor under the contract until the contractor complies; and/or

b. Cancelling, terminating, or suspending a contract, in whole or in part.

Incorporation of Provisions: The contractor will include the provisions of paragraphs one through six in every subcontract, including procurements of materials and leases of equipment, unless exempt by the Acts, the Regulations and directives issued pursuant thereto. The contractor will take action with respect to any subcontract or procurement as the sponsor 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 by a subcontractor, or supplier because of such direction, the contractor may request the sponsor to enter into any litigation to protect the interests of the sponsor. In addition, the contractor may request the United States to enter into the litigation to protect the interests of the United States.

2. Title VI List of Pertinent Nondiscrimination Acts and Authorities (FAA Provision A6.4.5).

During the performance of this contract, the contractor, for itself, its assignees, and successors in interest (hereinafter referred to as the "contractor") agrees to comply with the following non-discrimination statutes and authorities; including but not limited to:

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);

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);

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);

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;

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

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);

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, sub-recipients and contractors, whether such programs or activities are Federally funded or not);

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;

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);

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;

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);

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).

3. Federal Fair Labor Standards Act (FAA Provision A17). (Reference: 29 U.S.C. § 201, et seq**.)**

All contracts and subcontracts that result from this solicitation incorporate by reference the provisions of 29 CFR part 201, 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.

The Contractor has full responsibility to monitor compliance to the referenced statute or regulation. The Contractor must address any claims or disputes that arise from this requirement directly with the U.S. Department of Labor – Wage and Hour Division.

4. **Occupational Safety and Health Act of 1970 (FAA Provision A20).** (Reference: 29 CFR part 1910)

All contracts and subcontracts that result from this solicitation incorporate by reference the requirements of 29 CFR Part 1910 with the same force and effect as if given in full text. Contractor must provide a work environment that is free from recognized hazards that may cause death or serious physical harm to the employee. The Contractor retains full responsibility to monitor its compliance and their subcontractor's compliance with the applicable requirements of the Occupational Safety and Health Act of 1970 (20 CFR Part 1910). Contractor must address any claims or disputes that pertain to a referenced requirement directly with the U.S. Department of Labor – Occupational Safety and Health Administration.

5. **General Civil Rights Provisions (FAA Provision A5).** (Reference: 49 U.S.C. § 47123)

The Contractor agrees to comply with pertinent statutes, Executive Orders and such rules as are promulgated to ensure 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 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. If the Contractor transfers its obligation to another, the transferee is obligated in the same manner as the Contractor. The above provision obligates the Contractor for the period during which the property is owned, used or possessed by the Contractor and the airport remains obligated to the Federal Aviation Administration.

6. Buy American Preference (FAA Provision A4). (Reference: 49 USC § 50101)

The contractor agrees to comply with 49 USC § 50101, BABA and other related Made in America Laws,1 U.S. statutes, guidance, and FAA policies, which provides that Federal funds may not be obligated unless all iron, steel and manufactured goods used in AIP funded projects are produced in the United States, unless the FAA has issued a waiver for the product; the product is listed as an Excepted Article, Material Or Supply in Federal Acquisition Regulation subpart 25.108; or is included in the FAA Nationwide Buy American Waivers Issued list.

The bidder or offeror must complete and submit the certification of compliance with FAA's Buy American Preference, BABA and Made in America laws included herein with their bid or offer. The Airport Sponsor/Owner will reject as nonresponsive any bid or offer that does not include a completed certification of compliance with FAA's Buy American Preference and BABA.

The bidder or offeror certifies that all constructions materials, defined to mean an article, material, or supply other than an item of primarily iron or steel; a manufactured product; cement and cementitious materials; aggregates such as stone, sand, or gravel; or aggregate binding agents or additives that are or consist primarily of: non-ferrous metals; plastic and polymer-based products (including polyvinylchloride, composite building materials, and polymers used in fiber optic cables); glass (including optic glass); lumber; or drywall used in the project are manufactured in the U.S.

CERTIFICATE OF BUY AMERICAN COMPLIANCE FOR CONSTRUCTION PROJECTS

As a matter of bid responsiveness, the bidder or offeror must complete, sign, date, and submit this certification statement with their proposal. The bidder or offeror must indicate how they intend to comply with 49 USC § 50101, BABA and other related Made in America Laws, U.S. statutes, guidance, and FAA policies, by selecting one of the following certification statements. These statements are mutually exclusive. Bidder must select one or the other (i.e. not both) by inserting a checkmark (✓) or the letter "X".

☐ Bidder or offeror hereby certifies that it will comply with 49 USC. 50101 BABA and other related U.S. statutes, guidance, and policies of the FAA by::

a) Only installing steel and manufactured products produced in the United States; or

b) Only installing construction materials defined as: an article, material, or supply – other than an item of primarily iron or steel; a manufactured product; cement and cementitious materials; aggregates such as stone, sand, or gravel; or aggregate binding agents or additives that are or consist primarily of non-ferrous metals; plastic and polymer-based products (including polyvinylchloride, composite building materials, and polymers used in fiber optic cables); glass (including optic glass); lumber or drywall that have been manufactured in the United States; or

c) Installing manufactured products for which the FAA has issued a waiver as indicated by inclusion on the current FAA Nationwide Buy American Waivers Issued listing; or

d) Installing products listed as an Excepted Article, Material or Supply in Federal Acquisition Regulation Subpart 25.108.

By selecting this certification statement, the bidder or offeror agrees:

1. To provide to the Owner or the FAA evidence that documents the source and origin of the steel and manufactured product.
2. To faithfully comply with providing US domestic products.
3. To refrain from seeking a waiver request after establishment of the contract, unless extenuating circumstances emerge that the FAA determines justified.
4. Certify that all construction materials used in the project are manufactured in the U.S.

☐ The bidder or offeror hereby certifies it cannot comply with the 100% Buy American Preferences of 49 USC § 50101(a) but may qualify for either a Type 3 or Type 4 waiver under 49 USC § 50101(b). By selecting this certification statement, the apparent bidder or offeror with the apparent low bid agrees:

1. To submit to the Owner within 15 calendar days of being selected as the responsive bidder, a formal waiver request and required documentation that support the type of waiver being requested.
2. That failure to submit the required documentation within the specified timeframe is cause for a non-responsive determination that may result in rejection of the proposal.
3. To faithfully comply with providing US domestic products at or above the approved US domestic content percentage as approved by the FAA.
4. To furnish US domestic product for any waiver request that the FAA rejects.
5. To refrain from seeking a waiver request after establishment of the contract, unless extenuating circumstances emerge that the FAA determines justified.

Required Documentation

Type 3 Waiver - The cost of components and subcomponents produced in the United States is more than 60% of the cost of all components and subcomponents of the "facility". The required documentation for a type 3 waiver is:

a) Completed Content Percentage Worksheet and Final Assembly Questionnaire including;
b) Listing of all manufactured products that are not comprised of 100% US domestic content (Excludes products listed on the FAA Nationwide Buy American Waivers Issued listing and products excluded by Federal Acquisition Regulation Subpart 25.108; products of unknown origin must be considered as non-domestic products in their entirety)
c) Cost of non-domestic components and subcomponents, excluding labor costs associated with final assembly and installation at project location.
d) Percentage of non-domestic component and subcomponent cost as compared to total "facility" component and subcomponent costs, excluding labor costs associated with final assembly and installation at project location.

Type 4 Waiver – (Unreasonable Costs) - Applying this provision for iron, steel, manufactured goods or construction materials would increase the cost of the overall project by more than 25 percent. The required documentation for this waiver is:

a) A completed Content Percentage Worksheet and Final Assembly Questionnaire from
b) At minimum two comparable equal bids and/or offers;
c) Receipt or record that demonstrates that supplier scouting called for in Executive Order 14005,indicates that no domestic source exists for the project and/or component;
d) Completed waiver applications for each comparable bid and/or offer.

False Statements: Per 49 USC § 47126, this certification concerns a matter within the jurisdiction of the Federal Aviation Administration and the making of a false, fictitious or fraudulent certification may render the maker subject to prosecution under Title 18, United States Code.

Date	Signature
Company Name	Title

CERTIFICATE OF BUY AMERICAN COMPLIANCE FOR EQUIPMENT/ BUILDING PROJECTS

As a matter of bid responsiveness, the bidder or offeror must complete, sign, date, and submit this certification statement with their proposal. The bidder or offeror must indicate how they intend to comply with 49 USC § 50101, BABA and other Made in America Laws, U.S. statutes, guidance, and FAA policies by selecting one on the following certification statements. These statements are mutually exclusive. Bidder must select one or the other (not both) by inserting a checkmark (✓) or the letter "X".

☐ Bidder or offeror hereby certifies that it will comply with 49 USC § 50101, BABA and other related U.S. statutes, guidance, and policies of the FAA by:

a) Only installing steel and manufactured products produced in the United States, or;

b) Only installing construction materials defined as: an article, material, or supply – other than an item of primarily iron or steel; a manufactured product; cement and cementitious materials; aggregates such as stone, sand, or gravel; or aggregate binding agents or additives that are or consist primarily of non-ferrous metals; plastic and polymer-based products (including polyvinylchloride, composite building materials, and polymers used in fiber optic cables); glass (including optic glass); lumber or drywall that have been manufactured in the United States, or;

c) Installing manufactured products for which the FAA has issued a waiver as indicated by inclusion on the current FAA Nationwide Buy American Waivers Issued listing, or;

d) Installing products listed as an Excepted Article, Material or Supply in Federal Acquisition Regulation Subpart 25.108.

By selecting this certification statement, the bidder or offeror agrees:

1. To provide to the Owner evidence that documents the source and origin of the steel and manufactured product.
2. To faithfully comply with providing US domestic product.
3. To furnish US domestic product for any waiver request that the FAA rejects.
4. To refrain from seeking a waiver request after establishment of the contract, unless extenuating circumstances emerge that the FAA determines justified.

☐ The bidder or offeror hereby certifies it cannot comply with the 100% Buy American Preferences of 49 USC § 50101(a) but may qualify for either a Type 3 or Type 4 waiver under 49 USC § 50101(b). By selecting this certification statement, the apparent bidder or offeror with the apparent low bid agrees:

1. To submit to the Owner within 15 calendar days of being selected as the responsive bidder, a formal waiver request and required documentation that support the type of waiver being requested.

2. That failure to submit the required documentation within the specified timeframe is cause for a non-responsive determination that may result in rejection of the proposal.

3. To faithfully comply with providing US domestic products at or above the approved US domestic content percentage as approved by the FAA.

4. To refrain from seeking a waiver request after establishment of the contract, unless extenuating circumstances emerge that the FAA determines justified.

Required Documentation

Type 3 Waiver - The cost of the item components and subcomponents produced in the United States is more that 60% of the cost of all components and subcomponents of the "item". The required documentation for a type 3 waiver is:

a) Completed Content Percentage Worksheet and Final Assembly Questionnaire including;
b) Listing of all product components and subcomponents that are not comprised of 100% US domestic content (Excludes products listed on the FAA Nationwide Buy American Waivers Issued listing and products excluded by Federal Acquisition Regulation Subpart 25.108; products of unknown origin must be considered as non-domestic products in their entirety).

c) Cost of non-domestic components and subcomponents, excluding labor costs associated with final assembly at place of manufacture.
d) Percentage of non-domestic component and subcomponent cost as compared to total "item" component and subcomponent costs, excluding labor costs associated with final assembly at place of manufacture.

Type 4 Waiver – (Unreasonable Costs) - Applying this provision for iron, steel, manufactured goods or construction materials, would increase the cost of the overall project by more than 25 percent. The required documentation for this waiver is:

a) Completed Content Percentage Worksheet and Final Assembly Questionnaire from
b) At minimum two comparable equal bidders and/or offerors;
c) Receipt or record that demonstrates that supplier scouting called for in Executive Order14005, indicates that no domestic source exists for the project and/or component;
d) Completed waiver applications for each comparable bid and/or offer.

False Statements: Per 49 USC § 47126, this certification concerns a matter within the jurisdiction of the Federal Aviation Administration and the making of a false, fictitious or fraudulent certification may render the maker subject to prosecution under Title 18, United States Code.

Date	Signature
Company Name	Title

7. **Clean Air and Water Pollution Control (FAA Provision A7).** (Reference 2 CFR § 200, Appendix II(G))

Contractor agrees to comply with all applicable standards, orders, and regulations issued pursuant to the Clean Air Act (42 U.S.C. § 740-7671q) and the Federal Water Pollution Control Act as amended (33 U.S.C. § 1251-1387). The Contractor agrees to report any violation to the Owner immediately upon discovery. The Owner assumes responsibility for notifying the Environmental Protection Agency (EPA) and the Federal Aviation Administration.

Contractor must include this requirement in all subcontracts that exceeds $150,000.

8. Contract Workhours and Safety Standards Act Requirements (FAA Provision A8). (Reference: 2 CFR § 200, Appendix II (E))

1. Overtime Requirements.

No contractor or subcontractor contracting for any part of the contract work which may require or involve the employment of laborers or mechanics shall require or permit any such laborer or mechanic, including watchmen and guards, in any workweek in which he or she is employed on such work to work in excess of forty hours in such workweek unless such laborer or mechanic receives compensation at a rate not less than one and one-half times the basic rate of pay for all hours worked in excess of forty hours in such workweek.

2. Violation; Liability for Unpaid Wages; Liquidated Damages.

In the event of any violation of the clause set forth in paragraph (1) of this clause, the contractor and any subcontractor responsible therefor shall be liable for the unpaid wages. In addition, such contractor and subcontractor shall be liable to the United States (in the case of work done under contract for the District of Columbia or a territory, to such District or to such territory), for liquidated damages. Such liquidated damages shall be computed with respect to each individual laborer or mechanic, including watchmen and guards, employed in violation of the clause set forth in paragraph (1) of this clause, in the sum of $10 for each calendar day on which such individual was required or permitted to work in excess of the standard workweek of forty hours without payment of the overtime wages required by the clause set forth in paragraph (1) of this clause.

3. Withholding for Unpaid Wages and Liquidated Damages.

The Federal Aviation Administration (FAA) or the Owner shall upon its own action or upon written request of an authorized representative of the Department of Labor withhold or cause to be withheld, from any moneys payable on account of work

performed by the contractor or subcontractor under any such contract or any other Federal contract with the same prime contractor, or any other Federally-assisted contract subject to the Contract Work Hours and Safety Standards Act, which is held by the same prime contractor, such sums as may be determined to be necessary to satisfy any liabilities of such contractor or subcontractor for unpaid wages and liquidated damages as provided in the clause set forth in paragraph 2 of this clause.

4. Subcontractors.

The contractor or subcontractor shall insert in any subcontracts the clauses set forth in paragraphs (1) through (4) and also a clause requiring the subcontractor to include these clauses in any lower tier subcontracts. The prime contractor shall be responsible for compliance by any subcontractor or lower tier subcontractor with the clauses set forth in paragraphs (1) through (4) of this clause.

9. Debarment and Suspension (FAA Provision A11). (Reference: 2 CFR part 180 (Subpart C); 2 CFR part 1200; DOT Order 4200.5**)**

CERTIFICATION OF OFFERER/BIDDER REGARDING DEBARMENT

By submitting a bid/proposal under this solicitation, the bidder or offeror certifies that neither it nor its principals are presently debarred or suspended by any Federal department or agency from participation in this transaction.

CERTIFICATION OF LOWER TIER CONTRACTORS REGARDING DEBARMENT

The successful bidder, by administering each lower tier subcontract that exceeds $25,000 as a "covered transaction", must verify each lower tier participant of a "covered transaction" under the project is not presently debarred or otherwise disqualified from participation in this federally assisted project. The successful bidder will accomplish this by:

1. Checking the System for Award Management at website: http://www.sam.gov.
2. Collecting a certification statement similar to the Certificate Regarding Debarment and Suspension (Bidder or Offeror), above.
3. Inserting a clause or condition in the covered transaction with the lower tier contract.

If the FAA later determines that a lower tier participant failed to disclose to a higher tier participant that it was excluded or disqualified at the time it entered the covered transaction, the FAA may pursue any available remedies, including suspension and debarment of the non-compliant participant.

10. Prohibition of Segregated Facilities (FAA Provision A19). (Reference: 41 CFR § 60)

(a) The Contractor agrees that it does not and will not maintain or provide for its employees any segregated facilities at any of its establishments, and that it does not and will not permit its employees to perform their services at any location under its control where segregated facilities are maintained. The Contractor agrees that a breach of this clause is a violation of the Equal Opportunity clause in this contract.

(b) "Segregated facilities," as used in this clause, means any waiting rooms, work areas, rest rooms and wash rooms, restaurants and other eating areas, time clocks, locker rooms and other storage or dressing areas, parking lots, drinking fountains, recreation or entertainment areas, transportation, and housing facilities provided for employees, that are segregated by explicit directive or are in fact segregated on the basis of race, color, religion, sex, or national origin because of written or oral policies or employee custom. The term does not include separate or single-user rest rooms or necessary dressing or sleeping areas provided to assure privacy between the sexes.

(c) The Contractor shall include this clause in every subcontract and purchase order that is subject to the Equal Opportunity clause of this contract.

11. Access to Records and Reports (FAA Provision A1). (Reference: 2 CFR § 200.333, 2 CFR § 200.336)

The Contractor must maintain an acceptable cost accounting system. The Contractor agrees to provide the sponsor, the Federal Aviation Administration, and the Comptroller General of the United States or any of their duly authorized representatives, access to any books, documents, papers, and records of the contractor which are directly pertinent to the specific contract for the purpose of making audit, examination, excerpts and transcriptions. The Contractor agrees to maintain all books, records and reports required under this contract for a period of not less than three years after final payment is made and all pending matters are closed.

12. Affirmative Action Requirement (FAA Provision A2). (Reference: 41 CFR part 60-4, Executive Order 11246)

NOTICE OF REQUIREMENT FOR AFFIRMATIVE ACTION TO ENSURE EQUAL EMPLOYMENT OPPORTUNITY

1. The Offeror's or Bidder's attention is called to the "Equal Opportunity Clause" and the "Standard Federal Equal Employment Opportunity Construction Contract Specifications" set forth herein.

2. The goals and timetables for minority and female participation, expressed in percentage terms for the contractor's aggregate workforce in each trade on all construction work in the covered area, are as follows:

   Timetables

   Goals for minority participation for each trade: 32.3%

   Goals for female participation in each trade: 6.9%

   These goals are applicable to all of the contractor's construction work (whether or not it is Federal or federally-assisted) performed in the covered area. If the contractor performs construction work in a geographical area located outside of the covered area, it shall apply the goals established for such geographical area where the work is actually performed. With regard to this second area, the contractor also is subject to the goals for both its federally involved and non-federally involved construction.
   The Contractor's compliance with the Executive Order and the regulations in 41 CFR Part 60-4 shall be based on its implementation of the Equal Opportunity Clause, specific affirmative action obligations required by the specifications set forth in 41 CFR 60-4.3(a), and its efforts to meet the goals. The hours of minority and female employment and training must be substantially uniform throughout the length of the contract, and in each trade, and the contractor shall make a good faith effort to employ minorities and women evenly on each of its projects. The transfer of minority or female employees or trainees from Contractor to Contractor or from project to project for the sole purpose of meeting the Contractor's goals shall be a violation of the contract, the Executive Order and the regulations in 41 CFR Part 60-4. Compliance with the goals will be measured against the total work hours performed.

3. The Contractor shall provide written notification to the Director of the Office of Federal Contract Compliance Programs (OFCCP) within 10 working days of award of any construction subcontract in excess of $10,000 at any tier for construction work under the contract resulting from this solicitation. The notification shall list the name, address, and telephone number of the subcontractor; employer identification number of the subcontractor; estimated dollar amount of the subcontract; estimated starting and completion dates of the subcontract; and the geographical area in which the subcontract is to be performed.

4. As used in this notice and in the contract resulting from this solicitation, the "covered area" is Memphis, Shelby County, Tennessee.

13. Copeland "Anti-Kickback" Act (FAA Provision A9). (Reference: 2 CFR § 200, Appendix II (D), 29 CFR Parts 3 & 5)

Contractor must comply with the requirements of the Copeland "Anti-Kickback" Act (18 U.S.C. 874 and 40 U.S.C. 3145), as supplemented by Department of Labor regulation 29 CFR part 3. Contractor and subcontractors are prohibited from inducing, by any means, any person employed on the project to give up any part of the compensation to which the employee is entitled. The Contractor and each Subcontractor must submit to the Owner, a weekly statement on the wages paid to each employee performing on covered work during the prior week. Owner must report any violations of the Act to the Federal Aviation Administration.

14. Davis-Bacon Requirements (FAA Provision A10). (Reference: 2 CFR § 200, Appendix II (D), 29 CFR Part 5)

1. Minimum Wages

(i) All laborers and mechanics employed or working upon the site of the work will be paid unconditionally and not less often than once a week, and without subsequent deduction or rebate on any account (except such payroll deductions as are permitted by the Secretary of Labor under the Copeland Act (29 CFR Part 3)), the full amount of wages and bona fide fringe benefits (or cash equivalent thereof) due at time of payment computed at rates not less than those contained in the wage determination of the Secretary of Labor which is attached hereto and made a part hereof, regardless of any contractual relationship which may be alleged to exist between the contractor and such laborers and mechanics. Contributions made or costs reasonably anticipated for bona fide fringe benefits under section 1(b)(2) of the Davis-Bacon Act on behalf of laborers or mechanics are considered wages paid to such laborers or mechanics, subject to the provisions of paragraph (1)(iv) of this section; also, regular contributions made or costs incurred for more than a weekly period (but not less often than quarterly) under plans, funds, or programs which cover the particular weekly period, are deemed to be constructively made or incurred during such weekly period. Such laborers and mechanics shall be paid the appropriate wage rate and fringe benefits on the wage determination for the classification of work actually performed, without regard to skill, except as provided in 29 CFR Part 5.5(a)(4). Laborers or mechanics performing work in more than one classification may be compensated at the rate specified for each classification for the time actually worked therein: *Provided*, that the employer's payroll records accurately set forth the time spent in each classification in which work is performed. The wage determination (including any additional classification and wage rates conformed under (1)(ii) of this section) and the Davis-Bacon poster (WH-1321) shall be posted at all times by the contractor and its subcontractors at the site of the work in a prominent and accessible place where it can easily be seen by the workers.

(ii) (A) The contracting officer shall require that any class of laborers or mechanics, including helpers, which is not listed in the wage determination and which is to be employed under the contract shall be classified in conformance with the wage determination. The contracting officer shall approve an additional classification and wage rate and fringe benefits therefore only when the following criteria have been met:

(1) The work to be performed by the classification requested is not performed by a classification in the wage determination; and

(2) The classification is utilized in the area by the construction industry; and

(3) The proposed wage rate, including any bona fide fringe benefits, bears a reasonable relationship to the wage rates contained in the wage determination.

(B) If the contractor and the laborers and mechanics to be employed in the classification (if known), or their representatives, and the contracting officer agree on the classification and wage rate (including the amount designated for fringe benefits where appropriate), a report of the action taken shall be sent by the contracting officer to the Administrator of the Wage and Hour Division, Employment Standards Administration, U.S. Department of Labor, Washington, D.C. 20210. The Administrator, or an authorized representative, will approve, modify, or disapprove every additional classification action within 30 days of receipt and so advise the contracting officer or will notify the contracting officer within the 30-day period that additional time is necessary.
(C) In the event the contractor, the laborers or mechanics to be employed in the classification or their representatives, and the contracting officer do not agree on the proposed classification and wage rate (including the amount designated for fringe benefits where appropriate), the contracting officer shall refer the questions, including the views of all interested parties and the recommendation of the contracting officer, to the Administrator for determination. The Administrator, or an authorized representative, will issue a determination within 30 days of receipt and so advise the contracting officer or will notify the contracting officer within the 30-day period that additional time is necessary.
(D) The wage rate (including fringe benefits where appropriate) determined pursuant to subparagraphs (1)(ii) (B) or (C) of this paragraph, shall be paid to all workers performing work in the classification under this contract from the first day on which work is performed in the classification.

(iii) Whenever the minimum wage rate prescribed in the contract for a class of laborers or mechanics includes a fringe benefit which is not expressed as an hourly rate, the contractor shall either pay the benefit as stated in the wage determination or shall pay another bona fide fringe benefit or an hourly cash equivalent thereof.

(iv) If the contractor does not make payments to a trustee or other third person, the contractor may consider as part of the wages of any laborer or mechanic the amount of any costs reasonably anticipated in providing bona fide fringe benefits under a plan or program, *Provided*, That the Secretary of Labor has found, upon the written request of the contractor, that the applicable standards of the Davis-Bacon Act have been met. The Secretary of Labor may require the contractor to set aside in a separate account assets for the meeting of obligations under the plan or program.

2. Withholding.

The Federal Aviation Administration or the sponsor shall upon its own action or upon written request of an authorized representative of the Department of Labor withhold or cause to be withheld from the contractor under this contract or any other Federal contract with the same prime contractor, or any other Federally-assisted contract subject to Davis-Bacon prevailing wage requirements, which is held by the same prime contractor, so much of the accrued payments or advances as may be considered necessary to pay laborers and mechanics, including apprentices, trainees, and helpers, employed by the contractor or any subcontractor the full amount of wages required by the contract. In the event of failure to pay any laborer or mechanic, including any apprentice, trainee, or helper, employed or working on the site of work, all or part of the wages required by the contract, the Federal Aviation Administration may, after written notice to the contractor, sponsor, applicant, or owner, take such action as may be necessary to cause the suspension of any further payment, advance, or guarantee of funds until such violations have ceased.

3. Payrolls and basic records.

(i) Payrolls and basic records relating thereto shall be maintained by the contractor during the course of the work and preserved for a period of three years thereafter for all laborers and mechanics working at the site of the work. Such records shall contain the name, address, and social security number of each such worker, his or her correct classification, hourly rates of wages paid (including rates of contributions or costs anticipated for bona fide fringe benefits or cash equivalents thereof of the types described in 1(b)(2)(B) of the Davis-Bacon Act), daily and weekly number of hours worked, deductions made and actual wages paid. Whenever the Secretary of Labor has found under 29 CFR 5.5(a)(1)(iv) that the wages of any laborer or mechanic include the amount of any costs reasonably anticipated in providing benefits under a plan or program described in section 1(b)(2)(B) of the Davis-Bacon Act, the contractor shall maintain records which show that the commitment to provide such benefits is enforceable, that the plan or program is financially responsible, and that the plan or program has been communicated in writing to the laborers or mechanics affected, and records which show the costs anticipated or the actual costs incurred in providing such benefits. Contractors employing apprentices or trainees under approved programs shall maintain written evidence of the registration of apprenticeship programs and certification of trainee programs, the registration of the apprentices and trainees, and the ratios and wage rates prescribed in the applicable programs.

(ii) (A) The contractor shall submit weekly for each week in which any contract work is performed a copy of all payrolls to the Federal Aviation Administration if the agency is a party to the contract, but if the agency is not such a party, the contractor will submit the payrolls to the applicant, sponsor, or owner, as the case may be, for transmission to the Federal Aviation Administration. The payrolls submitted shall set out accurately and completely all of the information required to be maintained under 29 CFR 5.5(a)(3)(i), except that full social security numbers and home addresses shall not be included on weekly transmittals. Instead the payrolls shall only need to include an individually identifying number for each employee (*e.g.* the last four digits of the employee's social security number). The required weekly payroll information may be submitted in any form desired. Optional Form WH–347 is available for this purpose from the Wage and Hour Division Web site at *http://www.dol.gov/esa/whd/forms/wh347instr.htm* or its successor site. The prime contractor is responsible for the submission of copies of payrolls by all subcontractors. Contractors and subcontractors shall maintain the full social security number and current address of each covered worker, and shall provide them upon request to the Federal Aviation Administration if the agency is a party to the contract, but if the agency is not such a party, the contractor will submit them to the applicant, sponsor, or owner, as the case may be, for transmission to the Federal Aviation Administration, the contractor, or the Wage and Hour Division of the Department of Labor for purposes of an investigation or audit of compliance with prevailing wage requirements. It is not a violation of this section for a prime contractor to require a subcontractor to provide addresses and social security numbers to the prime contractor for its own records, without weekly submission to the sponsoring government agency (or the applicant, sponsor, or owner).

(B) Each payroll submitted shall be accompanied by a "Statement of Compliance," signed by the contractor or subcontractor or his or her agent who pays or supervises the payment of the persons employed under the contract and shall certify the following:

(1) That the payroll for the payroll period contains the information required to be provided under 29 CFR § 5.5(a)(3)(ii), the appropriate information is being maintained under 29 CFR § 5.5 (a)(3)(i) and that such information is correct and complete;

(2) That each laborer and mechanic (including each helper, apprentice and trainee) employed on the contract during the payroll period has been paid the full weekly wages earned, without rebate, either directly or indirectly, and that no deductions have been made either directly or indirectly from the full wages earned, other than permissible deductions as set forth in Regulations 29 CFR Part 3;

(4) That each laborer or mechanic has been paid not less than the applicable wage rates and fringe benefits or cash equivalents for the classification of work performed, as specified in the applicable wage determination incorporated into the contract.

(C) The weekly submission of a properly executed certification set forth on the reverse side of Optional Form WH-347 shall satisfy the requirement for submission of the "Statement of Compliance" required by paragraph (3)(ii)(B) of this section.

(D) The falsification of any of the above certifications may subject the contractor or subcontractor to civil or criminal prosecution under Section 1001 of Title 18 and Section 231 of Title 31 of the United States Code.

(iii) The contractor or subcontractor shall make the records required under paragraph (3)(i) of this section available for inspection, copying or transcription by authorized representatives of the sponsor, the Federal Aviation Administration or the Department of Labor, and shall permit such representatives to interview employees during working hours on the job. If the contractor or subcontractor fails to submit the required records or to make them available, the Federal agency may, after written notice to the contractor, sponsor, applicant or owner, take such action as may be necessary to cause the suspension of any further payment, advance, or guarantee of funds. Furthermore, failure to submit the required records upon request or to make such records available may be grounds for debarment action pursuant to 29 CFR 5.12.

4. Apprentices and Trainees.

(i) Apprentices. Apprentices will be permitted to work at less than the predetermined rate for the work they performed when they are employed pursuant to and individually registered in a bona fide apprenticeship program registered with the U.S. Department of Labor, Employment and Training Administration, Bureau of Apprenticeship and Training, or with a State Apprenticeship Agency recognized by the Bureau, or if a person is employed in his or her first 90 days of probationary employment as an apprentice in such an apprenticeship program, who is not individually registered in the program, but who has been certified by the Bureau of Apprenticeship and Training or a State Apprenticeship Agency (where appropriate) to be eligible for probationary employment as an apprentice. The allowable ratio of apprentices to journeymen on the job site in any craft classification shall not be greater than the ratio permitted to the contractor as to the entire work force under the registered program. Any worker listed on a payroll at an apprentice wage rate, who is not registered or otherwise employed as stated above, shall be paid not less than the applicable wage rate on the wage determination for the classification of work actually performed. In addition, any apprentice performing work on the job site in excess of the ratio permitted under the registered program shall be paid not less than the applicable wage rate on the wage determination for the work actually performed. Where a contractor is performing construction on a project in a locality other than that in which its program is registered, the ratios and wage rates (expressed in percentages of the journeyman's hourly rate) specified in the contractor's or subcontractor's registered program shall be observed. Every apprentice must be paid at not less than the rate specified in the registered program for the apprentice's level of progress, expressed as a percentage of the journeymen hourly rate specified in the applicable wage determination. Apprentices shall be paid fringe benefits in accordance with the provisions of the apprenticeship program. If the apprenticeship program does not specify fringe benefits, apprentices must be paid the full amount of fringe benefits listed on the wage determination for the applicable classification. If the Administrator determines that a different practice prevails for the applicable apprentice classification, fringes shall be paid in accordance with that determination. In the event the Bureau of Apprenticeship and Training, or a State Apprenticeship Agency recognized by the Bureau, withdraws approval of an apprenticeship program, the contractor will no longer be permitted to utilize apprentices at less than the applicable predetermined rate for the work performed until an acceptable program is approved.

(ii) Trainees. Except as provided in 29 CFR 5.16, trainees will not be permitted to work at less than the predetermined rate for the work performed unless they are employed pursuant to and individually registered in a program which has received prior approval, evidenced by formal certification by the U.S. Department of Labor, Employment and Training

Administration. The ratio of trainees to journeymen on the job site shall not be greater than permitted under the plan approved by the Employment and Training Administration. Every trainee must be paid at not less than the rate specified in the approved program for the trainee's level of progress, expressed as a percentage of the journeyman hourly rate specified in the applicable wage determination. Trainees shall be paid fringe benefits in accordance with the provisions of the trainee program. If the trainee program does not mention fringe benefits, trainees shall be paid the full amount of fringe benefits listed on the wage determination unless the Administrator of the Wage and Hour Division determines that there is an apprenticeship program associated with the corresponding journeyman wage rate on the wage determination which provides for less than full fringe benefits for apprentices. Any employee listed on the payroll at a trainee rate that is not registered and participating in a training plan approved by the Employment and Training Administration shall be paid not less than the applicable wage rate on the wage determination for the classification of work actually performed. In addition, any trainee performing work on the job site in excess of the ratio permitted under the registered program shall be paid not less than the applicable wage rate on the wage determination for the work actually performed. In the event the Employment and Training Administration withdraws approval of a training program, the contractor will no longer be permitted to utilize trainees at less than the applicable predetermined rate for the work performed until an acceptable program is approved.

(iii) Equal Employment Opportunity. The utilization of apprentices, trainees and journeymen under this part shall be in conformity with the equal employment opportunity requirements of Executive Order 11246, as amended, and 29 CFR Part 30.

5. Compliance with Copeland Act Requirements.

The contractor shall comply with the requirements of 29 CFR Part 3, which are incorporated by reference in this contract.

6. Subcontracts.

The contractor or subcontractor shall insert in any subcontracts the clauses contained in 29 CFR Part 5.5(a)(1) through (10) and such other clauses as the Federal Aviation Administration may by appropriate instructions require, and also a clause requiring the subcontractors to include these clauses in any lower tier subcontracts. The prime contractor shall be responsible for the compliance by any subcontractor or lower tier subcontractor with all the contract clauses in 29 CFR Part 5.5.

7. Contract Termination: Debarment.

A breach of the contract clauses in paragraph 1 through 10 of this section may be grounds for termination of the contract, and for debarment as a contractor and a subcontractor as provided in 29 CFR 5.12.

8. Compliance with Davis-Bacon and Related Act Requirements.

All rulings and interpretations of the Davis-Bacon and Related Acts contained in 29 CFR Parts 1, 3, and 5 are herein incorporated by reference in this contract.

9. Disputes Concerning Labor Standards.

Disputes arising out of the labor standards provisions of this contract shall not be subject to the general disputes clause of this contract. Such disputes shall be resolved in accordance with the procedures of the Department of Labor set forth in 29 CFR Parts 5, 6 and 7. Disputes within the meaning of this clause include disputes between the contractor (or any of its subcontractors) and the contracting agency, the U.S. Department of Labor, or the employees or their representatives.

10. Certification of Eligibility.

(i) By entering into this contract, the contractor certifies that neither it (nor he or she) nor any person or firm who has an interest in the contractor's firm is a person or firm ineligible to be awarded Government contracts by virtue of section 3(a) of the Davis-Bacon Act or 29 CFR 5.12(a)(1).

(ii) No part of this contract shall be subcontracted to any person or firm ineligible for award of a Government contract by virtue of section 3(a) of the Davis-Bacon Act or 29 CFR 5.12(a)(1).

(iii) The penalty for making false statements is prescribed in the U.S. Criminal Code, 18 U.S.C. 1001.

15. Disadvantaged Business Enterprises (FAA Provision A12). (Reference: 49 CFR part 26)

(a) **Contract Assurance (§ 26.13)** - The contractor or subcontractor shall not discriminate on the basis of race, color, national origin, or sex in the performance of this contract. The contractor shall carry out applicable requirements of 49 CFR Part 26 in the award and administration of DOT assisted contracts. 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, which may include, but is not limited to:

1) Withholding monthly progress payments;

2) Assessing sanctions;

3) Liquidated damages; and/or

4) Disqualifying the Contractor from future bidding as non-responsible.

(b) **Prompt Payment (§26.29**) - The prime contractor agrees to pay each subcontractor under this prime contract for satisfactory performance of its contract no later than ten (10) days from the receipt of each payment the prime contractor receives from Memphis-Shelby County Airport Authority. The prime contractor agrees further to return retainage payments to each subcontractor within ten (10) days after the subcontractor's work is satisfactorily completed. Any delay or postponement of payment from the above referenced time frame may occur only for good cause following written approval of the Memphis-Shelby County Airport Authority. This clause applies to both DBE and non-DBE subcontractors.

16 Energy Conservation Requirements (FAA Provision A14). (Reference: 2 CFR § 200, Appendix II(H))

Contractor and Subcontractor agree to comply with mandatory standards and policies relating to energy efficiency as contained in the state energy conservation plan issued in compliance with the Energy Policy and Conservation Act (42 U.S.C. 6201 *et seq*).

17.1 Equal Employment Opportunity (EEO) (FAA Provision A16). (Reference: 2 CFR 200, Appendix II(C) ,41 CFR § 60-1.4, Executive Order 11246)

During the performance of this contract, the contractor agrees as follows:

(1) The contractor will not discriminate against any employee or applicant for employment because of race, color, religion, sex, or national origin. The contractor will take affirmative action to ensure that applicants are employed, and that employees are treated during employment without regard to their race, color, religion, sex, sexual orientation, gender identify or national origin. Such action shall include, but not be limited to the following: employment, upgrading, demotion, or transfer; recruitment or recruitment advertising; layoff or termination; rates of pay or other forms of compensation; and selection for training, including apprenticeship. The contractor agrees to post in conspicuous places, available to employees and applicants for employment, notices to be provided setting forth the provisions of this nondiscrimination clause.

(2) The contractor will, in all solicitations or advertisements for employees placed by or on behalf of the contractor, state that all qualified applicants will receive considerations for employment without regard to race, color, religion, sex, or national origin.

(3) The contractor will send to each labor union or representative of workers with which he has a collective bargaining agreement or other contract or understanding, a notice to be provided advising the said labor union or workers' representatives of the contractor's commitments under this section, and shall post copies of the notice in conspicuous places available to employees and applicants for employment.

(4) The contractor will comply with all provisions of Executive Order 11246 of September 24, 1965, and of the rules, regulations, and relevant orders of the Secretary of Labor.

(5) The contractor will furnish all information and reports required by Executive Order 11246 of September 24, 1965, and by rules, regulations, and orders of the Secretary of Labor, or pursuant thereto, and will permit access to his books, records, and accounts by the administering agency and the Secretary of Labor for purposes of investigation to ascertain compliance with such rules, regulations, and orders.

(6) In the event of the contractor's noncompliance with the nondiscrimination clauses of this contract or with any of the said rules, regulations, or orders, this contract may be canceled, terminated, or suspended in whole or in part and the contractor may be declared ineligible for further Government contracts or federally assisted construction contracts in accordance with procedures authorized in Executive Order 11246 of September 24, 1965, and such other sanctions may be imposed and remedies invoked as provided in Executive Order 11246 of September 24, 1965, or by rule, regulation, or order of the Secretary of Labor, or as otherwise provided by law.

(7) The contractor will include the portion of the sentence immediately preceding paragraph (1) and the provisions of paragraphs (1) through (7) in every subcontract or purchase order unless exempted by rules, regulations, or orders of the Secretary of Labor issued pursuant to section 204 of Executive Order 11246 of September 24, 1965, so that such provisions will be binding upon each subcontractor or vendor. The contractor will take such action with respect to any subcontract or purchase order as the administering agency 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 vendor as a result of such direction by the administering agency the contractor may request the United States to enter into such litigation to protect the interests of the United States.

17.2 Equal Employment Opportunity Specification (FAA Provision A16). (Reference: 2 CFR 200, Appendix II(C) 41 CFR § 60-1.4, Executive Order 11246)

1. As used in these specifications:

   a. "Covered area" means the geographical area described in the solicitation from which this contract resulted;
   b. "Director" means Director, Office of Federal Contract Compliance Programs (OFCCP), U.S. Department of Labor, or any person to whom the Director delegates authority;
   c. "Employer identification number" means the Federal social security number used on the Employer's Quarterly Federal Tax Return, U.S. Treasury Department Form 941;
   d. "Minority" includes:

      (1) Black (all) persons having origins in any of the Black African racial groups not of Hispanic origin);

      (2) Hispanic (all persons of Mexican, Puerto Rican, Cuban, Central or South American, or other Spanish culture or origin regardless of race);

      (3) Asian and Pacific Islander (all persons having origins in any of the original peoples of the Far East, Southeast Asia, the Indian Subcontinent, or the Pacific Islands); and

      (4) American Indian or Alaskan native (all persons having origins in any of the original peoples of North America and maintaining identifiable tribal affiliations through membership and participation or community identification).

2. Whenever the contractor, or any subcontractor at any tier, subcontracts a portion of the work involving any construction trade, it shall physically include in each subcontract in excess of $10,000 the provisions of these specifications and the Notice which contains the applicable goals for minority and female participation and which is set forth in the solicitations from which this contract resulted.

3. If the contractor is participating (pursuant to 41 CFR 60-4.5) in a Hometown Plan approved by the U.S. Department of Labor in the covered area either individually or through an association, its affirmative action obligations on all work in the Plan area (including goals and timetables) shall be in accordance with that Plan for those trades which have unions participating in the Plan. Contractors shall be able to demonstrate their participation in and compliance with the provisions of any such Hometown

Plan. Each contractor or subcontractor participating in an approved plan is individually required to comply with its obligations under the EEO clause and to make a good faith effort to achieve each goal under the Plan in each trade in which it has employees. The overall good faith performance by other contractors or subcontractors toward a goal in an approved Plan does not excuse any covered contractor's or subcontractor's failure to take good faith efforts to achieve the Plan goals and timetables.

4. The contractor shall implement the specific affirmative action standards provided in paragraphs 7a through 7p of these specifications. The goals set forth in the solicitation from which this contract resulted are expressed as percentages of the total hours of employment and training of minority and female utilization the contractor should reasonably be able to achieve in each construction trade in which it has employees in the covered area. Covered construction contractors performing construction work in a geographical area where they do not have a Federal or federally assisted construction contract shall apply the minority and female goals established for the geographical area where the work is being performed. Goals are published periodically in the Federal Register in notice form, and such notices may be obtained from any Office of Federal Contract Compliance Programs office or from Federal procurement contracting officers. The contractor is expected to make substantially uniform progress in meeting its goals in each craft during the period specified.

5. Neither the provisions of any collective bargaining agreement nor the failure by a union with whom the contractor has a collective bargaining agreement to refer either minorities or women shall excuse the contractor's obligations under these specifications, Executive Order 11246, or the regulations promulgated pursuant thereto.

6. In order for the non-working training hours of apprentices and trainees to be counted in meeting the goals, such apprentices and trainees shall be employed by the contractor during the training period and the contractor shall have made a commitment to employ the apprentices and trainees at the completion of their training, subject to the availability of employment opportunities. Trainees shall be trained pursuant to training programs approved by the U.S. Department of Labor.

7. The contractor shall take specific affirmative actions to ensure equal employment opportunity. The evaluation of the contractor's compliance with these specifications shall be based upon its effort to achieve maximum results from its actions. The contractor shall document these efforts fully and shall implement affirmative action steps at least as extensive as the following:

   a. Ensure and maintain a working environment free of harassment, intimidation, and coercion at all sites, and in all facilities at which the contractor's employees are assigned to work. The contractor, where possible, will assign two or more women to each construction project. The contractor shall specifically ensure that all foremen, superintendents, and other onsite supervisory personnel are aware of and carry out the contractor's obligation to maintain such a working environment, with specific attention to minority or female individuals working at such sites or in such facilities.

   b. Establish and maintain a current list of minority and female recruitment sources, provide written notification to minority and female recruitment sources and to community organizations when the contractor or its unions have employment opportunities available, and maintain a record of the organizations' responses.

   c. Maintain a current file of the names, addresses, and telephone numbers of each minority and female off-the-street applicant and minority or female referral from a union, a recruitment source, or community organization and of what action was taken with respect to each such individual. If such individual was sent to the union hiring hall for referral and was not referred back to the contractor by the union or, if referred, not employed by the contractor, this shall be documented in the file with the reason therefore along with whatever additional actions the contractor may have taken.

   d. Provide immediate written notification to the Director when the union or unions with which the contractor has a collective bargaining agreement has not referred to the contractor a minority person or female sent by the contractor, or when the contractor has other information that the union referral process has impeded the contractor's efforts to meet its obligations.

e. Develop on-the-job training opportunities and/or participate in training programs for the area which expressly include minorities and women, including upgrading programs and apprenticeship and trainee programs relevant to the contractor's employment needs, especially those programs funded or approved by the Department of Labor. The contractor shall provide notice of these programs to the sources compiled under 7b above.

f. Disseminate the contractor's EEO policy by providing notice of the policy to unions and training programs and requesting their cooperation in assisting the contractor in meeting its EEO obligations; by including it in any policy manual and collective bargaining agreement; by publicizing it in the company newspaper, annual report, etc.; by specific review of the policy with all management personnel and with all minority and female employees at least once a year; and by posting the company EEO policy on bulletin boards accessible to all employees at each location where construction work is performed.

g. Review, at least annually, the company's EEO policy and affirmative action obligations under these specifications with all employees having any responsibility for hiring, assignment, layoff, termination, or other employment decisions including specific review of these items with onsite supervisory personnel such a superintendents, general foremen, etc., prior to the initiation of construction work at any job site. A written record shall be made and maintained identifying the time and place of these meetings, persons attending, subject matter discussed, and disposition of the subject matter.

h. Disseminate the contractor's EEO policy externally by including it in any advertising in the news media, specifically including minority and female news media, and providing written notification to and discussing the contractor's EEO policy with other contractors and subcontractors with whom the contractor does or anticipates doing business.

i. Direct its recruitment efforts, both oral and written, to minority, female, and community organizations, to schools with minority and female students; and to minority and female recruitment and training organizations serving the contractor's recruitment area and employment needs. Not later than one month prior to the date for the acceptance of applications for apprenticeship or other training by any recruitment source, the contractor shall send written notification to organizations, such as the above, describing the openings, screening procedures, and tests to be used in the selection process.

j. Encourage present minority and female employees to recruit other minority persons and women and, where reasonable, provide after school, summer, and vacation employment to minority and female youth both on the site and in other areas of a contractor's workforce.

k. Validate all tests and other selection requirements where there is an obligation to do so under 41 CFR Part 60-3.

l. Conduct, at least annually, an inventory and evaluation at least of all minority and female personnel, for promotional opportunities and encourage these employees to seek or to prepare for, through appropriate training, etc., such opportunities.

m. Ensure that seniority practices, job classifications, work assignments, and other personnel practices do not have a discriminatory effect by continually monitoring all personnel and employment related activities to ensure that the EEO policy and the contractor's obligations under these specifications are being carried out.

n. Ensure that all facilities and company activities are non-segregated except that separate or single user toilet and necessary changing facilities shall be provided to assure privacy between the sexes.

o. Document and maintain a record of all solicitations of offers for subcontracts from minority and female construction contractors and suppliers, including circulation of solicitations to minority and female contractor associations and other business associations.

p. Conduct a review, at least annually, of all supervisor's adherence to and performance under the contractor's EEO policies and affirmative action obligations.

8. Contractors are encouraged to participate in voluntary associations, which assist in fulfilling one or more of their affirmative action obligations (7a through 7p). The efforts of a contractor association, joint contractor union, contractor community, or other similar groups of which the contractor is a member and participant, may be asserted as fulfilling any one or more of its obligations under 7a through 7p of these specifications provided that the contractor actively participates in the group, makes every effort to assure that the group has a positive impact on the employment of minorities and women in the industry, ensures that the concrete benefits of the program are reflected in the contractor's minority and female workforce participation, makes a good faith effort to meet its individual goals and timetables, and can provide access to documentation which demonstrates the effectiveness of actions taken on behalf of the contractor. The obligation to comply, however, is the contractor's and failure of such a group to fulfill an obligation shall not be a defense for the contractor's noncompliance.

9. A single goal for minorities and a separate single goal for women have been established. The contractor, however, is required to provide equal employment opportunity and to take affirmative action for all minority groups, both male and female, and all women, both minority and non-minority. Consequently, if the particular group is employed in a substantially disparate manner (for example, even though the contractor has achieved its goals for women generally,) the contractor may be in violation of the Executive Order if a specific minority group of women is underutilized.

10. The contractor shall not use the goals and timetables or affirmative action standards to discriminate against any person because of race, color, religion, sex, or national origin.

11. The contractor shall not enter into any subcontract with any person or firm debarred from Government contracts pursuant to Executive Order 11246.

12. The contractor shall carry out such sanctions and penalties for violation of these specifications and of the Equal Opportunity Clause, including suspension, termination, and cancellation of existing subcontracts as may be imposed or ordered pursuant to Executive Order 11246, as amended, and its implementing regulations, by the Office of Federal Contract Compliance Programs. Any contractor who fails to carry out such sanctions and penalties shall be in violation of these specifications and Executive Order 11246, as amended.

13. The contractor, in fulfilling its obligations under these specifications, shall implement specific affirmative action steps, at least as extensive as those standards prescribed in paragraph 7 of these specifications, so as to achieve maximum results from its efforts to ensure equal employment opportunity. If the contractor fails to comply with the requirements of the Executive Order, the implementing regulations, or these specifications, the Director shall proceed in accordance with 41 CFR 60-4.8.

14. The contractor shall designate a responsible official to monitor all employment related activity to ensure that the company EEO policy is being carried out, to submit reports relating to the provisions hereof as may be required by the Government, and to keep records. Records shall at least include for each employee, the name, address, telephone number, construction trade, union affiliation if any, employee identification number when assigned, social security number, race, sex, status (e.g., mechanic, apprentice, trainee, helper, or laborer), dates of changes in status, hours worked per week in the indicated trade, rate of pay, and locations at which the work was performed. Records shall be maintained in an easily understandable and retrievable form; however, to the degree that existing records satisfy this requirement, contractors shall not be required to maintain separate records.
15. Nothing herein provided shall be construed as a limitation upon the application of other laws which establish different standards of compliance or upon the application of requirements for the hiring of local or other area residents (e.g., those under the Public Works Employment Act of 1977 and the Community Development Block Grant Program).

18. Lobbying and Influencing Federal Employees (FAA Provision A18). (Reference: 31 U.S.C. § 1352, 49 CFR part 20, Appendix A)

The bidder or offeror certifies by signing and submitting this bid or proposal, to the best of his or her knowledge and belief, that:

(1) No Federal appropriated funds have been paid or will be paid, by or on behalf of the Bidder or Offeror, to any person for influencing or attempting to influence an officer or employee of an agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with the awarding of any Federal contract, the making of any Federal grant, the making of any Federal loan, the entering into of any cooperative agreement, and the extension, continuation, renewal, amendment, or modification of any Federal contract, grant, loan, or cooperative agreement.

(2) If any funds other than Federal appropriated funds have been paid or will be paid to any person for influencing or attempting to influence an officer or employee of any agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with this Federal contract, grant, loan, or cooperative agreement, the undersigned shall complete and submit Standard Form-LLL, "Disclosure Form to Report Lobbying," in accordance with its instructions.

(3) The undersigned shall require that the language of this certification be included in the award documents for all sub-awards at all tiers (including subcontracts, sub-grants, and contracts under grants, loans, and cooperative agreements) and that all sub-recipients shall certify and disclose accordingly.

This certification is a material representation of fact upon which reliance was placed when this transaction was made or entered into. Submission of this certification is a prerequisite for making or entering into this transaction imposed by section 1352, title 31, U.S. Code. Any person who fails to file the required certification shall be subject to a civil penalty of not less than $10,000 and not more than $100,000 for each such failure.

19. Rights to Inventions (FAA Provision A22). (Reference: 2 CFR § 200, Appendix II(F), 37CFR § 401)

Contracts or agreements that include the performance of experimental, developmental, or research work must provide for the rights of the Federal Government and the Owner in any resulting invention as established by 37 CFR part 401, Rights to Inventions Made by Non-profit Organizations and Small Business Firms under Government Grants, Contracts, and Cooperative Agreements. This contract incorporates by reference the patent and inventions rights as specified in 37 CFR §401.14. Contractor must include this requirement in all sub-tier contracts involving experimental, developmental or research work.

20. Trade Restriction Certification (FAA Provision A26). (Reference: 49 USC § 50104, 49 CFR part 30)

By submission of an offer, the Offeror certifies that with respect to this solicitation and any resultant contract, the Offeror –

a. is not owned or controlled by one or more citizens of a foreign country included in the list of countries that discriminate against U.S. firms as published by the Office of the United States Trade Representative (U.S.T.R.);

b. has not knowingly entered into any contract or subcontract for this project with a person that is a citizen or national of a foreign country included on the list of countries that discriminate against U.S. firms as published by the U.S.T.R; and

c. has not entered into any subcontract for any product to be used on the Federal project that is produced in a foreign country included on the list of countries that discriminate against U.S. firms published by the U.S.T.R.

This certification concerns a matter within the jurisdiction of an agency of the United States of America and the making of a false, fictitious, or fraudulent certification may render the maker subject to prosecution under Title 18, United States Code, Section 1001.

The Offeror/Contractor must provide immediate written notice to the Owner if the Offeror/Contractor learns that its certification or that of a subcontractor was erroneous when submitted or has become erroneous by reason of changed circumstances. The Contractor must require subcontractors provide immediate written notice to the Contractor if at any time it learns that its certification was erroneous by reason of changed circumstances.

Unless the restrictions of this clause are waived by the Secretary of Transportation in accordance with 49 CFR 30.17, no contract shall be awarded to an Offeror or subcontractor:

(1) who is owned or controlled by one or more citizens or nationals of a foreign country included on the list of countries that discriminate against U.S. firms published by the U.S.T.R; or
(2) whose subcontractors are owned or controlled by one or more citizens or nationals of a foreign country on such U.S.T.R. list; or
(3) who incorporates in the public works project any product of a foreign country on such U.S.T.R. list.

Nothing contained in the foregoing shall be construed to require establishment of a system of records in order to render, in good faith, the certification required by this provision. The knowledge and information of a contractor is not required to exceed that which is normally possessed by a prudent person in the ordinary course of business dealings.

The Offeror agrees that, if awarded a contract resulting from this solicitation, it will incorporate this provision for certification without modification in all lower tier subcontracts. The contractor may rely on the certification of a prospective subcontractor that it is not a firm from a foreign country included on the list of countries that discriminate against U.S. firms as published by U.S.T.R, unless the Offeror has knowledge that the certification is erroneous.

This certification is a material representation of fact upon which reliance was placed when making an award. If it is later determined that the Contractor or subcontractor knowingly rendered an erroneous certification, the Federal Aviation Administration may direct through the Owner cancellation of the contract or subcontract for default at no cost to the Owner or the FAA.

21. Veteran's Preference (FAA Provision A27). (Reference: 49 USC § 47112(c))

In the employment of labor (excluding executive, administrative, and supervisory positions), the contractor and all sub-tier contractors must give preference to covered veterans as defined within Title 49 United States Code Section 47112. Covered veterans include Vietnam-era veterans, Persian Gulf veterans, Afghanistan-Iraq war veterans, disabled veterans, and small business concerns (as defined by 15 U.S.C. 632) owned and controlled by disabled veterans. This preference only applies when there are covered veterans readily available and qualified to perform the work to which the employment relates.

22. Procurement of Recovered Materials (FAA Provision A21). (Reference: 2 CFR § 200.322, 40 CFR part 247)

Contractor and subcontractor agree to comply with Section 6002 of the Solid Waste Disposal Act, as amended by the Resource Conservation and Recovery Act, and the regulatory provisions of 40 CFR Part 247. In the performance of this contract and to the extent practicable, the Contractor and subcontractors are to use products containing the highest percentage of recovered materials for items designated by the Environmental Protection Agency (EPA) under 40 CFR Part 247 whenever:

a) The contract requires procurement of $10,000 or more of a designated item during the fiscal year; or,

b) The contractor has procured $10,000 or more of a designated item using Federal funding during the previous fiscal year.
The list of EPA-designated items is available at www.epa.gov/smm/comprehensive-procurement-guidelines-construction-products.
Section 6002(c) establishes exceptions to the preference for recovery of EPA-designated products if the contractor can demonstrate the item is:

a) Not reasonably available within a timeframe providing for compliance with the contract performance schedule;
b) Fails to meet reasonable contract performance requirements; or
c) Is only available at an unreasonable price.

23. Seismic Safety (FAA Provision A23). (Reference: 49 CFR part 41)

(a) In the performance of design services, the Consultant agrees to furnish a building design and associated construction specification that conform to a building code standard which provides a level of seismic safety substantially equivalent to standards as established by the National Earthquake Hazards Reduction Program (NEHRP). Local building codes that model their building code after the current version of the International Building Code (IBC) meet the NEHRP equivalency level for seismic safety. At the conclusion of the design services, the Consultant agrees to furnish the Owner a "certification of compliance" that attests conformance of the building design and the construction specifications with the seismic standards of NEHRP or an equivalent building code.

(b) The contractor agrees to ensure that all work performed under the contract, including work performed by subcontractors, conforms to a building code standard that provides a level of seismic safety substantially equivalent to standards established by the National Earthquake Hazards Reduction Program (NEHRP). Local building codes that model their code after the current version of the International Building Code (IBC) meet the NEHRP equivalency level for seismic safety.

24. Distracted Driving (FAA Provision A13). (Reference: Executive Order 13513, DOT Order 3902.10)

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), the FAA encourages recipients of Federal grant funds to adopt and enforce safety policies that decrease crashes by distracted drivers, including policies to ban text messaging while driving when performing work related to a grant or sub-grant.

In support of this initiative, the Owner encourages the Contractor to promote policies and initiatives for its employees and other work personnel that decrease crashes by distracted drivers, including policies that ban text messaging while driving motor vehicles while performing work activities associated with the project. The Contractor must include the substance of this clause in all sub-tier contracts exceeding $10,000 which involve driving a motor vehicle in performance of work activities associated with the project.

25. Tax Delinquency and Felony Conviction (FAA Provision A24).

CERTIFICATION OF OFFERER/BIDDER REGARDING TAX DELINQUENCY AND FELONY CONVICTIONS

The applicant must complete the following two certification statements. The applicant must indicate its current status as it relates to tax delinquency and felony conviction by inserting a checkmark (✓) in the space following the applicable response. The applicant agrees that, if awarded a contract resulting from this solicitation, it will incorporate this provision for certification in all lower tier subcontracts.

Certifications

a) The applicant represents that it is ( ) is not (✓) a corporation that has any unpaid Federal tax liability that has been assessed, for which all judicial and administrative remedies have been exhausted or have lapsed, and that is not being paid in a timely manner pursuant to an agreement with the authority responsible for collecting the tax liability.

b) The applicant represents that it is ( ) is not (✓) is not a corporation that was convicted of a criminal violation under any Federal law within the preceding 24 months.

Note

If an applicant responds in the affirmative to either of the above representations, the applicant is ineligible to receive an award unless the sponsor has received notification from the agency suspension and debarment official (SDO) that the SDO has considered suspension or debarment and determined that further action is not required to protect the Government’s interests. The applicant therefore must provide information to the owner about its tax liability or conviction to the Owner, who will then notify the FAA Airports District Office, which will then notify the agency’s SDO to facilitate completion of the required considerations before award decisions are made.

Term Definitions

Felony conviction: Felony conviction means a conviction within the preceding twenty four (24) months of a felony criminal violation under any Federal law and includes conviction of an offense defined in a section of the U.S. code that specifically classifies the offense as a felony and conviction of an offense that is classified as a felony under 18 U.S.C. § 3559.

Tax Delinquency: A tax delinquency is any unpaid Federal tax liability that has been assessed, for which all judicial and administrative remedies have been exhausted, or have lapsed, and that is not being paid in a timely manner pursuant to an agreement with the authority responsible for collecting the tax liability.

26. Domestic Preferences for Procurements (FAA Provision A28)

CERTIFICATION REGARDING DOMESTIC PREFERENCES FOR PROCUREMENTS

The Bidder or Offeror certifies by signing and submitting this bid or proposal that, to the greatest extent practicable, the Bidder or Offeror has provided a preference for the purchase, acquisition, or use of goods, products, or materials produced in the United States (including, but not limited to, iron, aluminum, steel, cement, and other manufactured products) in compliance with 2 CFR § 200.322.

27. **Prohibition on Certain Telecommunications and Video Surveillance Services or Equipment (FAA Provision A14)**

PROHIBITION ON CERTAIN TELECOMMUNICATIONS AND VIDEO SURVEILLANCE SERVICES OR EQUIPMENT

Contractor and Subcontractor agree to comply with mandatory standards and policies relating to use and procurement of certain telecommunications and video surveillance services or equipment in compliance with the National Defense Authorization Act [Public Law 115-232 § 889(f)(1)].

EXHIBIT F
TO
CONSTRUCTION CONTRACT
FOR
DEWITT SPAIN AIRPORT APRON REHABILITATION - CONSTRUCTION

BY AND BETWEEN
THE MEMPHIS-SHELBY COUNTY AIRPORT AUTHORITY
AND
(CONTRACTOR NAME)

STATE REQUIRED CONTRACT PROVISIONS

STANDARD TERMS AND CONDITIONS:

Grantees shall not assign an Aeronautics Grant Contract or enter into a subcontract for any of the services performed under an Aeronautics Grant Contract without obtaining the prior written approval of the State. If such subcontracts are approved by the State, each shall contain, at a minimum, sections of the Aeronautics Grant Contract pertaining to "Conflicts of Interest," "Lobbying," "Nondiscrimination," "Public Accountability," "Public Notice," and "Records" (as identified by the section headings). Notwithstanding any use of approved subcontractors, the Grantee shall remain responsible for all work performed.

CONTRACT CLAUSES:

F.1. Conflicts of Interest. Contractor warrants that no part of the total contract amount shall be paid directly or indirectly to an employee or official of the State of Tennessee as wages, compensation, or gifts in exchange for acting as an officer, agent, employee, subcontractor, or consultant to MSCAA in connection with any work contemplated or performed relative to this Contract.

F.2. Lobbying. The Contractor certifies, to the best of its knowledge and belief, that:

a. No federally appropriated funds have been paid or will be paid, by or on behalf of the undersigned, to any person for influencing or attempting to influence an officer or employee of an agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with the awarding of any federal contract, the making of any federal grant, the making of any federal loan, the entering into of any cooperative agreement, and the extension, continuation, renewal, amendment, or modification of any federal contract, grant, loan, or cooperative agreement.

b. If any funds other than federally appropriated funds have been paid or will be paid to any person for influencing or attempting to influence an officer or employee of any agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with this contract, grant, loan, or cooperative agreement, the Promisor shall complete and submit Standard Form-LLL, "Disclosure of Lobbying Activities," in accordance with its instructions.

c. The Contractor shall require that the language of this certification be included in the award documents for all sub-awards at all tiers (including subcontracts, sub-grants, and contracts under grants, loans, and cooperative agreements) and that all subrecipients shall certify and disclose accordingly.

This certification is a material representation of fact upon which reliance was placed when this transaction was made or entered into and is a prerequisite for making or entering into this transaction imposed by 31 U.S.C. § 1352.

F.3. Nondiscrimination. Contractor hereby agrees, warrants, and assures that no person shall be excluded from participation in, be denied benefits of, or be otherwise subjected to discrimination in the performance of this Grant

Contract or in the employment practices of the Contractor on the grounds of handicap or disability, age, race, color, religion, sex, national origin, or any other classification protected by federal, Tennessee state constitutional, or statutory law. The Contractor shall, upon request, show proof of nondiscrimination and shall post in conspicuous places, available to all employees and applicants, notices of nondiscrimination.

F.4. Public Accountability. If the Contractor is subject to Tenn. Code Ann. § 8-4-401 *et seq*., or if this Contract involves the provision of services to citizens by Contractor on behalf of the State, Contractor agrees to establish a system through which recipients of services may present grievances about the operation of the service program. The Contractor shall also display in a prominent place, located near the passageway through which the public enters in order to receive Grant supported services, a sign at least eleven inches (11") in height and seventeen inches (17") in width stating:

NOTICE: THIS AGENCY IS A RECIPIENT OF TAXPAYER FUNDING. IF YOU OBSERVE AN AGENCY DIRECTOR OR EMPLOYEE ENGAGING IN ANY ACTIVITY WHICH YOU CONSIDER TO BE ILLEGAL, IMPROPER, OR WASTEFUL, PLEASE CALL THE STATE COMPTROLLER'S TOLL-FREE HOTLINE: 1-800-232-5454.

The sign shall be on the form prescribed by the Comptroller of the Treasury. MSCAA shall obtain copies of the sign from the Tennessee Department of Transportation, Aeronautics Division, and upon request from the Contractor, provide Contractor with any necessary signs.

F.5. Public Notice. All notices, informational pamphlets, press releases, research reports, signs, and similar public notices prepared and released by the Contractor in relation to this Contract shall include the statement, "This project is funded under a grant contract with the State of Tennessee." All notices by the Contractor in relation to this Contract shall be approved by the State.

F.6. Records. The Contractor and any approved subcontractor shall maintain documentation for all charges under this Contract. The books, records, and documents of the Contractor and any approved subcontractor, insofar as they relate to work performed or money received under this Grant Contract, shall be maintained in accordance with applicable Tennessee law. In no case shall the records be maintained for a period of less than five (5) full years from the date of the final payment. The Contractor's records shall be subject to audit at any reasonable time and upon reasonable notice by the Tennessee Department of Transportation, the Comptroller of the Treasury, or their duly appointed representatives.

The records shall be maintained in accordance with Governmental Accounting Standards Board (GASB) Accounting Standards or the Financial Accounting Standards Board (FASB) Accounting Standards Codification, as applicable, and any related AICPA Industry Audit and Accounting guides.

In addition, documentation of grant applications, budgets, reports, awards, and expenditures will be maintained in accordance with U.S. Office of Management and Budget's *Uniform Administrative Requirements, Cost Principles, and Audit Requirements for Federal Awards*.

Contract expenditures shall be made in accordance with local government purchasing policies and procedures and purchasing procedures for local governments authorized under state law.

The Contractor shall also comply with any recordkeeping and reporting requirements prescribed by the Tennessee Comptroller of the Treasury.

The Contractor shall establish a system of internal controls that utilize the COSO Internal Control - Integrated Framework model as the basic foundation for the internal control system. The Contractor shall incorporate any additional Comptroller of the Treasury directives into its internal control system.

Any other required records or reports which are not contemplated in the above standards shall follow the format designated by the head of the Tennessee Department of Transportation, the Central Procurement Office, or the Commissioner of Finance and Administration of the State of Tennessee.

DIVISION 0 – SECTION 00605

CERTIFICATE OF SECRETARY

AS TO RESOLUTION ADOPTED BY BOARD OF DIRECTORS

On _____

I,_____, hereby certify that I am the duly authorized Secretary of _____, charged with keeping the records and the seal of said Corporation, and that the following is a true and correct copy of a resolution adopted at a meeting of the Board of Directors of the Corporation duly held on _____, which resolution is now in full force and effect.

RESOLVED, that _____, (President, Vice President) of _____ is hereby authorized to execute contracts, performance bonds and labor materials bonds on behalf of the Corporation.

WITNESS my hand as Secretary, and the seal of the Corporation this _____ day of _____, 20____.

_____
Secretary

BEFORE ME, a notary public of the state and county mentioned, personally appeared

_____, with whom I am personally acquainted, and who, upon oath,

acknowledged such person to be _____, and officer authorized to execute the

instrument, of _____, the within named bargainor, a corporation, and that such

officer, as such _____, executed the foregoing instrument for the purposes therein

contained, by personally signing their name of the corporation as _____.

WITNESS my hand and seal, at office, this _____ day of _____ , 20 .

_____
Notary Public

(SEAL)

My Commission Expires:_____

END OF SECTION 00605

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PERFORMANCE BOND

KNOW ALL MEN BY THESE PRESENTS: that

as Principal, hereinafter called Contractor or Principal, and

as Surety, hereinafter called Surety, are held and firmly bound unto

MEMPHIS-SHELBY COUNTY AIRPORT AUTHORITY

hereinafter called Owner, or Obligee, in the amount of _____ Dollars, for the performance whereof Principal and Surety bind themselves, their heirs, executors, administrators, successors and assigns, jointly, severally, and solidarily, firmly by these presents.

The penal sum of this Performance Bond shall be increased by the amount that the Contract, as herein below defined, is increased during the term of the Performance Bond.

WHEREAS, Principal has entered into a written agreement with the Owner (hereinafter referred to as "Contract") for:

in accordance with Drawings and Specifications prepared and to be prepared by

POWERS HILL DESIGN

which Contract is by reference incorporated herein and made a part hereof.

WHEREAS, the Surety represents that it possesses an A-VIII rating or higher in the most recent edition of Best Insurance Reports and that Surety is authorized to execute and deliver bonds in the State of Tennessee.

NOW THEREFORE, THE CONDITION OF THIS OBLIGATION is such that, if Principal shall promptly and faithfully perform each and every term, condition, obligation and provision of said Contract, including but not limited to, completion and delivery of the work described in the Contract within the scheduled time as such time may be extended from time to time as permitted in the Contract, then this obligation shall be null and void; otherwise, it shall remain in full force and effect.

The Surety shall within sixty (60) days from notice by Owner to the Surety, either

1. Proceed to complete the performance of the Contract timely in accordance with the terms and conditions of the Contract, including but not limited to:

   (a) The responsibilities of the Principal for completion of the Work, correction of defective Work, warranty Work and payment for the Work; and

   (b) Payment of liquidated damages specified in the Contract, or

2. Pay to the Owner the amount of its costs and damages, up to the penal sum of this bond, that would be owed by the Principal to the Obligee under the Contract to complete the obligations of the Principal, including any liquidated damages that may be due and any additional legal, design professional or delay costs resulting from the Contractor's default less any remaining contract funds.

The Surety hereby waives notice of any alteration or extension of time made by the Owner. The Surety hereby waives notice of any change in the scope of the Contract.

Any suit under this Performance Bond must be instituted in a court of competent jurisdiction, in Shelby County, Tennessee, and not elsewhere within four (4) years from Substantial Completion as defined in the Contract.

No right of action shall accrue on this bond to or for the use of any person, partnership or corporation other than the Owner or the heirs, executors, administrators, successors or assigns of the Owner.

Notice of claim to the Surety under the bond shall be sent to the following address:

SIGNED AND SEALED this ____ day of _____, 20____.

_____
PRINCIPAL

TITLE: _____

_____
SURETY

TITLE:_____

_____
ADDRESS

_____
CITY STATE ZIP CODE

LABOR AND MATERIAL PAYMENT BOND

KNOW ALL MEN BY THESE PRESENTS: that

as Principal, hereinafter called Contractor or Principal, and

as Surety, hereinafter called Surety, are held and firmly bound unto

MEMPHIS-SHELBY COUNTY AIRPORT AUTHORITY

hereinafter called Owner or Obligee, in the amount of _____ Dollars, for the payment whereof Principal and Surety bind themselves, their heirs, executors, administrators, successors and assigns, jointly, severally, and solidarily, firmly by these presents.

The penal sum of this Labor and Material Payment Bond shall increase by the amount that the Contract, as herein below defined, is increased during the term of the Labor and Material Payment Bond.

WHEREAS, Principal has entered into a written agreement with the Owner (hereinafter referred to as the "Contract") for:

in accordance with Drawings and Specifications prepared and to be prepared by

Po

which Contract is by reference incorporated herein and made a part hereof.

WHEREAS, the Surety represents that it possesses an A--.VIII rating or higher in the most recent edition of Best Insurance Reports and that Surety is authorized to execute and deliver bonds in the State of Tennessee.

NOW THEREFORE, THE CONDITION OF THIS OBLIGATION is such that, if Principal shall promptly and faithfully complete the work as defined in the Contract free and clear of all claims, liens and any other contractual, statutory, or legal rights the Claimants, as hereinbelow defined, may have for the payment of amounts owed in connection with or arising out of the Contract ("Claims"); and the Principal shall make prompt payment to all persons having a Claim or lien pursuant to any statute or law of the State of Tennessee, then this obligation shall be void; otherwise, it shall remain in full force and effect.

1. A Claimant is defined as one having a contract with the Principal or a subcontractor or supplier of any tier for labor, materials, equipment used or reasonably required for use in the performance of the Contract, labor and materials being construed to include water, power, gas, light, heat, oil, gasoline, or telephone services applicable to the Contract.

2. No suit or action shall be commenced by any Claimant:

   a) After the expiration of two (2) years following the date which Substantial Completion as defined in the Contract is achieved. However, if any limitation embodied in this bond is prohibited by any law controlling the construction hereof, such limitation shall be deemed to be amended so as to be equal to the minimum period of limitation permitted by such law.

b) Other than in a court of competent jurisdiction in Shelby County, Tennessee, and not elsewhere.

3. Upon written notice to Surety from the Owner, Surety shall, within forty-five (45) days after receipt of said notice, pay or cause to be paid all Claims made or if the Surety contests in good faith the validity of any Claim, the Surety shall, within forty-five (45) days after receipt of said notice, cause bonds to be posted in an amount and form acceptable to Obligee to bond off such Claims. Surety shall indemnify, defend and hold Obligee harmless from any such Claims together with any and all attorney's fees, costs and expenses or liability in any manner arising out of or in connection therewith.

4. The Surety hereby waives notice of any alteration or extension of time made by the Owner. The Surety hereby also waives notice of any changes in the scope of the Contract, including changes to the contract amount.

Notice of claim to the Surety under the bond shall be sent to the following address.

SIGNED AND SEALED this the _____ day of _____, 20____.

_____
PRINCIPAL

TITLE: _____

_____
SURETY

TITLE: _____

_____
ADDRESS

_____
CITY STATE ZIP CODE

MEMPHIS INTERNATIONAL AIRPORT

APPLICATION FOR PAYMENT NO. ____

TO: MEMPHIS-SHELBY COUNTY AIRPORT AUTHORITY

REGARDING CONTRACT FOR: **MSCAA PROJECT NO. 20-1440-01**
DeWitt Spain Airport Apron Rehabilitation - Construction

CONTRACTOR: **CONTRACTOR**

FOR WORK ACCOMPLISHED FROM __ TO __

STATUS OF CONTRACT:

ORIGINAL CONTRACT PRICE:			**$0.00**
APPROVED CONTRACT AMENDMENTS:			
No. 1 Approved	MM/DD/YYYY	Adds 0 days	**$0.00**
No. 2 Approved	MM/DD/YYYY	Adds 0 days	**$0.00**
No. 3 Approved	MM/DD/YYYY	Adds 0 days	**$0.00**
No. 4 Approved	MM/DD/YYYY	Adds 0 days	**$0.00**
No. 5 Approved	MM/DD/YYYY	Adds 0 days	**$0.00**
No. 6 Approved	MM/DD/YYYY	Adds 0 days	**$0.00**
	Total time extension:	**Adds 0 days**	
TOTAL AMENDED CONTRACT PRICE			**$0.00**

NOTICE TO PROCEED DATE:

ORIGINAL COMPLETION DATE:

AMENDED COMPLETION DATE:

REMARKS:

TOTAL INSTALLED TO DATE		
previously installed to date	**$0.00**	
this application installed	**$0.00**	
		$0.00
plus STORED MATERIALS		
previously stored materials	**$0.00**	
this application stored materials	**$0.00**	
		$0.00
less PREVIOUSLY CERTIFIED FOR PAYMENT		**$0.00**
equals AMOUNT DUE THIS APPLICATION		**$0.00**

CONTRACTOR'S CERTIFICATION:

The undersigned Contractor certifies that (1) all previous progress payments received from Owner on account of Work done under the Contract referred to above have been applied to discharge in full all obligations of Contractor incurred in connection with Work covered by prior Application for Payment number 0 through ___ inclusive; and (2) title to all materials and equipment incorporated in said Work or otherwise listed in or covered by this Application for Payment will pass to Owner at time of payment free and clear of all liens, claims, security interests and encumbrances (except such as covered by Bond acceptable to Owner). Progress status is as described in schedule under monthly construction payment request.

Dated: MM/DD/YYYY

CONTRACTOR:
Contractor

State of: Tennessee

BY: _____
Signatory
Title

County of: Shelby

Subscribed and sworn to before me this _____ day of _____, YYYY .

Notary Public: _____

My Commission Expires: _____

PROGRAM MANAGER'S RECOMMENDATION:

Payment of the above AMOUNT DUE THIS APPLICATION to CONTRACTOR is recommended.

DATED:

BY: _____
Program Manager Signatory
Title

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DIVISION 0 - SECTION 00640

Business Diversity
Monthly Compliance Report

MSCAA Project. Name and Number: DeWitt Spain Airport Apron Rehabilitation - Construction (20-1440-01) Date: _____

To: Memphis Shelby County Airport Authority
Attn: ReGina Armstrong
2491 Winchester Rd., Ste. 113
Memphis, TN 38116-3856

From: Name: _____
Company: _____
Address: _____
Ph: _____
Owner Gender & Ethnicity: _____

For the month ending _____, I certify that the current payment for this contract was satisfied by the means shown below:

Name, Address, & Phone No. of All Subcontractors	Company Code	Current Payment Amt.	Check No.	Total for Calendar Year	Cumulative Total to Date	Gender	Ethnicity

PLEASE PROVIDE PROOF OF YOUR PAYMENT AMOUNT TO YOUR SUB CONTRACTORS.

Signed: _____ Title: _____

Gender Code: M=Male, **F**=Female **Proof of Payments**: Copy of Check, or Copy of E-Payment Confirmation

Company Code: DBE =Disadvantaged Business Enterprise, **MOC**=Majority Owner Company, **INC**=Incorporated/Partnership, **CM/WBE** = M/WBEs the owners of which have been certified as having a personal net worth less than $1.32mil

Ethnicity Code: **B**=Black, **H**=Hispanic, **N**=Native American, **AA**=Asian American, **APA**=Asian Pacific American, **SCA**=Sub Continent Asian, **NM**=Non-Minority, **C**=Caucasian & **O**=Other

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DIVISION 0 – SECTION 00662

WAGE AND LABOR PROVISIONS - TENNESSEE PREVAILING WAGE RATES

GENERAL DECISION NUMBER: TN20240147 01/05/2024

Superseded General Decision Number: TN20230147

State: Tennessee

Construction Type: Highway

Counties: Tennessee Statewide.

HIGHWAY CONSTRUCTION PROJECTS

Note: Contracts subject to the Davis-Bacon Act are generally required to pay at least the applicable minimum wage rate required under Executive Order 14026 or Executive Order 13658.
Please note that these Executive Orders apply to covered contracts entered into by the federal government that are subject to the Davis-Bacon Act itself, but do not apply to contracts subject only to the Davis-Bacon Related Acts, including those set forth at 29 CFR 5.1(a)(1).

If the contract is entered into on or after January 30, 2022, or the contract is renewed or extended (e.g., an option is exercised) on or after January 30, 2022:	. Executive Order 14026 generally applies to the contract. The contractor must pay all covered workers at least $17.20 per hour (or the applicable wage rate listed on this wage determination, if it is higher) for all hours spent performing on the contract in 2024.
If the contract was awarded on or between January 1, 2015 and January 29, 2022, and the contract is not renewed or extended on or after January 30, 2022:	. Executive Order 13658 generally applies to the contract. . The contractor must pay all covered workers at least $12.90 per hour (or the applicable wage rate listed on this wage determination, if it is higher) for all hours spent performing on that contract in 2024.

The applicable Executive Order minimum wage rate will be adjusted annually. If this contract is covered by one of the Executive Orders and a classification considered necessary for performance of work on the contract does not appear on this wage determination, the contractor must still submit a conformance request.

Additional information on contractor requirements and worker protections under the Executive Orders is available at http://www.dol.gov/whd/govcontracts.

Modification Number Publication Date

0 01/05/2024

SUTN2016-001 07/13/2016

	Rates	Fringes
BRICKLAYER.....	**$ 14.26 ****	
CARPENTER.....	$ 17.52	

CEMENT MASON/CONCRETE FINISHER...$ 15.55 **

ELECTRICIAN.....$ 24.08

IRONWORKER
Reinforcing.....$ 16.29 **
Structural.....$ 16.89 **

LABORER
Common/Unskilled.....$ 13.11 **
Skilled
Air Tool Operator, Asphalt Raker, Chain Saw Operator, Concrete Mixer (less than 1 yd), Concrete Rubber, Edger, Fence Erector, Form Setter (steel), Guard Rail Erector, Mechanic's Tender (tire changer or oiler), Mortar Mixer, Nozzleman or Gun Operator (gunite), Pipelayer, Sign Erector.....$ 15.27 **

PAINTER (INCLUDES SANDBLASTER)...$ 26.36

POWER EQUIPMENT OPERATOR:
GROUP 1
Backhoe/Hydraulic Excavator (3/4 yd & over), Crane (less than 20 Tons), End Loader (3 yd & over), Motor Patrol (finish),Piledriver, Dragline.....$ 19.14
GROUP 1A
Drill Operator (Caisson)...$ 25.26
Farm Tractor Operator (Power Broom).....$ 13.50 **
GROUP 2
Backhoe/Hydraulic Excavator (less than 3/4 yd), Bulldozer or Push Dozer, End Loader (less than 3 yd), Motor Patrol (rough), Tractor

(crawler/ utility), Truck Driver (Heavy Duty, Off Road) Scraper, Shovel, or Trenching Machine.....$ 17.08 **
GROUP 3
Asphalt Paver, Concrete Finishing Machine, Concrete Paver, Scale, Spreader (self-propelled), Concrete Grinder, Asphalt Milling Machine, Boring Machine (horizontal).....$ 17.75
GROUP 4
Bobcat, Central Mining Plant, Concrete Pump, Concrete Saw, Curb Machine (automatic or manual), Dozer or Loader (stockpile), Drill (piling), Mulcher or Seeder, Rock Drill (truck mounted), Roller (asphalt), Roller (compaction self-propelled), Soil Stabilization Machine, Tractor (boom and hoist), Bituminous Distributor Machine, pump, Track Drill, Striping Machine....$ 16.48 **
Heavy Duty Mechanic.....$ 20.33
Light Duty Mechanic.....$ 19.53
Sweeping Machine (Vacuum) Operator.....$ 15.56 **
GROUP 5
Crane (over 20 Tons).....$ 20.44

TRUCK DRIVER
2 axles.....$ 15.36 **
3-4 axles.....$ 14.86 **
5 or more axles.....$ 16.27 **

WELDERS - Receive rate prescribed for craft performing operation to which welding is incidental.

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** Workers in this classification may be entitled to a higher minimum wage under Executive Order 14026 ($17.20) or 13658 ($12.90). Please see the Note at the top of the wage determination for more information. Please also note that the minimum wage requirements of Executive Order 14026 are not currently being enforced as to any contract or subcontract to which the states of Texas, Louisiana, or Mississippi, including

their agencies, are a party.

Note: Executive Order (EO) 13706, Establishing Paid Sick Leave for Federal Contractors applies to all contracts subject to the Davis-Bacon Act for which the contract is awarded (and any solicitation was issued) on or after January 1, 2017. If this contract is covered by the EO, the contractor must provide employees with 1 hour of paid sick leave for every 30 hours they work, up to 56 hours of paid sick leave each year. Employees must be permitted to use paid sick leave for their own illness, injury or other health-related needs, including preventive care; to assist a family member (or person who is like family to the employee) who is ill, injured, or has other health-related needs, including preventive care; or for reasons resulting from, or to assist a family member (or person who is like family to the employee) who is a victim of, domestic violence, sexual assault, or stalking. Additional information on contractor requirements and worker protections under the EO is available athttps://www.dol.gov/agencies/whd/government-contracts.

Unlisted classifications needed for work not included within the scope of the classifications listed may be added after award only as provided in the labor standards contract clauses (29CFR 5.5 (a) (1) (iii)).

The body of each wage determination lists the classification and wage rates that have been found to be prevailing for the cited type(s) of construction in the area covered by the wage determination. The classifications are listed in alphabetical order of ""identifiers"" that indicate whether the particular rate is a union rate (current union negotiated rate for local),a survey rate (weighted average rate) or a union average rate(weighted union average rate).

Union Rate Identifiers

A four letter classification abbreviation identifier enclosed in dotted lines beginning with characters other than ""SU"" or ""UAVG"" denotes that the union classification and rate were prevailing for that classification in the survey. Example: PLUM0198-005 07/01/2014. PLUM is an abbreviation identifier of the union which prevailed in the survey for this classification, which in this example would be Plumbers. 0198indicates the local union number or district council number where applicable, i.e., Plumbers Local 0198. The next number,005 in the example, is an internal number used in processing the wage determination. 07/01/2014 is the effective date of the most current negotiated rate, which in this example is July 1,2014.

Union prevailing wage rates are updated to reflect all rate changes in the collective bargaining agreement (CBA) governing this classification and rate.

Survey Rate Identifiers

Classifications listed under the ""SU"" identifier indicate that no one rate prevailed for this classification in the survey and the published rate is derived by computing a weighted average rate based on all the rates reported in the survey for that classification. As this weighted average rate includes all rates reported in the survey, it may include both union and non-union rates. Example: SULA2012-007 5/13/2014. SU indicates the rates are survey rates based on a weighted average calculation of rates and are not majority rates. LA indicates the State of Louisiana. 2012 is the year of survey on which these classifications and rates are based. The next number, 007 in the example, is an internal number used in producing the wage determination. 5/13/2014 indicates the survey completion date for the classifications and rates under that identifier.

Survey wage rates are not updated and remain in effect until a new survey is conducted.

Union Average Rate Identifiers

Classification(s) listed under the UAVG identifier indicate that no single majority rate prevailed for those classifications; however, 100% of the data reported for the classifications was union data. EXAMPLE: UAVG-OH-0010 08/29/2014. UAVG indicates that the rate is a weighted union average rate. OH indicates the state. The next

number, 0010 in the example, is an internal number used in producing the wage determination. 08/29/2014 indicates the survey completion date for the classifications and rates under that identifier.

A UAVG rate will be updated once a year, usually in January of each year, to reflect a weighted average of the current negotiated/CBA rate of the union locals from which the rate is based.

WAGE DETERMINATION APPEALS PROCESS

1.) Has there been an initial decision in the matter? This can be:

* an existing published wage determination
* a survey underlying a wage determination
* a Wage and Hour Division letter setting forth a position on a wage determination matter
* a conformance (additional classification and rate) ruling

On survey related matters, initial contact, including requests for summaries of surveys, should be with the Wage and Hour National Office because National Office has responsibility for the Davis-Bacon survey program. If the response from this initial contact is not satisfactory, then the process described in 2.) and 3.) should be followed.

With regard to any other matter not yet ripe for the formal process described here, initial contact should be with the Branch of Construction Wage Determinations. Write to:

Branch of Construction Wage Determinations
Wage and Hour Division
U.S. Department of Labor
200 Constitution Avenue, N.W.
Washington, DC 20210

2.) If the answer to the question in 1.) is yes, then an interested party (those affected by the action) can request review and reconsideration from the Wage and Hour Administrator (See 29 CFR Part 1.8 and 29 CFR Part 7). Write to:

Wage and Hour Administrator
U.S. Department of Labor
200 Constitution Avenue, N.W.
Washington, DC 20210

The request should be accompanied by a full statement of the interested party's position and by any information (wage payment data, project description, area practice material, etc.) that the requestor considers relevant to the issue.

3.) If the decision of the Administrator is not favorable, an interested party may appeal directly to the Administrative Review Board (formerly the Wage Appeals Board). Write to:

Administrative Review Board
U.S. Department of Labor
200 Constitution Avenue, N.W.
Washington, DC 20210

4.) All decisions by the Administrative Review Board are final.

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END OF GENERAL DECISION

END OF SECTION 00661

DIVISION 0 – SECTION 00765

SUPPLEMENTAL PROVISIONS

00765-01 CONTRACTOR'S FIELD OFFICE

A Contractor's field office **is not** required for this project. Contractor shall keep on file at the project site copies of contract drawings, shop drawings, specifications, and other records pertaining to the project, in good condition, and readily accessible to the Contractor, Owner, Engineer, and all parties concerned.

00765-02 PROTECTION OF PERSONS AND PROPERTY

00765-02.1 The Contractor shall be responsible for initiating, maintaining and supervising safety and anti-substance abuse precautions and programs in connection with the Work, and shall provide all protection to prevent injury to all persons involved in any way in the Work and all other persons, including, without limitation, the employees, agents, guests, visitors, invitees and licensees of the Owner who may visit or be affected thereby. These precautions shall include, but in no event be limited to: the posting of danger signs and personal notification to all affected persons of the existence of a hazard of whatever nature; the furnishing and maintaining of necessary traffic control barricades and flagman services; the use, or storage, removal and disposal of required explosives or other hazardous materials only under the supervision of qualified personnel and after first obtaining permission of all applicable governmental authorities; and the maintenance of adequate quantities of both hose and operable fire extinguishers at the job site. The Contractor shall set forth in writing its safety and anti-substance abuse precautions and programs in connection with the Work and, if requested by the Owner, submit the same to the Owner for review. The Owner may, but shall not be obligated to, make suggestions and recommendations to the Contractor with respect thereto.

00765-02.2 All Work, whether performed by the Contractor, its Subcontractors or Sub-Subcontractors, or anyone directly or indirectly employed by any of them, and all equipment, appliances, machinery, materials, tools and like items incorporated or used in the Work, shall be in compliance with, and conform to: (a) all applicable laws, ordinances, rules, regulations and orders of any public, quasi-public or other governmental authority relating to the safety of persons and their protection against injury, specifically including, but in no event limited to, the Federal Occupational Safety and Health Act of 1970, as amended, and all rules and regulations now or hereafter in effect pursuant to said Act; and (b) all codes, rules, regulations and requirements of the Owner and its insurance carriers relating thereto. In the event of conflicting requirements, the more stringent shall govern.

00765-02.3 The Contractor shall designate a responsible member of its organization at the Job site as the Project Safety Officer, whose duties it shall be to enforce the Contractor's safety and anti-substance abuse programs, to assure compliance with the Contract Documents and to prevent accidents. This person shall have enforcement authority and be responsible for carrying out the relevant duties and be designated in writing by the Contractor and approved by the Owner. The Contractor shall further cause each of its Subcontractors and Sub-Subcontractors to designate a responsible supervisory representative to assist the Contractor's Project Safety Officer representative in the performance of their duties as aforesaid.

00765-02.4 Should the Contractor fail to provide a safe area for the performance of the Work or any portion thereof, the Owner shall have the right, but not the obligation, to suspend Work in the unsafe area. All costs of any nature (including, without limitation, overtime pay) resulting from the suspension, by whomsoever incurred, shall be borne by the Contractor.

00765-02.5 The Contractor shall provide to each worker on the job site the proper safety equipment for the duties being performed by that worker and will not permit any worker on the job site who fails or refuses to use the same. The Owner shall have the right, but not the obligation, to order the Contractor to send a worker home for the day or to discharge a worker for their failure to comply with safe practices or anti-substance abuse policies, with which order the Contractor shall promptly comply.

00765-02.6 The Contractor shall indemnify the Owner, from and against any and all liability, public or private, penalties, contractual or otherwise, losses, damages, costs, attorney's fees, expenses, causes of action, claims or judgments resulting either in whole or in part from any failure of the Contractor, its Subcontractors or Sub-Subcontractors or anyone directly or indirectly employed by any of them or for whose acts any of them may be liable, to comply with the provisions of the Contract. The Contractor shall not be relieved of its responsibilities under the Contract, should the Owner act or fail to act pursuant to its rights hereunder, nor shall the Owner thereby assume, nor be deemed to have assumed, any responsibilities otherwise imposed upon the Contractor by this Construction Contract, in any manner whatsoever.

00765-02.7 The Contractor shall, throughout the performance of the Work, maintain adequate and continuous protection of all Work and temporary facilities against loss or damage from whatever cause, shall protect the property of the Owner and third parties from loss or damage from whatever cause arising out of the performance of the Work and shall comply with the requirements of the Owner, its designated agents, and its insurance carriers and with all applicable laws, codes, rules and regulations with respect to the prevention of loss or damage to property as a result of fire or other hazards. The Owner may, but shall not be required to, make periodic patrols of the job site as a part of its normal security program. In such event, however, the Contractor shall not be relieved of its aforesaid responsibilities.

END OF SECTION 00765

DIVISION 0 – SECTION 00801

AIRPORT CONSTRUCTION SAFETY REQUIREMENTS

PART 1 GENERAL

1.01 SUMMARY

A. This section contains the minimum level of safety requirements for construction projects at Memphis International Airport, General DeWitt Spain Airport, and/or Charles W. Baker Airport.

B. Related work:

1. Other contract documents affecting construction safety include, but are not limited to, the DIVISION 0 AND DIVISION 1 specifications.

PART 2 PRODUCTS

Not used.

PART 3 EXECUTION

3.01 CONTRACTOR PERSONNEL SAFETY ORIENTATION

A. The Contractor shall be responsible for briefing all construction personnel on the requirements contained in this section prior to their working in the construction area and at periodic intervals throughout the course of the contract. These briefings will be documented in writing.

3.02 SCHEDULING WORK

A. See Specification section 01100, SEQUENCE OF CONSTRUCTION & LIQUIDATED DAMAGES.

B. See General Provision Section 80, Paragraph 80-04, Limitation of Operations.

3.03 CONSTRUCTION SECURITY

A. See Specification section 00802, AIRPORT SECURITY REQUIREMENTS.

3.04 LIMITATION ON CONSTRUCTION

A. The limits of construction, material storage areas, equipment parking and other areas defined as available for the contractor's exclusive use during construction shall be identified and defined by the contractor prior to starting work on the project. Temporary barricades, flagging and flashing caution lights may be required at access points, taxiway crossings and pavement tie-ins. The type markings, barricades and flashing caution lights are designated on the construction plans and must be inspected and approved by the Airport Authority.

B. The Contractor shall store all materials and park construction equipment, when not in use only in the areas designated on the plans or during the pre-construction conference.

C. Stockpiling of dirt and construction materials shall be constrained in a manner preventing movement resulting from jet blast or wind in excess of 10 knots.

D. Construction debris, waste, wrappings or loose material capable of causing damage to aircraft

engines, propellers, or landing gear shall not be allowed on active aircraft movement areas. Material meeting this criteria shall be contained and removed immediately from the AOA.

E. Open flame, welding, or torch cutting operations are prohibited in the construction area unless written permission has been given by the Airport Authority and adequate fire and safety precautions have been taken.

F. The use or possession of explosives is prohibited on Airport property.

G. Extensive stockpiles of construction materials will not be permitted near runway ends, runway edges, taxiways or aircraft parking aprons.

H. Excavation and open trenches may be permitted within runway safety areas and up to the edge of structural pavement on taxiways and aprons, on a case-by-case basis, i.e. cable trenches, pavement tie-ins, etc.; but only with prior approval of the Owner and, where required, the FAA.

I. Hazardous areas, into which no part of an aircraft may enter, (i.e., excavations, open trenches, material stockpiles, etc.) must be permanently delineated by use of barricades with alternate orange and white markings. The barricades are to be supplemented with orange flags (20x20 inch minimum) made and installed so that they are always in the extended position and properly oriented. For nighttime use, the barricades are supplemented with flashing red lights. Light intensity and barricade spacing must adequately delineate the hazardous area. Flare pots are prohibited.

Note: The Contractor shall designate an individual by name who is on call 24 hours per day for emergency maintenance of airport hazard lighting and barricades.

J. FAA approval is required in advance of scheduled operation of any crane or other construction equipment with top elevation exceeding 300 feet mean sea level or that will penetrate any navigable surface as defined under FAR PART 77. Advance notification of intended use will be provided by the Owner well in advance of intended use.

3.06 CONSTRUCTION VEHICLE TRAFFIC

A. Access to the construction site is as shown on the plans or as directed by the Owner. No other access point is authorized unless designated in writing by the Airport Authority. Construction traffic will operate only on designated haul routes within the construction area limits.

B. Drivers of construction vehicles will be knowledgeable of construction routes or will be escorted by other Contractor or Owner designated personnel who are knowledgeable.

C. The Contractor will be responsible for traffic control in the various construction areas of the work site. The Contractor will not permit unauthorized personnel or vehicles on the construction site.

D. The Contractor shall be responsible for immediate cleanup of any debris deposited along construction routes, as result of his construction traffic.

E. Directional signing at the construction access gate and along the delivery route to work site temporary storage areas shall be as designated and approved by the Owner.

F. Construction vehicle identification shall be as prescribed in Specification Section 00802, AIRPORT SECURITY REQUIREMENTS.

G. No construction vehicle is authorized on any active AOA pavement surface or to enter runway safety areas without specific authorization from the Owner.

3.07 REPORTING PROPERTY DAMAGE OR PERSONNEL INJURY

A. All persons involved in any accident whether personal injury, aircraft or automotive, occurring on Airport property, shall make a full report to the Airport Police (922-8298) as soon after the accident as possible. The report shall include, but not be limited to, the names, addresses of all principals and witnesses, if known, and a statement of the facts. Construction accidents fall under this category.

B. In the event of personnel injury, call 911.

END OF SECTION 00801

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DIVISION 0 – SECTION 00802

AIRPORT SECURITY REQUIREMENTS

PART 1 GENERAL

1.01 CONTRACTORS SECURITY AND VEHICLE PROCEDURES OVERVIEW

A. This overview outlines procedures concerning Airport security requirements, vehicle operation, and maintenance requirements for contractors at Memphis International Airport or any airport owned and operated by the Memphis-Shelby County Airport Authority. The sponsor Memphis-Shelby County Airport Authority (Airport Authority), airline, tenant, or concessionaire at the Airport who has hired the contractor is responsible for ensuring the contractor understands and complies with all the rules and regulations. This is a consolidated synopsis of the contractor requirements from the Airport Security Program and the Airport Rules and Regulations.

1.02 DEFINITIONS

A. **Aircraft** - shall mean any contrivance known or hereinafter invented, used or designed for navigation of or flight in the air.

B. **Air Operations Area (AOA)** - that part of the Airport used or intended to be used for landing, taking off, surface maneuvering, loading, unloading, or servicing the aircraft.

C. **Airport** - shall mean the Memphis International Airport and/or the General DeWitt Spain Airport and/or the Charles W. Baker Airport – where applicable.

D. **Airport Restricted Area** - area of Memphis International Airport that is not intended for public uses or access. These are areas designated by the Airport Authority as restricted areas and clearly identified with signs designating those areas as "RESTRICTED AREA." The restricted area also includes the AOA.

E. **AOA Driver's Permit** - permit issued by the Airport Authority for operating unescorted motor vehicles on the AOA.

F. **Construction Restricted Area** - any area, inside or outside of the Airport Restricted Area, which is fenced, or in some like manner defined by the Contractor. The Contractor is responsible for the security of the Construction Restricted Area.

G. **Director** - shall mean the Director of Operations and Public Safety or his duly authorized representatives.

H. **Job Site** - a predetermined geographic area with specific boundaries established by the Airport Authority.

I. **Movement Area** - runways, taxiways, and other areas of the Airport used for taxiing, takeoff, and landing of aircraft, except loading ramps and parking areas.

J. **Personal Escort** - remaining within sight of the individual under escort at all times while in the Airport restricted areas at a distance not to exceed 20 feet.

K. **Public Area** - any area within Airport facilities open to the general public.

L. **SIDA** - Security Identification Display Area.

M. **Unescorted Identification Badge** - pictured identification badge issued by the Airport Authority, which allows bearer to enter Airport Restricted Areas where there is a job related need.

N. **Vehicle Escort** - means the following of an authorized escort vehicle into the Airport Restricted Areas.

PART 2 PRODUCTS

(No products are required in this Section.)

PART 3 EXECUTION

3.01 AMENDMENTS AND SPECIAL NOTICES

A. The Contractor will be bound by any future amendments, additions, deletions, or corrections of the Airport Rules and Regulations promulgated by the Airport Authority, as dictated by changes in Federal Transportation Security Administration (TSA) regulations, as dictated by changes in Federal Aviation Administration (FAA) regulations, or safety requirements at Memphis International Airport or any airport owned and operated by Memphis-Shelby County Airport Authority.

B. Special regulations, notices, memoranda, or directions of an operations nature of interest to persons engaged in business with the Airport Authority, as generated by the Director, shall be issued under the authority of the Airport Regulations and shall have the same effect as the Airport Rules and Regulations.

C. The Director is authorized to interpret and construe these regulations wherever necessary, either by directions of general or specific application, and his interpretation and construction should be deemed a part of the regulations and binding upon all persons.

3.02 ENFORCEMENT AND COMPLIANCE WITH AIRPORT REGULATIONS

A. The uniformed Airport Police Officers of the Airport Authority and other representatives as designated by the Director are empowered to require compliance with Airport Rules and Regulations, ordinances of the City of Memphis, laws of the State of Tennessee, and federal rules and regulations. No authority is either hereby expressed or implied, however, that would permit any individual other than the Director to change, alter, or amend Airport Rules and Regulations.

B. It shall be unlawful for any person to do or commit any act forbidden herein or fail to perform any act required by Airport Rules and Regulations.

3.03 SCOPE

A. All users of and persons on Airport property shall be governed by the Airport Rules and Regulations and directions of the Director. Airport Rules and Regulations are subject to change by the Airport Authority Board of Directors at any time.

B. Airport Rules and Regulations are not intended to amend, modify or supersede federal, state, or local laws or regulations.

C. If any portion of the Airport Rules and Regulations shall be invalid or unenforceable, all other portions shall remain in effect and be construed to achieve the purposes hereof.

3.04 IDENTIFICATION REQUIREMENTS

A. Identification badges are not required on this project.

3.05 VEHICLE PARKING AND OPERATION

A. General.

1. All streets on the Airport shall have the status of dedicated city streets for the purpose of traffic enforcement.

2. Motor vehicles operated on the public roadways and parking lots of the Airport shall be governed by the traffic ordinance of the city and state laws applicable and, in addition thereto, the following regulations shall be applicable.

B. Traffic Rules and Regulations in the Air Operations Area.

1. The driver of any motor vehicle operating within the Airport boundary shall comply with the lawful orders, signals or directives of Airport Police Officers.

2. All drivers operating motor vehicles within the Airport boundary must possess a valid state driver's license.

3. Riding on trailer hitches, fenders, or on any portion of a vehicle not equipped with proper seats, running boards, or handholds is prohibited. Standing up in a moving motor vehicle, riding outside of a moving motor vehicle, or riding with arms or legs protruding from the body of the vehicle is prohibited.

4. All vehicle lights shall be lighted during the hours of darkness or during the time of reduced visibility when said vehicle is being operated in the restricted area.

5. No person shall operate any motorized vehicle when vision is restricted due to the load being carried, or for any other reason.

6. No person under the influence of alcoholic beverages or narcotic drugs shall operate any motor vehicle or motorized equipment on the Airport.

7. It shall be the responsibility of the operator to ascertain that the vehicle is in good operating condition. Operators are required to check proper operation of the vehicle's brakes before commencing any operation on airport.

8. Vehicles dripping oil, gasoline, water, or debris of any kind, shall be restricted.

9. Pedestrians and aircraft shall at all times have right-of-way over vehicular traffic. All vehicles must pass to the rear of taxiing aircraft.

C. Radio Equipment.

1. All vehicles operating in the aircraft movement area must be equipped with a two-way radio and, when the movement area is being controlled, be in continuous communication with the Control Tower, unless being escorted by authorized escort vehicle.

2. The installation of two-way radios does not permit the operation of vehicles on the Airport without proper authorization of the Director.

D. Contractor Employee Parking.

1. Employee parking is not available on the job site. The Contractor must provide for remote parking for employees and transport them to the job site.

E. Authorized Contractor Vehicles.

1. Unless otherwise authorized, the Contractor and each subcontractor shall be permitted to have no more than one (1) vehicle per trade on the job site. All Contractor vehicles authorized access to Airport restricted areas shall be:

   a. Owned or hired by the Contractor or subcontractor;
   b. Insured under company policy;
   c. On a pre-approved list; and
   d. Marked in accordance with Airport regulations.

2. Passenger type vehicles, including pickup trucks, must have the company name displayed on each front door of the vehicle. The company name must be readable, but at a minimum (the letter size shall be 4.5”). The vehicle must display the appropriate Airport registration decal. Specialized equipment such as bulldozers, cranes, etc., will be exempted from this requirement.

3. Cranes used during daylight hours shall have a red flag affixed to the top of boom. Cranes shall have a red obstruction light on the top of boom when used at night. Crane booms shall not be left erect when not in use or following end of workday.

F. Emergency Vehicles and Conditions.

1. Any person operating a motor vehicle on the air operations area shall immediately yield the right-of-way to the police, ambulance, fire department, or other emergency vehicle giving an audible or visual signal or as otherwise directed by an Airport law enforcement officer or fire/rescue department personnel.

2. Emergency conditions existing on the air operations area will not mitigate or cancel existing regulations for non-emergency vehicles in areas not affected by the emergency.

3. Under emergency conditions such as an aircraft accident or fire, access to the scene is denied to all vehicles or persons except those whose duties require their presence. Permits and licensing shall be rendered invalid in the area of emergency conditions and the Airport Authority shall determine when normal operations may be resumed.

G. Passing Aircraft.

1. All vehicles shall pass to the rear of taxiing aircraft and shall pass no nearer than 200 feet horizontal distance.

H. Passenger Concourse.

1. No motorized vehicles or carts of any type shall be used in any concourse or terminal lobby unless approved by the Director.

2. No vehicle or motorized equipment shall be driven under concourses except at authorized vehicle pass-throughs designated by the Director.

I. AOA Driving Lanes.

1. Vehicles on the aircraft parking apron at the terminal and air cargo buildings shall be operated within the marked driving lanes and in compliance with marked traffic control signs except for the following:

   a. Authorized vehicles engaged in parking apron repair and inspection; and
   b. Vehicles exceeding a width of 12 feet which shall follow marked lanes as closely as possible.

2. Vehicles shall enter and exit designated driving lanes at a point nearest to the origin and destination.
3. No vehicles or equipment shall be parked in a manner as to obstruct any portion of the driving lanes.

J. Taxiing Aircraft.

1. Vehicles shall yield to taxiing aircraft or aircraft under tow.

K. Speed Limits.

1. No person shall operate a motor vehicle or other motorized equipment at a speed greater than the following:

   a. Five miles per hour in designated drives under the terminal;
   b. Fifteen miles per hour on paved service roads in the vicinity of the terminal and air cargo buildings; or
   c. Twenty-five miles per hour on all aprons or ramps unless the area has an otherwise posted speed limit.
   d. Fifteen miles per hour on all aprons or ramps at General DeWitt Spain Airport and Charles W. Baker Airport unless the area has an otherwise posted speed limit.

L. Inspection of Vehicles.

1. Contractors authorized to operate vehicles on the air operations area shall be responsible for ensuring that each motor vehicle is inspected at least each 12 months by a qualified mechanic, is in good mechanical condition and has all the required safety equipment.

2. The Contractor shall remove from service any vehicle, which, in the opinion of the Director, is defective and in need of repair and said vehicle will not be returned to service until properly repaired.

M. Violations of Restricted Area Traffic Regulations.

1. The penalties for a violation of restricted area traffic regulations shall be as follows:

   a. First offense within any 12-month period: retraining;
   b. Second offense within any 12 month period: retraining and fine not to exceed $50.00;
   c. Third offense within any 12 month period: retraining and fine not to exceed $100.00; and
   d. Fourth offense within any 12 month period: revocation of privilege to drive in restricted area (unescorted or escorted).

2. The above set penalties do not negate the right of the Airport Authority to immediately revoke driving privileges, dependent upon the seriousness of the violation.

N. Vehicle Registration.

1. The Contractor shall list all construction vehicles requiring passage through the access gate on the "AOA Access Decal Request Form," which will be provided upon request.

2. Each vehicle approved will be issued a windshield decal, which must be affixed to the driver's side of the windshield. This decal is not transferable. Only those vehicles so marked will be allowed through the access gate with the following exceptions:

a. dump trucks;
b. concrete trucks;
c. vehicles making deliveries; and
d. cranes, tracter, etc.

O. Delivery Vehicles.

1. Each day the Contractor shall give the access gate guard a written list of deliveries expected. No delivery will be cleared into the restricted area unless it is on the list or the construction supervisor is contacted for clearance.

3.06 GENERAL INFORMATION

A. Access to Public Facilities.

1. Contractor employees are not authorized to use public facilities, (i.e., rest rooms, eating facilities, boarding gate hold rooms or other public areas of the terminal), except as specifically authorized by the Airport Authority and as necessary for access to job site.

2. Contractors shall provide adequate rest room and break facilities within the job site and staging areas as appropriate.

3. All public areas authorized for use by the Contractor's employees are to be kept in a clean and sanitary manner, free of all construction debris.

B. Accident Reports.

1. All persons involved in any accident whether personal injury, aircraft or automotive, occurring on Airport property, shall make a full report to the Airport Police (922-8298) as soon after the accident as possible. The report shall include, but not be limited to, the names, addresses of all principals and witnesses, if known, and a statement of the facts. Construction accidents fall under this category

2. To request paramedics call 911.

C. Airport Rules and Regulations.

1. The Contractor shall conform to the "Memphis-Shelby County Airport Authority Rules and Regulations."

2. The Contractor shall conform to "Memphis-Shelby County Airport Authority's Air Operations Area Rules and Regulations and its Airport Security Program."

D. Alcoholic Beverages and Narcotic Drugs.

1. No person shall have any alcoholic beverages or narcotic drugs on Airport property.

E. Damages.

1. Contractors shall be fully responsible for all damages to buildings, equipment, real property and appurtenances in the ownerships or custody of the Airport Authority caused by negligence, abuse or carelessness on the part of their employees, agents, customers, visitors, suppliers or persons with whom they do business.

F. Disorderly Conduct.

1. No person shall commit any disorderly, obscene or indecent act nor commit any nuisance.

2. Abusive behavior by Contractor supervisors or their employees will not be tolerated.

G. Debris and Cleanup.

1. No person shall dispose of any garbage, trash, refuse or any other material on the Airport except in the receptacles provided for that purpose.

2. No person shall dispose of any fill or building materials or any other materials on Airport property except in such areas as are specifically designated by the Director.

3. Contractors are responsible for the cleanliness of the job site and access to the job site as appropriate. All Contractors must establish an active ongoing program to eliminate any foreign objects which may cause damage to aircraft or cause personal injury to other persons. Contractors must pay particular attention to haul routes used to and from the job site to clean up any debris which may be tracked onto or dropped on the air operations area. Contractor will immediately remove such debris to eliminate the hazard. **END OF THE WORKDAY CLEANUP WILL <u>NOT</u> SUFFICE**. Cleanup shall be done to the satisfaction of the Airport Authority. All Active taxiway crossings and work areas adjacent to the taxiways shall be kept clean.

4. If it should become necessary for the Airport Authority to remove debris left by a Contractor, the Contractor shall be billed at 2 1/2 times the actual cost of the cleanup or a minimum of $250 per trip whichever is greater.

H. Firearms and Explosives.

1. No person shall have any firearm, explosive or incendiary device on or about their person or accessible property while on Airport property.

I. Fire Equipment.

1. All Contractors shall supply and maintain adequate and readily accessible fire extinguishers for the particular hazard involved as directed by the Airport Authority or the Fire Marshal. All fire apparatus shall be maintained in first class operable condition.

2. The Contractor shall maintain the following items on site:
   a. Two-pound dry chemical extinguisher, or
   b. Four-pound carbon dioxide extinguisher.

3. Carbon tetrachloride chlorobromethene or other vaporizing liquid extinguishers are not permitted inside buildings due to their high toxicity unless approved in writing by the Fire Marshal.

J. Gambling.

1. No person shall conduct gambling in any form or operate gambling devices anywhere on Airport property.

K. Hazards.

1. No person shall use flammable volatile liquids having a flash point of less than 100°F in cleaning of parts, appliances, or for any other purpose unless such operations are conducted in the open air not within 50 feet of an aircraft, away from structures and equipment or in properly ventilated, approved paint booths.

2. No person shall keep or store any flammable liquids, gases, oil, oil wastes, flares, paints, or other similar material in any building within the Airport boundary except that such materials may be kept in specially provided rooms or receptacles approved by the Fire Marshal.

3. Contractors shall provide suitable metal receptacles with covers for the storage of wastes, rags, or other rubbish.

4. No person shall start any open fires of any type, including flare posts, torches or fires in containers formerly used for oil, paint, or similar materials on any part of an Airport without permission of the Director.

L. Picketing and Public Demonstrations.

1. Subject to applicable federal, state and local regulations and laws, no persons shall walk in a picket line as a picketer or take part in any labor or other public demonstration on any Airport property or facilities therein except in those places which may be specifically assigned for use of such picket lines or other public demonstration by the Director.

M. Restricted Areas.

1. No persons shall enter any area posted as being restricted or closed to the public except for the following:

   a. Persons assigned to duty therein;
   b. Persons authorized by the Director; or
   c. Persons under contractual agreement with the Airport Authority or tenants of the Airport Authority.

2. All persons in restricted areas of Memphis International Airport must be duly authorized and must have displayed on their person an official identification badge which will clearly establish the individual by name, contractor affiliation, and construction project completion date.

3. The identification badge must be worn on the outermost garment above the waist except in those cases where there exists an overriding safety consideration approved by the FAA.

N. Signs on the Airport.

1. Signs may not be installed in public view on the Airport without prior approval of the Airport Authority. Proposals should be documented and submitted to the Airport Authority with an accompanying sketch depicting the general appearance and location of the desired sign, and the name and telephone number of an individual to contact.

O. Smoking.

1. Smoking cigarettes, cigars, pipes, and electronic cigarettes is prohibited in all hangars, buildings, rooms, terminals, and aprons of the Airport unless posted as a designated smoking area. This regulation applies to all public and non-public areas including restaurants, bars, lounges, and tenant leased areas except as expressly authorized in writing by the President. No person shall smoke or carry lighted cigars, cigarettes, pipes, matches or any naked flame in or on any fuel storage areas, Air Operations Area, public aircraft parking and storage area, in any other place where smoking is specifically prohibited by signs or upon any open space within 50 feet of any fuel carrier which is not in motion. Smoking by tank vehicle drivers, helpers, repairmen, or other personnel is prohibited while they are driving, making deliveries, filling or making repairs to tank vehicles. No person shall smoke or permit any open flame within 100 feet of any aircraft undergoing fuel service or within at least 50 feet of any hangar or building.

P. Storage of Equipment.

1. Contractors shall store or stock material or equipment in a neat and orderly manner and in a manner not to constitute a hazard to personnel or property.

Q. Trash Containers.

1. Areas to be used for trash and garbage containers shall be designated by the Director and no other areas shall be used. Only trash containers approved by the Director shall be used by contractors for the collection of trash and garbage. The placement of trash or garbage outside approved containers is strictly prohibited.

R. Utilities.

1. The following instructions must be adhered to without exception:

   a. No contractor or employee for any craft shall turn off any utilities without contacting the Airport Authority. This includes water, electrical and HVAC;
   b. No one shall open any electrical substations, distribution or motor control centers without first notifying the Airport Authority. No branch circuits shall be turned off or on, without obtaining permission from the Airport Authority; and
   c. No one shall turn off the water or the HVAC or open any drain lines without notifying the Airport Authority.

2. All notifications for utility disruption must be made through the Airport Authority and coordinated with as much notice as possible but a minimum of 72 hours prior to scheduled shutoff.

3. The Airport Authority has a responsibility to keep the Airport in operation; it is your responsibility to conform to the above instructions. You may contact the Airport Authority.

FOR ANY QUESTIONS CONCERNING SECURITY REGULATIONS CONTACT THE SECURITY COORDINATOR AT 901-922-8146

END OF SECTION 00802

EXHIBIT B

GUARD HOUSE SPECIFICATIONS

1. No less than 5' x 8'
2. Heated, air conditioned and lighted
3. Counter or table (minimum size 16" x 36")
4. House must have two doors to allow guards to check entering and exiting vehicles.
5. Windows on all sides, large enough for guard to observe restricted areas from a seated position.
6. Chair with turning radius of 360 degrees, at a height which allows guards to observe restricted areas through windows.
7. Trash can (dumping daily responsibility of Contractor)

PORTABLE TOILETS

1. Daily cleanliness responsibility of Contractor
2. Restricted to guards only. NO CONSTRUCTION PERSONNEL PERMITTED.

PLACEMENT OF GUARD HOUSES AND PORTABLE TOILETS

1. Area to be designated by Airport Authority
2. Clear Accessibility (paved or gravel)

The Contractor is responsible for supplying and maintaining power source for the guard houses. The contractor is also responsible for maintaining the heating and cooling of same.

END OF EXHIBIT B

EXHIBIT C

CONTRACT SECURITY SERVICE PROJECTION FORM (.PDF VERSION IS AVAILABLE)

Memphis INTERNATIONAL AIRPORT

CONTRACT SECURITY SERVICE PROJECTION FORM

CONSTRUCTION

A CONTRACT SECURITY SERVICE PROJECTION FORM SHOULD BE SUBMITTED TO THE AIRPORT SECURITY COORDINATOR EACH THURSDAY NO LATER THAN **12:00** PM FOR THE FOLLOWING WEEK. CONTRACT SECURITY SERVICES MAY NOT BE AVAILABLE IF AN ACCURATE PROJECTION FORM IS NOT RECEIVED ON TIME. IF YOU HAVE ANY QUESTIONS CONTACT THE **MSCAA** SECURITY COORDINATOR AT **901-922-8021** OR EMAIL @ CROBINSON@FLYMEMPHIS.COM.

IMPORTANT NOTE: THIS FORM MUST BE FILLED OUT COMPLETELY & SIGNED PRIOR TO SUBMITTAL.

PROJECTED SCHEDULE FOR THE WEEK OF:		SCHEDULE				
COMPANY NAME:		DAY	DATE	OPEN TIME	CLOSE TIME	SIGN IN TIME (FOR OFFICIAL USE ONLY)
PROJECT NAME:		SUNDAY				
PROJECT NUMBER:		MONDAY				
LOCATION:		TUESDAY				
POINT OF CONTACT:		WEDNESDAY				
PHONE#:		THURSDAY				
		FRIDAY				
		SATURDAY				

IMPORTANT NOTE: A 24 HOUR NOTICE IS REQUIRED FOR ANY CHANGES TO A SUBMITTED SCHEDULE.

COMPANY AUTHORIZED SIGNATORY AUTHORIZATION/VERIFICATION

(LAST NAME) (FIRST) (MI) (SIGNATURE) (COMPANY) (DATE) (CONTACT TEL #)

ALL REQUESTS FOR SERVICE MUST BE MADE BY AN AIRPORT AUTHORIZED SIGNATORY

CS FM 03 – CONTRACT SECURITY SERVICE PROJECTION FORM

END OF EXHIBIT C

DIVISION 1 – SECTION 01100

SUMMARY OF THE WORK, SEQUENCE OF CONSTRUCTION & LIQUIDATED DAMAGES

PART 1 GENERAL

Related Work:

1. Documents affecting work of this Section include, but are not necessarily limited to Division 0 and Division 1 and other Sections of these Specifications.

1.01 SUMMARY

SUMMARY OF WORK

A. The "Project," of which the "Work" of this Contract is a part, is titled DeWitt Spain Airport Apron Rehabilitation - Construction, MSCAA Project 20-1440-01.

B. The "Work" of this Contract is defined in the Contract Documents to include, but not be limited to, overlay of runway 18/36 at Charles Baker Airport. Work efforts include, but are not necessarily limited to, erosion prevention and sediment control, surface preparation, crack repair, asphalt paving, tack coat, seal coat, pavement markings, electrical work, grading and other efforts as necessary.

C. Airport Improvement Program Project: The work in this contract is included in an Airport Improvement Program Project (which project is subject to receipt of confirmation of federal funds) which is being undertaken and accomplished by the Owner in accordance with the terms and conditions of an agreement between the Memphis-Shelby County Airport Authority and the United States, under the provision of Title 49, United States Code, herein called Title 49, USC, pursuant to which the United States Government has agreed to pay a certain percentage of the costs of the project that are determined to be allowable project costs under that Act. The United States Government is not a party to this contract and no reference in this contract to the FAA or any representative thereof, or to any rights granted to the FAA or any representative thereof, or the United States Government, by the contract, makes the United States Government a party to this contract.

E. FAA Inspection and Review: The Contractor shall allow any authorized representative of the FAA to inspect and review any work or materials used in the performance of this contract.

F. Subcontracts: The Contractor shall insert in each of his subcontracts the provisions contained in paragraphs C. and D., of this section and also a clause requiring the subcontractors to include these provisions in any lower tier subcontracts which they may enter into, together with a clause requiring this insertion in any further subcontracts that may in turn be made.

PART 2 PRODUCTS

Not used.

PART 3 EXECUTION

3.01 PROJECT PHASING AND COMPLETION

A. This is a fixed-duration Contract required to be substantially completed within the timeframe listed: if only the base bid is awarded, the contract time will be one hundred and nine (109) calendar days from the Notice to Proceed ("NTP") date. If the base bid plus bid alternate 1 is awarded, the contract time will be one hundred and thirty-four (134) days from the NTP date The project scope of work is as

stated in Paragraphs 1.01 (A) and (B) above. Final Completion of the project shall be within forty-five (45) days of the Substantial Completion Date.

"Substantial Completion" of the project shall be defined as the stage of construction when work is substantially completed and excludes all punch list items, record drawings, O&M manuals, lien waivers, maintenance training, warranties, consent of surety to final payment, and all other required closeout documentation.

"Final Completion" of the project shall be defined as work that is 100% complete including all punch list items, record drawings, O&M manuals, lien waivers, maintenance training, warranties, consent of surety to final payment, and all other required closeout documentation. Final Completion shall include Demobilization.

"Demobilization" shall consist of all activities by the Contractor and subcontractors necessary for 100% completion of the work and final contract closeout as listed above and all cleanup work and operations, including but not limited to, removal of personnel, equipment, contractor-owned stockpiles, supplies, and incidentals from the project site; return of any and all airport-issued security identification badges; cleanup of all offices, buildings, batch plant, staging/lay-down areas, and other facilities; and restoration of all areas to preconstruction condition or better or to other condition as stipulated in the project plans and specifications; completion and delivery to the Owner of all contract closeout documentation and any other documentation request by Owner, including but not limited to, Operations and Maintenance Manuals, Warranties, Final Lien-waivers, Owner Controlled Insurance Program closeout paperwork, DBE paperwork, Final Project Record Documents and finalization of any and all punch list items. The Demobilization lump sum amount becomes fixed and will not change for the duration of contract.

B. The actual NTP date will be negotiated and mutually agreed by both parties (Owner and Contractor) prior to issuance of the NTP. If mutual agreement cannot be reached between the parties, the Owner reserves the right to establish the actual Notice to Proceed date. The NTP letter will state the date on which the Contractor will begin construction and from which date contract time will be charged. Contractor shall be mobilized and on site ready for work on the date stated in the Notice to Proceed.

C. "Mobilization" shall consist of all preparatory work and operations needed to begin construction activities on the date mutually agreed including but not limited to, movement of personnel, equipment, stockpiles, supplies and incidentals to the project site; the establishment of all offices, buildings, batch plant, staging/lay-down areas and other facilities necessary for work on the project; all other work and operations which must be performed or costs incurred prior to beginning work on the various items on the project site, and utility services for all offices, buildings, batch plant, staging/ lay-down areas, and other facilities. The Mobilization lump sum amount becomes fixed and will not change for the duration of contract.

D. All days are calendar days.

E. The work site will be available as described on the plans and applicable sections of these specifications. Work is permitted 24 hours per day, 7 days per week except that only non-noise producing activities shall be permitted between 11:00 PM and 6:00 AM, except with prior written approval of the Owner.

F. The Contractor shall proceed with the work at such rate of progress to ensure full completion within the specified duration. It is expressly understood and agreed, by and between the Contractor and the Owner, that the contract time for the completion of the work described herein is a reasonable time, taking into consideration the average climatic and economic conditions and other factors prevailing in the locality of the work.

G. If the Contractor experiences weather related delays, he shall submit a report documenting the

weather conditions and delays, if any, experienced during any calendar month.

H. If the Contractor is prevented from working due to any other legitimate reason he shall notify the Owner in writing as per the Lump Sum Construction Contract of the delay and request a corresponding increase in the number of contract days.

I. The Owner shall be the sole judge as to whether or not a request for a contract time extension is legitimate.

J. The Owner reserves the right to adjust limits of construction to accommodate the Owner's requirements for maintenance of Airport Operations and Public Traffic with minimum interruption during the construction of this project. Any required adjustment of limits of construction will be at no additional cost to the Owner.

3.02 LIQUIDATED DAMAGES

A. The OWNER and the CONTRACTOR recognize that time is an essential element of this contract and that delay in completing this project will result in damages due to public inconvenience, obstruction to aviation and vehicular traffic, interference with businesses both on and off the airport, increased operational costs to airport users, and increased costs to the OWNER associated with engineering services, inspections, testing, and project administration. It is therefore agreed that in view of the difficulty of making a precise determination of such damages, the CONTRACTOR will pay the OWNER, sums of money in the amounts herein stipulated, not as a penalty, but as Liquidated Damages for not meeting the schedule for specific critical Project Milestones.

B. If the CONTRACTOR fails to deliver equipment or materials, or perform any services within the times and dates specified in this Contract to achieve the established Milestones, or any extensions granted in writing, the CONTRACTOR shall pay to the OWNER as Liquidated Damages, the sums specified in Table 1, below:

Table 1

Milestone	***Duration***	***Liquidated Damages***
Phase 1	7 days	$1,000 per calendar day
Phase 2	45 days	$1,000 per calendar day
Phase 3	5 days	$1,000 per calendar day
Phase 4	60 days	$1,000 per calendar day
Substantial Completion (base bid)	117 days	$1,000 per calendar day
Final Completion & Demobilization	30 days	$500 per calendar day

D. Application of Liquidated Damages is not a Change to the Contract. The application of any Liquidated Damages to one Milestone shall not effect a change in the subsequent Contract Milestone dates or relieve CONTRACTOR of his responsibility to meet all construction schedules. If multiple Milestone dates are missed, Liquidated Damages for more than one Milestone will be imposed concurrently.

E. If Liquidated Damages are imposed, the OWNER shall deduct the same from any amounts due the CONTRACTOR at the time Liquidated Damages are imposed. If sufficient amounts are not due to the CONTRACTOR to cover such Liquidated Damages, then the OWNER shall invoice the CONTRACTOR for the amounts due to the OWNER. Such invoices shall become due and payable immediately upon receipt by the CONTRACTOR.

F. Liquidated Damages are in addition to any other damages or penalties which may be assessed and withheld under other provisions of this contract.

3.03 COMPLETION BONUS

NO completion bonus has been budgeted for this project.

END OF SECTION 01100

DIVISION 1 – SECTION 01210

ALLOWANCES

PART 1 GENERAL

1.01 SUMMARY

A. To provide adequate budget and bonding to cover items not precisely determined by the Owner prior to bidding, allow within the proposed Contract Sum the amounts described in this Section.

B. Unless stated otherwise herein, all allowances are to be paid as Time and Materials Work per GP-150.

C. Related Work:

1. Documents affecting Work of this Section include, but are not necessarily limited to, Division 0, Division 1 and other Sections of these Specifications.
2. Other provisions concerning Allowances may be stated in other Sections of these Specifications.

1.02 SPECIFIC ALLOWANCES – The following cash allowances are included within this Contract:

A. None.

END OF 01210

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DIVISION 1 – SECTION 01230

ALTERNATES

PART 1 GENERAL

1. 01 SUMMARY

A. This selection includes identification of each Alternate by number, and describes the basic changes to be incorporated into the Work if a particular Alternate is made a part of the Work by specific provisions in the Agreement between the Owner and the Contractor.

B. Related Work:

1. Documents affecting Work of this Section include, but are not necessarily limited to, Division 0, Division 1 and other Sections of these Specifications.

2. Materials and methods to be used in the Base Bid and in the Alternates also may be described on the Drawings and/or in pertinent other Sections of these Specifications.

3. Method for stating the proposed Contract Sum is shown on the Bid Form.

1.02 SUBMITTALS

A. All Alternates described in this Section are required to be reflected on the Bid Form as submitted by the Bidder.

B. Do not submit Alternates other than as described in this Section.

1.03 SELECTION OF ALTERNATES

A. Immediately after award of the Contract, or as soon thereafter as the Owner has made a decision on which, if any, of the Alternates will be selected, thoroughly and clearly advise necessary personnel and suppliers as to the nature of Alternates selected by the Owner.

B. If the Owner elects to proceed on the basis of one or more of the described Alternates, make modifications to the Work required in providing the selected Alternate or Alternates to the approval of the Owner and at no additional cost to the Owner except as proposed in the Bid.

1.04 ADVANCE COORDINATION

A. Immediately after award of the Contract, or as soon thereafter as the Owner has made a decision on which, if any, of the Alternates will be selected, thoroughly and clearly advise necessary personnel and suppliers as to the nature of Alternates selected by the Owner.

PART 2 ALTERNATES – The following alternates are included within this Contract:

A. None.

END OF SECTION 01230

DIVISION 1 – SECTION 01250

AMENDMENT PROCEDURE

PART 1 GENERAL

1.01 SUMMARY

A. Make such changes in the Work, in the Contract Price, in the Contract Time, or any combination thereof, as are described in written Amendments signed by the Owner and the Contractor and issued after execution of the Construction Contract, in accordance with the provisions of this Section.

B. Related work:

1. Documents affecting work of this Section include, but are not necessarily limited to, Division 0, Division 1, and other Sections of these Specifications.

2. Any proposal for a change in the Work shall include DBE participation consistent with the required DBE percentage for this Contract. If the Contractor is unable to meet said DBE percentage, a written justification of the good faith efforts made shall be submitted along with the response to the Engineer's or Owner's proposal request.

3. Engineer or Owner supplemental instructions:

a. From time to time during progress of the Work the Engineer or Owner may issue supplemental instructions, which interpret the Contract Documents or order minor changes in the Work without change in Contract Sum or Contract Time.

b. Should the Contractor consider that a change in Contract Sum or Contract Time is required, he shall submit an itemized proposal to the Engineer or Owner immediately and before proceeding with the Work. If the proposal is found to be satisfactory and in proper order, the supplemental instructions in that event will be superseded by an Amendment.

4. Proposal requests:

a. From time to time during progress of the Work the Engineer or Owner may issue a Request for Proposal (RFP) proposal request for an itemized quotation for changes in the Contract Price and/or Contract Time incidental to proposed modifications to the Contract Documents.

b. This will not be an Amendment, and will not be a direction to proceed with the changes described therein.

1.02 QUALITY ASSURANCE

A. Include within the Contractor's quality assurance program such measures as are needed to assure familiarity of the Contractor's staff and employees with these procedures for processing Amendment data.

1.03 PROCESSING PROPOSAL REQUESTS

A. Make timely written reply to the Engineer or Owner in response to each proposal request. Proposal requests will be numbered in sequence and dated.

1. State proposed change in the Contract Sum, if any.

2. State proposed change in the Contract Time of Completion, if any.

3. Clearly describe other changes in the Work, if any, required by the proposed change or desirable therewith.

4. State amount of DBE participation applicable to the proposed changes.

5. Include full backup data such as subcontractor's letter of proposal or similar information.

6. Submit this response in single copy.

B. When cost or credit for the change has been agreed upon by the Owner and the Contractor, or the Owner has directed that cost or credit be determined in accordance with provisions of Division 0 and Division 1 Specifications, the Engineer or Owner will prepare an Amendment for execution by the Owner and Contractor.

1.04 PROCESSING AMENDMENTS

A. Amendments will be numbered in sequence, and dated.

1. The Amendment will describe the change or changes, will refer to the proposal requests or supplemental instructions involved, and will be signed by the Contractor and Owner, in sequence.

2. The Engineer or Owner will electronically issue each Amendment to the Contractor.

a. The Contractor shall promptly sign and return to the Engineer or Owner for further processing by the Owner.

b.

c. The Owner will sign and return a copy to the Contractor for distribution.

END OF SECTION 01250

DIVISION 1 – SECTION 01310

PROJECT MANAGEMENT AND COORDINATION

PART 1 PROJECT MANAGEMENT

1.01 DESCRIPTION

A. The Contractor will be required to utilize an integrated construction project management software platform for coordination, meeting organization, submittals, payment applications, project records, drawings, specifications, reports, punch-lists, and schedules throughout the duration of the project.

1. Project Management software platform utilized for this project will be Procore.

B. The project management software will be provided by the Owner. The Contractor will be allowed seat licenses with access to the project management software as needed for the duration of the project.

C. Any training required in order for the Contractor to become proficient in the utilization of the construction project management software, shall be the responsibility of the Contractor at no additional cost to the Owner.

PART 2 PRECONSTRUCTION CONFERENCE

2.01 SUMMARY

A. To help clarify construction contract administration procedures, the Engineer or Owner will schedule a Preconstruction Conference prior to start of the Work, as described in this Section.

B. Related Work:

1. Documents affecting work of this Section include, but are not necessarily limited to, Division 0 and Division 1 Specification Sections.

2.02 AGENDA AND MEETING SUMMARIES

A. To the maximum extent practicable, advise the Engineer or Owner at least 24 hours in advance of the Conference as to items to be added to the agenda.

B. The Engineer or Owner will compile summaries of the Conference, and will furnish copies of the summaries to the Contractor. The Contractor may make and distribute such other copies as he wishes.

2.03 QUALITY ASSURANCE

A. For those persons designated by the Contractor, his subcontractors, and suppliers to attend the Pre-Construction Conference, provide required authority to commit the entities they represent to schedules and solutions agreed upon in the Conference.

2.04 PRECONSTRUCTION CONFERENCE

A. The Conference will be held at a time and date established by the Engineer or Owner. If requested by the Engineer or Owner, additional conferences will be held.

B. Attendance:

1. Insure attendance by authorized representatives of the Contractor and major Subcontractors.

2. The Engineer or Owner will advise other interested parties, including the Owner, and request their attendance.

C. Minimum agenda:

1. Organizational arrangement of Contractor's forces and personnel and those of subcontractors, material suppliers, and the Engineer or Owner;

2. Channels and procedures for communications;

3. Construction schedule, including sequence of critical work;

4. Contract Documents, including distribution of required copies of Drawings and revisions;

5. Processing of Shop Drawings and other data submitted to the Engineer or Owner for review;

6. Processing of field decisions and Change Orders;

7. Rules and regulations governing performance of the Work;

8. Procedures for safety and first aid, security, quality control, housekeeping, and related matters; and

9. Reports required and schedule for submittal.

10. Items requiring long lead time and special requirements.

PART 3 PROGRESS MEETINGS

3.01 DESCRIPTION

A. Work included: To enable orderly review during progress of the Work, and to provide for systematic discussion of problems, the Engineer or Owner will conduct project meetings throughout the construction period.

B. Related work:

1. Documents affecting work of this Section include, but are not necessarily limited to, General Provisions, and other Sections of these Specifications.

2. The Contractor's relations with his subcontractors and materials suppliers, and discussions relative thereto, are the Contractor's responsibility and normally are not part of project meetings content.

3.02 SUBMITTALS

A. Agenda items: To the maximum extent practicable, advise the Engineer or Owner at least 24 hours in advance of project meetings regarding items to be added to the agenda.

B. Summaries:

1. The Engineer or Owner will compile summaries of each project meeting, and will furnish copies to the Contractor and the Owner.

2. Recipients of copies may make and distribute such other copies as they wish.

3.03 QUALITY ASSURANCE

A. For those persons designated by the Contractor to attend and participate in project meetings, provide required authority to commit the Contractor to solutions agreed upon in the project meetings.

PART 4 EXECUTION

4.01 MEETING SCHEDULE

A. Project meetings will be held at times as determined by the Engineer or Owner.

B. Coordinate as necessary to establish a mutually acceptable schedule for meetings.

4.02 MEETING LOCATION

A. The Engineer or Owner will establish the meeting location.

4.03 PROJECT MEETINGS

A. Attendance:

1. To the maximum extent practicable, assign the same person or persons to represent the Contractor at project meetings throughout progress of the Work.

2. Subcontractors, materials suppliers, and others may be invited to attend those project meetings in which their aspect of the Work is involved.

B. Minimum agenda:

1. Review, revise as necessary, and approve summaries of previous meetings.

2. Review progress of the Work since last meeting, including status of outstanding submittals.

3. Identify problems which may impede planned progress.

4. Develop corrective measures and procedures to reestablish planned schedule.

5. Discuss other current business.

C. Revisions to summaries:

1. Unless published summaries are challenged in writing prior to the next regularly scheduled progress meeting, they will be accepted as properly stating the activities and decisions of the meeting.

2. Persons challenging published summaries shall reproduce and distribute copies of the challenge to all indicated recipients of the particular set of summaries.

3. Challenge to summaries shall be settled as priority portion of "old business" at the next regularly scheduled meeting.

END OF SECTION 01310

DIVISION 1- SECTION 01320

SCHEDULES AND REPORTS

PART 1 GENERAL

1.01 SUMMARY

A. The work under this Contract shall be planned, scheduled and reported using computerized precedence diagram format of the Critical Path Method in calendar days, unless otherwise specifically provided in the Contract Documents. The Detailed Construction Schedule shall be developed by using the latest revision of Microsoft Project, or approved equal computer software.

B. Related Work:

1. Documents affecting work of this Section include, but are not necessarily limited to,other Sections of these Specifications.

2. Other provisions concerning Schedules and Reports are stated to Specification Sections:
   01100 – Summary of Work, Sequence of Construction & Liquidated Damages
   General Provision Section 60 - Control of Materials
   General Provision Section 90 - Measurement and Payment

PART 2 PRODUCTS

Not Used.

PART 3 EXECUTION

3.01 GENERAL REQUIREMENTS

A. The Detailed Construction Schedule shall be developed by using the latest revision of Microsoft Project, or approved equal computer software that is compatible with Owner’s scheduling software.

B. The primary objectives of the requirements of this section are:

1. to insure adequate planning and execution of the Work by Contractor;

2. to assist Owner and Engineer in evaluating the progress of the Work;

3. to provide a mechanism or tool for use by the Owner, Engineer and Contractor in determining and monitoring any actions of the Contractor which may be required in order to comply with the requirements of the Contract relating to the timely completion of the various portions of the Work

C. The Detailed Construction Schedule, defined in Paragraph 3.04, shall represent the Contractor's commitment and intended plan for completion of the Work in compliance with the Contract. The Contractor will not:

1. Misrepresent to the Owner its planning, scheduling, and coordination of the work;

2. Utilize schedules different from those provided to the Owner and Engineer for the direction, execution and coordination of the work;

3. Utilize schedules which are not feasible or realistic; or

4. Prepare schedules, updates, revisions or reports which do not accurately reflect the Contractor's actual intent or the Contractor's reasonable and actual expectations as to: the sequences of activities, labor availability, productivity, or efficiency; expected or reasonably foreseeable inclement weather conditions; the percentage complete of any activity or path of activities; completion of any item of work or activity; projected dates of completion; delays, slippage, or problems encountered or expected and Subcontractor requests for time extensions,

D. Once approved by the Engineer or Owner, the Detailed Construction Schedule will become the Schedule of Record for coordinating the work, scheduling the work, monitoring the work, issuing progress payments, evaluating time extension requests, and all other objectives listed in Paragraph 3.01.B. The Contractor is required to employ whatever means he deems necessary to implement the Detailed Construction Schedule and to comply with the requirements of this Section. Updates shall be provided to the Engineer or Owner at each construction progress meeting or as requested by the Engineer or Owner. Updates shall be both electronic media and hard copy.

E. Contractor is responsible for determining the sequence of activities, the time estimates of the detailed construction activities and the means, methods, techniques and procedures to be employed. Each construction schedule shall represent the Contractor's best judgment of how he will prosecute the Work in compliance with the Contract.

F. Contractor shall consult with his Subcontractors and Suppliers (if any) relating to the preparation of each construction schedule. Subcontractors shall receive copies of each construction schedule and shall be continually advised of any updates or revisions to each construction schedule as the Work progresses.

G. When there are separate contractors working concurrently on Airport whose work must interface or be coordinated with the Work of Contractor, Contractor shall coordinate his activities with the activities of the separate contractors and shall, prior to the submission of any construction schedule to the Engineer or Owner, obtain written approval of his construction schedule by the separate contractors.

H. To carry out the intent of this Section, the Contractor agrees that the reasonable exercise of any rights under this Section by the Engineer or Owner shall not be grounds for any claim by Contractor or any of his Suppliers, Subcontractors or Sub-subcontractors of alleged interference, lack of cooperation, delay, disruption, negligence or hindrance by Owner or Engineer, and Contractor covenants not to sue therefor.

I. It is understood and agreed that the Detailed Construction Schedule, defined in Paragraph 3.04, is to represent Contractor's best plan and commitment for the Work; however, Contractor acknowledges that the Detailed Construction Schedule may have to be revised from time-to-time as progress proceeds. Contractor further acknowledges and agrees that the Owner and Engineer do not guarantee that:

1. Any changes, modifications or adjustments to any schedule by Contractor can only be made by the written approval of the Engineer or Owner.

J. It is understood and agreed that should the Engineer or Owner provide the Contractor, at Contractor's request, with any advice relating to the scheduling or coordination of the Work or any other matter that:

1. Owner and Engineer shall not be liable to Contractor for any errors, omissions, negligence or deficiencies which may in any way occur because of same;

2. Such advice is provided solely as aids in the development by Contractor of a

representation of Contractor's actual construction plan and schedule in accordance with the requirements of the Contract Documents, and Owner and Engineer shall not be liable to Contractor should Contractor rely on such advice or counsel to his detriment;

3. Such advice shall not relieve Contractor of any responsibility under Paragraph 3.01.E hereof for all construction means, methods techniques, sequences and procedures and for planning, scheduling and coordinating all portions of the Work; and

4. Any advice provided by the Engineer or Owner or the lack or alleged untimeliness thereof will not in any way take the place of or relieve the Contractor of full responsibility for compliance with all requirements of the Contract, including, but not limited to the obligations to complete the Work within the Contract.

K. Approval or acceptance by the Owner or Engineer of any Contractor's construction schedule, or any revisions or updates thereto, shall not relieve the Contractor of the responsibility for accomplishing the Work by the Project Substantial Completion date.

L. Contractor shall be solely responsible for expediting the delivery of all materials and equipment to be furnished by him so that the progress of construction shall be maintained according to the currently approved construction schedule for the Work. Contractor shall notify the Owner or Engineer in writing, and in a timely and reasonable manner, whenever Contractor determines or anticipates that the delivery date of any material or equipment to be furnished by Contractor will be later than the delivery date indicated by the currently approved construction schedule, or the current update thereof as herein provided.

3.02 NOT USED

3.03 DETAILED CONSTRUCTION SCHEDULE DRAFT

A. No later than two (2) weeks after the Notice to Proceed, the Contractor shall complete a draft of the Detailed Construction Schedule in accordance with the requirements of this Paragraph 3.03.

B. Except for procurement activities, Contractor shall differentiate activities of the Detailed Construction Schedule Draft so that no single activity shown has a duration longer than twenty-eight (28) calendar days, unless the Engineer, in its sole discretion, shall approve a longer duration for certain specific activities.

C. The Detailed Construction Schedule Draft shall represent the Contractor's commitment and intended plan for completion of the Work in compliance with Contract Times listed elsewhere in the Contract. The Detailed Construction Schedule Draft shall take into account all foreseeable activities to be accomplished by any separate contractors, and interface dates with utility owners, the Owner's operations and others. The Detailed Construction Schedule Draft shall anticipate all necessary manpower and resources to accomplish the activities within the durations set forth therein.

D. The Detailed Construction Schedule Draft shall consist of a time-scaled, detailed network graphic representation of all activities, which are part of the Contractor's construction plan. The Detailed Construction Schedule Draft submission shall include, but not be limited to, the following information:

1. Project name;
2. Activities of completed Work ready for use by next trade, Owner, etc.;
3. Activities relating to different areas of responsibility, such as subcontracted Work, which is distinctly separate from that being done by the Contractor directly;
4. Activities relating to different categories of Work as distinguished by craft or crew requirements;
5. Activities relating to different categories of Work as distinguished by equipment requirements;
6. Activities relating to different categories of Work as distinguished by materials;

7. activities relating to distinct and identifiable subdivisions of Work;
8. Activities relating to locations of Work within the Project that necessitates different times or crews to perform;
9. Activities relating to outage schedules for existing utility services that will be interrupted during the performance of the Work;
10. Activities relating to acquisition and installation of equipment, materials and supplies installed by the Owner and/or separate contractors;
11. Activities relating to material to be stored on site;
12. Contract Times consistent with those required in the contract;
13. A legible time scaled network diagram;
14. Activity durations not exceeding twenty-eight (28) calendar days for all activities for which the Contractor will perform actual field work. Material procurement, submittals, concrete curing and other similar activities may exceed twenty-eight (28) calendar days for this draft submission only.

3.04 DETAILED CONSTRUCTION SCHEDULE

A. Prior to any monthly Application for Payment, the Contractor shall complete the Detailed Construction Schedule to the satisfaction of the Owner or Engineer.

B. The Detailed Construction Schedule shall represent the Contractor's commitment and intended plan for completion of the Work in compliance with the Contract.

C. The Owner/Engineer reserves the right to require the Contractor to furnish such manpower, materials facilities and equipment and shall work such hours, including additional shifts and overtime operations as may be necessary, to insure completion of the Work or specified portions thereof within the specific dates as set forth in the Contract Documents. If it becomes apparent to the Owner or Engineer that the work, or any required portion thereof, will not be completed by any such dates, the Contractor shall undertake the following actions, at no additional cost to the Owner, and comply with the requirements as set forth in Section 01320, 3.07 and 3.08, in order to ensure that it complies with all completion requirements:

1. Increase the quantity of manpower, materials, trades, crafts, and equipment and facilities on the site;

2. Increase the number of working hours per shift, shifts per working day, or any combination of the foregoing; and

3. Reschedule activities to achieve maximum activity accomplishment.

3.05 DETAILED CONSTRUCTION SCHEDULE CONTENT

A. The Detailed Construction Schedule shall consist of a time-scaled graphic representation of all activities, which are part of the Contractor's construction plan and an accompanying listing of each activity's dependencies and interrelationships.

B. The Contractor shall anticipate and account for, as a minimum, the potential loss of the number of **calendar** days listed below for each calendar month due to weather and shall schedule the work accordingly.

January	12	July	6
February	10	August	6
March	9	September	4
April	6	October	5

May	8	November	6
June	5	December	10

The preceding days were derived from historical data provided by the National Climatic Data Center regarding rainfall at Memphis International Airport. They represent a number less than the actual number of days of measurable rainfall that can be expected to occur during a twenty-four (24) hour period for the months indicated. **The Contractor shall make his own determination as to the likely impact of weather on his operation and shall include as part of the Detailed Construction Schedule submission an accounting of how the impact of anticipated weather was determined and accounted for in the schedule.** These values listed above are the minimum number of weather related days the Contractor shall consider in developing his Detailed Construction Schedule. It is further understood that said calendar day period shall be derived through assuming that work will take place on a calendar day basis.

The Owner or Engineer will continually monitor the effects of weather and when found justified, grant time extensions, if required, at the end of the Contract. In the event less weather days are actually encountered than provided for in this section, those days will accrue to subsequent months of the phase or contract and be balanced against actual weather. In accordance with the Contract Documents weather days occurring during the extension beyond the original completion date will be compensated day for day, if justified. No weather days will be granted beyond the final Contract completion date as computed herein.

C. All activity durations shall be given in calendar days.

D. Contractor shall plan his operations and schedule the work to ensure that the critical path runs through on-site construction activities and that off-site procurement activities do not control the critical path of the Detailed Construction Schedule, unless approved in writing by the Owner or Engineer.

3.06 UPDATING OF CONSTRUCTION SCHEDULE/PROGRESS REPORTS

A. The Detailed Construction Schedule will be reviewed and updated as needed during each project progress meeting.

3.07 RECOVERY SCHEDULE

A. Should the updated Detailed Construction Schedule, at any time during Contractor's performance, show, in the sole opinion of the Owner or Engineer, that the Contractor is seven (7) or more days behind schedule for any location or category of work, or should Contractor be required to undertake actions under Paragraph 3.04.D hereof, the Contractor shall immediately prepare a Recovery Schedule explaining and displaying how Contractor intends to reschedule his Work in order to regain compliance with the Approved Detailed Construction Schedule during the immediate subsequent pay period.

3.08 SCHEDULE REVISIONS

A. Should Contractor desire to or be otherwise required under the Contract to make modifications or changes in his method of operation, his sequence of Work or the durations of the activities in his Construction Schedule, he shall do so in accordance with Paragraph 3.04 of this specification. The approved Detailed Construction Schedule may only be revised by the written approval of the Owner or Engineer as provided herein.

END OF SECTION 01320

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DIVISION 1 – SECTION 01321

CONSTRUCTION SURVEYING

PART 1 GENERAL

1.01 SUMMARY

A. This section describes the Owner's airport survey grid and surveying requirements.

B. Related Work:
   1. Documents affecting work of this Section include, but are not necessarily limited to the General Provisions and other Sections of these Specifications.

PART 2 PRODUCTS

Not used.

PART 3 EXECUTIONS

3.01 EXISTING SURVEY CONTROL MONUMENTS

A. The Owner has established an airport-wide survey grid consisting of both first order and second order survey monuments. The monuments are distributed both inside and outside the Air Operations Area fence.

B. The monuments are tied to the Tennessee State Plane Coordinate System in U.S. Survey feet with the North American Datum, 1983.

C. Survey control monuments typically, but not always, consist of aluminum disks stamped with identifying codes, set in concrete, and marked by orange witness posts.

D. The Contractor may obtain the current Survey Control Monument Manual from the Program Manager.

3.02 REQUIREMENTS

A. Contractor is responsible for all construction surveying.

B. Any deviations from the existing grades shall be immediately reported to the Program Manager.

C. Contractor shall tie the project to the survey grid as established by the monuments described in section 3.01.

D. Contractor shall protect all survey monuments within the vicinity of the project and all survey monuments used for survey while they are occupied.

E. The Contractor shall, at his expense, have a Tennessee Professional Land Surveyor replace any monument disturbed or destroyed by Contractor's construction activities (using first order techniques); replaced monuments shall be located at least ten feet, but not more than fifty feet, from the location of the disturbed monument. New monuments shall consist of aluminum disks stamped with an identifying code, set in concrete using a procedure approved by Program Manager, and marked by an orange witness post. Replaced-monument survey information shall be provided to Owner in exact format as contained within Owner's Survey Control Monument Manual.

END OF SECTION 01321

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DIVISION 1- SECTION 01322

AERIAL PHOTOGRAPHS

PART 1 GENERAL

1.01 SUMMARY

A. Provide photographs taken at specified stages during construction, and in accordance with provisions of this Section.

B. Related work:

1. Documents affecting work of this Section include, but are not necessarily limited to, General Provisions and other Sections of these Specifications.

1.02 SUBMITTALS

A. Except as otherwise directed and paid for, submit one electronic file of each photograph.

1.03 QUALITY ASSURANCE

A. Secure the services of a professional photographer who is skilled and experienced in construction photography and whose work samples are acceptable to the Engineer.

B. Do not replace the photographer without the Engineer's written approval.

PART 2 PRODUCTS

2.01 AERIAL PHOTOGRAPHS

A. Provide electronic files, at a quality and resolution capable of printing the photographs at a size up to 36” x 24”.

B. Record each electronic file’s filename in a manner to show:

1. Job number;

2. Location from which photographed;

3. Date of photograph;

C. Do not permit photographs to be issued for any other purpose without specific written approval from the Engineer.

PART 3 EXECUTION

3.01 AERIAL PHOTOGRAPHY

A. Except as otherwise specifically approved by the Engineer, make the photographs within three calendar days of the date of each Application for Payment.

1. To the maximum extent practicable, make photographs at approximately the same time of day throughout progress of the Work.

2. When inclement weather is anticipated, consult with the Engineer and determine acceptable alternative arrangements.

B. Except as otherwise specifically approved by the Engineer, take the photographs from four (4) directions. The photographs required shall be oblique aerial photographs. One shall be taken from the north, one from the south, one from the east and one from the west looking at the entire project, or as directed by the Engineer.

1. Select the locations to provide diversified overall views of the Work, from positions, which are expected to remain accessible throughout progress of the Work.

2. Identify each location by word description, by marked drawing, or by such other means as acceptable to the Engineer, to enable future photographs to be taken from the same position.

3. When so directed by the Engineer because of the stage of construction, change one or more of the locations as the Engineer directs.

C. Make each photograph clear, in focus, with high resolution and sharpness, and with minimum distortion.

END OF SECTION 01322

DIVISION 1 – SECTION 01325

DELAYS AND EXTENSIONS OF TIME

1.01 DESCRIPTION

A. Work included:

1. Delays and extensions of time.

B. Related Work:

1. Documents affecting work of this Section include, but are not necessarily limited to the General Provisions, and other Sections of these Specifications.

1.02 OBLIGATION OF OWNER AND PROGRAM MANAGER

A. Neither the Owner nor the Program Manager shall be obligated or liable to the Contractor for any damages, cost or expenses of any type which the Contractor, its subcontractors, sub-subcontractors, or any other person may incur as a result of any disruption or delay from any cause, regardless of the actual source of delay, whether avoidable or unavoidable, it being understood and agreed that the Contractor's sole and exclusive remedy in such event shall be an extension of the Contract Time, but in accordance with provisions of the Contract Documents.

B. Except for weather delays, any claim for extension of time shall be made in writing to the Program Manager not more than ten (10) days after commencement of such delay, otherwise, such claim will be waived. The Contractor shall provide an estimate of the probable effect of such delay on the progress of the Work.

C. The time during which the Contractor is delayed in performance of the work caused by the acts or omissions of the Owner, Program Manager or their employees or agents, or by acts of God, fires, floods, epidemics, quarantine restrictions, riots, civil commotions or freight embargoes, or other conditions beyond the Contractor’s control which the Contractor could not have reasonably foreseen and provided against shall be added to the Contract Time; however, the Contractor must submit his claim for such delays in accordance with the requirements of this Section and any other applicable provisions of these Contract Documents in order to be considered for an extension of time.

D. The Contract Time shall be adjusted only for changes in the work pursuant to GP-40, suspensions of the work, excusable delays or emergencies. Whenever the Contractor requests an extension of the Contract Time, the Contractor shall furnish such justification and supporting evidence as required by this section and such other and additional information as the Owner may deem necessary to determine whether the Contractor is entitled to an extension of the Contract Time. All such requests shall conform to all of the requirements of the Contract Documents, shall include evidence that the reasons for the requested Contract Time extension were beyond the control of the Contractor, and the Contractor shall bear the burden of substantiating and proving the necessity of an extension to the Contract Time. The Owner, with the assistance of the Program Manager, shall review all requests for Contract Time extensions and shall advise the Contractor of its decision and finding of fact in writing. If the Owner determines that the Contractor is entitled to an extension of the Contract Time, the length of the extension shall be based upon the currently approved detailed construction schedule and on all other relevant data, which data shall be incorporated into and from the basis for revision to the construction schedule.

The Contractor acknowledges and agrees that the actual delays due to said changes, suspension of the work, or excusable delays in activities which, according to the detailed construction schedule, do not affect the Contract Time, shall not affect the Contract Time, and therefore, cannot form the basis for an extension in the Contract Time or a change in the construction schedule.

E. The Contractor shall be entitled to an extension of the Contract Time but no increase in the Contract sum, for delays arising from unforeseeable causes beyond the control and without the fault of negligence of the Contractor or its Subcontractors as follows:

1. Acts of God, tornadoes, fires, blizzards, earthquakes, or floods that severely damages completed work or stored materials.

2. Acts of the public enemy; acts of the state, federal or local governments in their sovereign capacities; and acts of a separate contractor in the performance of a separate contract with the Owner relating to this or another project.

F. The Contractor shall not be entitled to any extension of Contract Time resulting from any condition or cause unless the Contractor strictly complies with the requirements of this Section and the Contractor must submit to the Program Manager within ten (10) days of the first instance of the delay a written request for an extension in the Contract Time which shall include the following information: (a) the nature of the delay; (b) the date of anticipated date of commencement of the delay; (c) activities on the schedule affected by the delay, and/or new activities created by the delay and their relationship with existing activities; (d) identification of persons or organizations or events responsible for the delay; and (e) recommended action to avoid or minimize the delay.

G. No claim for delay shall be allowed and the Contractor waives any such claim if the Contractor fails to furnish the written request, required by this or other sections, within the period of time specified therein.

END OF SECTION 01325

DIVISION 1 – SECTION 01330

SUBMITTALS

PART 1 GENERAL

1.01 SUMMARY

A. This section describes the process for handling Contractor submittals.

B. Related work:

1. Documents affecting work of this Section include, but are not necessarily limited to, Division 0, Division 1, and other Sections of these Specifications

1.02 SUBMITTALS

A. Except as otherwise specified below, as soon as practicable after contract award and without causing delay in the work, electronically submit, submittals of all items for which submittals are specified in other sections, and for all major submittal equipment whether specified in other sections or not. Alternatively, all Submittals may be submitted electronically in lieu of hard copies, if possible. Each submittal shall be clearly marked with the project name, dated, and accompanied by a letter of transmittal listing all items included in the submittal and referencing the project specification page and article numbers applicable to each item.

1. Submittals shall include all test results and/or certificate necessary to show that the item conforms to the standards specified. Such standards shall include ASTM, AASHTO, FAA, PCA, Federal Specifications or any other standard listed in these specifications.

1.03 QUALITY ASSURANCE

A. Before submission to the Engineer or Owner, the Contractor shall check the submittals of all items furnished directly by him, and the applicable Subcontractor shall check the submittals of all items furnished by the Subcontractor involved, as follows: check the submittal drawings for completeness and compliance with the contract documents; check and verify all dimensions, field conditions certifications relating to the submittals and certify in writing that these checks have been made.

1. The Engineer or Owner will return for resubmission, all submittals without the above specified approval and certification, and all submittals which in the Engineer’s or Owner's opinion contain numerous discrepancies and/or have not been checked by the Contractor or Subcontractor.

PART 2 PRODUCTS

Not used.

PART 3 EXECUTION

3.01 SUBMITTAL REVIEW

A. After the Owner or Engineer has reviewed the submittals, except as otherwise specified below, submittals will be dated, and returned to the Contractor. If submittals are rejected, they will be returned with indications of the required corrections and changes.. Make such corrections and changes as indicated. Resubmit submittals as specified above, as often as required by the Engineer

or Owner to complete the review. No correction or change indicated on submittals shall be considered as an order for extra work.

B. Submittals reviewed by the Owner or Engineer will be a general review only, and acceptance will not relieve Contractor or Subcontractor of responsibility for accuracy of submittals, proper fitting, coordination, construction or work, and furnishing materials and work required by Contract but not indicated on submittals. Review of submittals shall not be construed as accepting departures from Contract requirements.

C. Any material ordered, or work performed prior to obtaining an approved submittal shall be at the Contractor's risk and subject to rejection.

END OF SECTION 01330

DIVISION 1 – SECTION 01351

STORAGE AND PROTECTION

PART 1 GENERAL

1.01 SUMMARY

A. Protect products scheduled for use in the Work by all means including, but not necessarily limited to, those described in this Section.

B. Related Work:

1. Documents affecting work of this Section include, but are not necessarily limited to, Division 0, and Division 1 of these Specifications.

2. Additional procedures may also be prescribed in other Sections of these Specifications.

1.02 QUALITY ASSURANCE

A. Include within the Contractor's quality assurance program such procedures as are required to assure full protection of work and materials.

1.03 MANUFACTURERS' RECOMMENDATIONS

A. Except as otherwise approved by the Owner or Engineer, determine and comply with manufacturers' recommendations on product handling, storage, and protection.

1.04 PACKAGING

A. Deliver products to the job site in their manufacturer's original container, with labels intact and legible.

1. Maintain packaged materials with seals unbroken and labels intact until time of use.

2. Promptly remove damaged material and unsuitable items from the job site, and promptly replace same with material meeting the specified requirements, at no additional cost to the Owner.

B. The Owner or Engineer may reject as non-complying such material and products as do not bear identification satisfactory to the Owner or Engineer such as manufacturer, grade, quality, and other pertinent information.

1.05 PROTECTION

A. Protect finished surfaces, materials, trenches, earthwork, etc. from weather, construction operations, etc.

B. Maintain finished surfaces clean, unmarred, and suitably protected until accepted by the Owner.

1.06 REPAIRS AND REPLACEMENTS

A. In event of damage, promptly make replacements and repairs to the approval of the Owner or Engineer and at no additional cost to the Owner.

B. Additional time required to secure replacements and to make repairs will not be considered by the Owner or Engineer to justify an extension in the Substantial Completion Date.

END OF SECTION 01351

DIVISION 1 – SECTION 01353

RADIO COMMUNICATIONS

1.01 DESCRIPTION

A. Work Included

1. Provide radio communication with local traffic via the CTAF Frequency **122.7**.

B. Documents affecting work of this Section include, but are not necessarily limited to General Provisions, and other Sections of these Specifications.

1.02 RADIO COMMUNICATIONS

A. When required by the Contract Documents, and when work under this Contract is in progress within the Air Operations Area (AOA), the Contractor's job superintendent or other authorized representative of the Contractor on the job site shall coordinate such work with the Program Manager and the Program Manager shall maintain approved 2-way radio communication with the Airport Control Tower, for coordination of work with airport operations in progress.

END OF SECTION 01353

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DIVISION 1 – SECTION 01455

QUALITY CONTROL AND QUALITY ASSURANCE TESTING PROGRAMS

PART 1 GENERAL

1.01 SUMMARY

A. This Section describes quality control and quality assurance testing and inspections required to be provided by the Contractor and the Owner.

B. Related work:

1. Documents affecting work of this Section include, but are not necessarily limited to, Division 0, Division 1 and other Sections of these Specifications.

2. Requirements for testing are described in various Sections of these Specifications.

1.02 QUALITY CONTROL and QUALITY ASSURANCE TESTING PROGRAMS

A. Contractor Quality Control Testing: At his own expense, the Contractor shall make separate arrangements for and be fully responsible for all quality control testing as required by the technical specifications and General Construction Items C-100.

B. Owner Quality Assurance Testing: At no cost to the Contractor, the Owner will make arrangements for the services of an independent testing laboratory for quality assurance testing of work and materials. This testing is for the Owner's use only and will only be performed after the Contractor’s quality control testing program has tested and approved materials and workmanship to be in full compliance with the quality standards of the Specifications. The Owner Quality Assurance testing services shall in no way relieve the Contractor of the responsibility for providing the quality materials, workmanship and testing required for compliance with these specifications.

C. Determination of Specification Compliance: In all cases of conflicting test results, the Owner's quality assurance test results shall govern. All retesting shall be conducted by Owner's testing laboratory at the Contractor's expense. The amount and location of any retesting shall be as directed by the Owner or Engineer. Unsatisfactory work or materials shall be retested as often as necessary until retests indicate that the failed work or materials have achieved conformity with the Plans and Specifications. The Owner or Engineer shall make the final determination as to whether any work or materials, which do not conform to the Plans and Specifications upon initial testing, are to be removed from the site or reworked. The Owner or Engineer shall also make the final determination as to whether the retesting indicates that work or materials initially rejected have been corrected to meet the requirements of the Plans and Specifications. All removal, replacement, rolling, watering, aeration, reworking, etc. required to bring rejected work or materials into conformance with the Plans and Specifications shall be at the Contractor's expense.

D. Retesting Expense: The Owner will bear the expense of the initial quality assurance testing of certain items of work or materials as required by the technical specifications. Any retesting of these items of work or materials which upon initial testing fail to meet the standards specified or indicated on the plans shall be at the Contractor's expense.

E. Laboratory Inspection and Testing: If this contract requires laboratory inspection, testing, and stamping of concrete pipe, concrete fittings, or any other material, the cost of that laboratory inspection, testing, and stamping shall be borne by the Contractor and included in the cost of the work.

F. Prior to starting concrete operations the Contractor shall name his source of supply for concrete materials and submit representative samples and reports of quality tests for approval.

G. The Owner shall engage and pay for the services of an independent testing laboratory to perform the following services:

1. Slump test, ASTM C143, shall be taken with every set of cylinders and as often as required to provide the specified consistency of concrete.

2. Determine air content with every set of cylinders, ASTM C231, or as required.

3. Cast and test a set of at least 6 cylinders for each day's pour or for each 100 cubic yards or fraction thereof for each class of concrete. Cylinders shall be made and cured, ASTM C31, and tested, ASTM C39, in accordance with ASTM specifications for control tests. Cylinders shall be tested at 7 and 28 days. The Contractor shall provide insulated storage room with heat when necessary to store control cylinders and a protected space for storage of "field" cylinders which approximates the condition of curing of the concrete being sampled. Cylinders designated as "field" cylinders shall be used to determine safe stripping and loading of members. On all pours in excess of 25 cubic yards, continuous laboratory inspection shall be provided at the job site for checking materials, deliveries and concrete consistencies.

H. The testing laboratory shall observe the materials and the manufacturer of concrete as specified and shall report to the Contractor and Designer the progress thereof. Also, when it appears that the material furnished and the work performed by the Contractor fails to fulfill the specified requirements and Con-tract, the testing laboratory shall direct the attention of the Contractor and Designer to such failure or infringement. Such observation shall not relieve the Contractor of any obligation to furnish acceptable materials or to provide the concrete quality in the structure that is in strict accordance with plans and specifications. The testing laboratory is not authorized to revoke, alter, relax, enlarge or release the requirements of the specifications, nor to issue instructions contrary to the plans and specifications; nor to approve or accept any portion of the work but in case of any dispute arising between the testing laboratory and the Contractor as to materials furnished or in the manner of performing the work, the testing laboratory shall have the authority to reject materials or suspend the work until the question at issue can be referred to the Designer. The testing laboratory shall not act as foreman or perform other duties for the Contractor. In no case shall any advice or oversight on the part of the testing laboratory relieve the Contractor of responsibility for completing the work in accordance with plans and specifications and the fulfillment of the Contract. The work will be observed as it progresses, but failure to report to the Designer any defective work or materials shall not in any way prevent later rejection when such a defect is discovered or obligate the Owner for final acceptance. Any expense incident to the investigation and determination of actual quality of any questionable material shall be borne by the Contractor.

I. In the event that concrete tests fail to meet strength requirements of these specifications the designer may require, at no additional cost to the Owner, tests in accordance with the "Standard Method of Obtaining and Testing Drilled Cores and Sawed Beams of Concrete", ASTM C42, or order load tests in accordance with Chapter 20 of the ACI Building Code 318, to be made on the portions of the structure containing questionable concrete. Suitable appliances and methods of loading the measuring shall be provided by the Contractor under the direction of the testing laboratory. The portions of the structure which are found by the Designer to contain defective concrete shall be removed and reconstructed in a satisfactory manner at the Contractor's expense. Concrete strength tests are to conform to Chapter 5 of the ACI Building Code 318.

J. The laboratory shall have free access to material stockpiles, batching and mixing plants, and job site. The Contractor shall provide adequate assistance to the laboratory in securing specified samples for tests.

K. Contractor shall give the Designer and laboratory reasonable notice before beginning any pours (at least 24 hours).

L. The laboratory shall supply a daily report of concrete and materials testing and inspection to the designer (two copies) and Contractor (one copy).

M. Concrete batched away from the job and delivered in mixer or agitator trucks shall conform to requirements of ASTM C94.

N. Sampling and Testing:

1. All materials shall be sampled, tested in accordance with appropriate ASTM Standards, and approved before inclusion in any work on this project.

2. Samples for testing shall be furnished by the Contractor.

3. Rejected material shall be immediately removed from the site.

O. Standards: Comply with the following applicable standards:

1. ACI 211.1R: "Standard Practice for Selecting Proportions for Normal, Heavyweight and Mass Concrete."

2. ACI 211.2 "Standard Practice for Selecting Proportions for Structural Lightweight Concrete."

3. ACI 301R: "Standard Specifications for Structural Concrete for Buildings".

4. ACI 304R: "Guide for Measuring, Mixing, Transporting, and Placing Concrete."

5. ACI 305R: "Hot Weather Concreting."

6. ACI 306R: "Cold Weather Concreting."

7. ACI 308R: "Standard Practice for Curing Concrete."

8. ACI 318: "Building Code Requirements for Structural Con-crete and Commentary."

P. Examine the substrate, formwork, and the conditions under which concrete reinforcement is to be placed, and correct conditions which would prevent proper and timely completion of the Work. Do not proceed with the Work until unsatisfactory conditions have been corrected.

Q. Inspection: Before placement of concrete, the Owner's Representative shall observe the placement of all reinforcing and give his approval.

END OF SECTION 01455

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DIVISION 1 – SECTION 01500

CONSTRUCTION FACILITIES AND TEMPORARY CONTROLS

PART 1 GENERAL

1.01 SUMMARY

A. This Section describes construction facilities and temporary controls required for the Work.

B. Related work:

1. Documents affecting work of this Section include, but are not necessarily limited to, Division 0 and Division 1 Specifications,

1.02 REQUIREMENTS

A. Provide construction facilities and temporary controls needed for the Work including, but not necessarily limited to:

1. Sanitary facilities;

2. Temporary fencing of the construction site, if required.

1.03 DELIVERY, STORAGE, AND HANDLING

A. Maintain temporary facilities and controls in proper and safe condition throughout progress of the Work.

PART 2 PRODUCTS

2.01 UTILITIES

A. Water:

1. Provide necessary temporary piping and water supply and, upon completion of the Work, remove such temporary facilities.

2. Provide and pay for water used in construction.

B. Electricity:

1. Provide necessary temporary wiring and, upon completion of the Work, remove such temporary facility.

2. Provide area distribution boxes located so that the individual trades may furnish and use 100 ft maximum length extension cords to obtain power and lighting at points where needed for work, inspection, and safety.

3. Provide and pay for electricity used in construction.

C. Heating: Provide, maintain and pay for heat necessary for proper conduct of operations needed in the Work.

2.02 FIELD OFFICES AND SHEDS

A. Sanitary facilities:

1. Provide temporary sanitary facilities in the quantity required for use by all personnel.

2. Maintain in a sanitary condition at all times.

2.03 ENCLOSURES

A. Provide and maintain for the duration of construction all scaffolds, tarpaulins, canopies, warning signs, steps, platforms, bridges, and other temporary construction necessary for proper completion of the Work in compliance with pertinent safety and other regulations.

2.04 TEMPORARY FENCING

A. If indicated provide and maintain for the duration of construction a temporary fence of design and type needed to prevent entry onto the Work by the public.

2.05 REMOVING AND REPLACING FENCES, SOD, ETC.

A. Where required to install the Work, carefully remove and store all interfering fences, mailboxes, culverts, etc. After installation of work and backfilling, reinstall these items and restore them to at least the conditions, which existed prior to the commencement of work, using materials and workmanship to match those of the original construction and installation.

B. Carefully remove and store all interfering shrubbery, trees, sod, flowers, and other planting, sufficiently in advance of construction. After installation of work and backfilling, reset and restore these items to at least the conditions that existed prior to the commencement of work.

PART 3 EXECUTION

3.01 MAINTENANCE AND REMOVAL

A. Maintain temporary facilities and controls as long as needed for safe and proper completion of the Work.

B. Remove such temporary facilities and controls as rapidly as progress of the Work will permit, or as directed by the Owner or Engineer.

3.02 DUST CONTROL

A. During construction, haul roads and other disturbed construction areas shall be watered as required to prevent dust from damaging and/or becoming a nuisance to the terminal and other buildings, automobiles, aircraft, and residential and other built-up areas surrounding the project site.

END OF SECTION 01500

DIVISION 1 - SECTION 01600

PRODUCT REQUIREMENTS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings, Contract, Division 0 and Division 1 Specification Sections apply to this Section.

1.2 SUMMARY

A. This Section specifies administrative and procedural requirements governing Contractor's selection of products for use in Project.

B. Related Sections: Following Sections contain requirements that relate to this Section:

1. Division 1 Section "Reference Standards and Definitions" specifies the applicability of industry standards to products specified.
2. Division 1 Section 01320 specifies requirements for submittal of the Contractor's Construction Schedule and the Submittal Schedule.
3. Division 1 Section "Product Substitution Procedures" specifies administrative procedures for handling requests for substitutions made after award of the Contract.

1.3 DEFINITIONS

A. Definitions used in this Article are not intended to change meaning of other terms used in Contract Documents, such as "specialties," "systems," "structure," "finishes," "accessories," and similar terms. Such terms such are self-explanatory and have well recognized meanings in construction industry.

1. **"Products"** are items purchased for incorporation in Work, whether purchased for Project or taken from previously purchased stock. Term "product" includes terms "material," "equipment," "system," and terms of similar intent.

    a. "Named Products" are items identified by manufacturer's product name, including make or model designation, indicated in manufacturer's published product literature, that is current as of date of Contract Documents.
    b. "Foreign Products," as distinguished from "domestic products," are items substantially manufactured (50% or more of value) outside of United States and its possessions; or produced or supplied by entities substantially owned (more than 50%) by persons who are not citizens of nor living within United States and its possessions.

2. **"Materials"** are products that are substantially shaped, cut, worked, mixed, finished, refined or otherwise fabricated, processed, or installed to form part of 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 list showing products specified in tabular form acceptable to Program Manager. Include generic names of products required. Include manufacturer's name and proprietary product names for each item listed.

1. Coordinate product list with Contractor's Construction Schedule and Schedule of Submittals.
2. Form: Prepare product list with information on each item tabulated under following column headings:

    a. Related Specification Section number.
    b. Generic name used in Contract Documents.
    c. Proprietary name, model number and similar designations.
    d. Manufacturer's name and address.
    e. Supplier's name and address.
    f. Installer's name and address.
    g. Projected delivery date, or time span of delivery period.

3. Initial Submittal: Within 30 days after date of commencement of Work, submit 3 copies of an initial product list. Provide written explanation for omissions of data and for known variations from Contract requirements.

    a. At Contractor's option, initial submittal may be limited to product selections and designations that must be established early in Contract period.

4. Completed List: Within 60 days after date of commencement of Work, submit 3 copies of completed product list. Provide written explanation for omissions of data and for known variations from Contract requirements.

5. Engineer’s Action: Engineer will review and the Program Manager will respond in writing to Contractor within 2 wks of receipt of completed product list. No response within this period constitutes no objection to listed manufacturers or products but does not constitute a waiver of the requirement that products comply with Contract Documents. Engineer’s review will include a list of unacceptable product selections, containing a brief explanation of reasons for this action.

B. Source Limitations: To fullest extent possible, provide products of same kind, from single source.

1. When specified products are available only from sources that do not or cannot produce quantity adequate to complete project requirements in timely manner, consult with Program Manager for determination by the Engineer of most important product qualities before proceeding. Qualities may include attributes relating to visual appearance, strength, durability, or compatibility. When determination has been made, select products from sources that produce products that possess these qualities, to fullest extent possible.

C. Compatibility of Options: When Contractor is given option of selecting between 2 or more products for use on Project, product selected shall be compatible with products previously selected, even if previously selected products were also options.

1. Each Contractor is responsible for providing products and construction methods that are compatible with products and construction methods of other separate Contractors.
2. If dispute arises between Contractors over concurrently selectable, but incompatible products, Engineer will determine which products shall be retained and which are incompatible and must be replaced.

D. Foreign Product Limitations: Except under 1 or more of following conditions, provide domestic products, not foreign products, for inclusion in the Work:

1. No available domestic product complies with Contract Documents.
2. Domestic products that comply with Contract Document are only available at prices or terms that are substantially higher than foreign products that also comply with Contract Documents.

E. 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 which will be exposed to view in occupied spaces or on exterior.

F. Labels: Locate required product labels and stamps on a concealed surface or, where required for observation after installation, on an accessible surface that is not conspicuous.

G. Equipment Nameplates: Provide permanent nameplate on each item of service-connected or power-operated equipment. Locate on an easily accessible surface which is inconspicuous in occupied spaces. Nameplate shall contain following information and other essential operating data:

1. Name of product and manufacturer.
2. Model and serial number.
3. Capacity.
4. Speed.
5. Ratings.

1.5 PRODUCT DELIVERY, STORAGE, AND HANDLING

A. Deliver, store and handle products according to manufacturer's recommendations, using means and methods that will prevent damage, deterioration, and loss, including theft.

1. Schedule delivery to minimize long-term storage at site and to prevent overcrowding of construction spaces.
2. Coordinate delivery with installation time to ensure minimum holding time for items that are flammable, hazardous, easily damaged, or sensitive to deterioration, theft and other losses.
3. Deliver products to site in an undamaged condition in manufacturer's original sealed container or other packaging system, complete with labels and instructions for handling, storing, unpacking, protecting and installing.
4. Inspect products upon delivery to ensure compliance with Contract Documents, and to ensure that products are undamaged and properly protected.
5. Store products at site in manner that will facilitate inspection and measurement of quantity or counting of units.
6. Store heavy materials away from Project structure in manner that will not endanger supporting construction.
   Store products subject to damage by elements above ground, under cover in 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 Contract Documents, that are undamaged and, unless otherwise indicated, new at time of installation.

1. Provide products complete with all accessories, trim, finish, safety guards and other devices and details needed for complete installation and for 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: Product selection is governed by Contract Documents and governing regulations, not by previous Project experience. Procedures governing product selection include following:

1. Proprietary Specification Requirements: Where only a single product or manufacturer is named, provide product indicated. No substitutions will be permitted.
2. Semi proprietary Specification Requirements: Where 2 or more products or manufacturers are named, provide 1 of products indicated. No substitutions will be permitted.

    a. Where products or manufacturers are specified by name, accompanied by term "or equal," or "or approved equal" comply with Contract Document provisions concerning "substitutions" to obtain approval for use of an unnamed product.

3. Compliance with Standards, Codes and Regulations: Where Specifications only require compliance with an imposed code, standard or regulation, select product that complies with standards, codes or regulations specified.
4. Visual Matching: Where Specifications require matching an established Sample, Engineer's decision will be final on whether proposed product matches satisfactorily.

    a. Where no product available within specified category matches satisfactorily and complies with other specified requirements, comply with provisions of Contract Documents concerning "substitutions" for selection of matching product in another product category.

5. Visual Selection: Where specified product requirements include phrase "...as selected from manufacturer's standard colors, patterns, textures..." or similar phrase, select product and manufacturer that complies with other specified requirements. Engineer will select color, pattern and texture from product line selected.
6. Allowances: Refer to individual Specification Sections and "Allowance" provisions in Division 1 for allowances that control product selection, and for procedures required for processing such selections.

2.2 ASBESTOS-FREE REQUIREMENTS

A. The Contractor shall not use any asbestos containing material (ACM) at any time during the Project. The Contractor shall verify that all materials used on the Project are asbestos-free materials.

B. During the course of the Project, the Contractor shall routinely check products utilized on-site to ensure only asbestos-free products are utilized.

C. If the Owner suspects the presence of asbestos, the Owner will sample the suspect material to verify that no ACM was utilized. This testing shall be performed at the expense of the Owner. If ACM is subsequently found during the sampling, the Contractor shall remove and replace the product or material at his/her sole expense. No adjustment of the Contract Schedule will be provided to account for delays associated with removal and/or replacement of ACM. The Contractor shall reimburse Owner for any and all costs associated with the original testing and/or any re-testing that may be necessary.

D. Upon completion, a notarized certification statement shall be provided by the Contractor to the Owner certifying that all materials associated with this Project are asbestos free. See Specification 01771 Closeout Documents for certification document. If the Contractor does not submit the required asbestos-free certification, the Authority shall have a complete building survey performed by a qualified testing firm within the Project’s location. The cost of the survey and any subsequent removal/replacement of any ACM shall be deducted from the Contractor’s final payment at the sole discretion of the Owner.

PART 3 - EXECUTION

3.1 INSTALLATION OF PRODUCTS:

A. Comply with manufacturer's instructions and recommendations for installation of products in 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 until time of Substantial Completion.

END OF SECTION 01600

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DIVISION 1 - SECTION 01630

PRODUCT SUBSTITUTION PROCEDURES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings, Contract, Division 0 and 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 award of Contract.

B. Contractor's Construction Schedule and Schedule of Submittals are included under Section 01320.

C. Standards: Refer to Section "Reference Standards and Definitions" for applicability of industry standards to products specified.

D. Procedural requirements governing Contractor's selection of products and product options are included under Section "Product Requirements."

E. Program Manager’s policy is to reject requests for substitution unless paragraph "Substitutions" under Article "Definitions" applies.

1.3 DEFINITIONS

A. Definitions used in this Article are not intended to change or modify meaning of other terms used in Contract Documents.

B. Substitutions: Requests for changes in products, materials, equipment, and methods of construction required by Contract Documents proposed by Contractor after award of Contract are considered requests for "substitutions." Following are not considered substitutions:

1. Revisions to Contract Documents requested by Owner or Program Manager.
2. Specified options of products and construction methods included in Contract Documents.
3. Contractor's determination of and compliance with governing regulations and orders issued by governing authorities.

1.4 SUBMITTALS

A. Substitution Request Submittal: Requests for substitution will be considered if received within 30 days after commencement of Work. Requests received more than 30 days after commencement of Work may be considered or rejected at discretion of Program Manager.

1. Submit 3 copies of each request for substitution for consideration. Submit requests on forms included at end of this Section.

2. Identify product, or fabrication or installation method to be replaced in each request. Include related Specification Section and Drawing numbers. Provide complete documentation showing compliance with 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. Detailed comparison of significant qualities of proposed substitution with those of Work specified. Significant qualities may include elements such as size, weight, durability, performance and visual effect.
    d. Coordination information, including list of changes or modifications needed to other parts of Work and to construction performed by Owner and separate Contractors, that will become necessary to accommodate proposed substitution.
    e. Statement indicating substitution's effect on Contractor's Construction Schedule compared to schedule without approval of substitution. Indicate effect of proposed substitution on the overall Substantial Completion of the project.
    f. Cost information, including proposal of net change, if any in Contract Sum.
    g. Certification by Contractor that substitution proposed is equal-to or better in every significant respect to that required by Contract Documents, and that it will perform adequately in application indicated. Include Contractor's waiver of rights to additional payment or additional Contract time, that may subsequently become necessary because of failure of substitution to perform adequately.

PART 2 - PRODUCTS

2.1 SUBSTITUTIONS

A. Conditions: Contractor's substitution request will be received and considered by Program Manager when one or more of following conditions are satisfied, as determined by Program Manager; 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 general intent of Contract Documents.
3. Request is timely, fully documented and properly submitted.
4. Request is directly related to an "or equal" clause or similar language in Contract Documents.
5. Specified product or method of construction cannot be provided within Contract Time. Request will not be considered if product or method cannot be provided as result of failure to pursue Work promptly or coordinate activities properly.
6. Specified product or method of construction cannot receive necessary approval by governing authority, and requested substitution can be approved.
7. Substantial advantage is offered the Owner, in terms of cost, time, energy conservation or other considerations of merit, after deducting offsetting responsibilities Owner may be required to bear. Additional responsibilities for Owner may include additional compensation to Program Manager and Engineer for redesign and evaluation services, increased cost of other construction by Owner or separate Contractors, and similar considerations.
8. Specified product or method of construction cannot be provided in manner that is compatible with other materials, and where Contractor certifies that substitution will overcome incompatibility.
9. Specified product or method of construction cannot be coordinated with other materials, and where Contractor certifies that proposed substitution can be coordinated.
10. Specified product or method of construction cannot provide warranty required by Contract Documents and where Contractor certifies that proposed substitution provide required warranty.

B. Contractor's submittal to the Program Manager and Engineer’s acceptance of Shop Drawings, Product Data or Samples that relate to construction activities not complying with Contract Documents does not constitute an acceptable or valid request for substitution, nor does it constitute approval.

C. See next page for “Request for Substitution” form.

REQUEST FOR SUBSTITUTION

To:

Attention:

From: _____
Name of Company

_____
Address

_____
City, State, Zip Code

_____
Phone

Fully answer all information requested below. Failure to answer any item may cause rejection of request for substitution. If requested by Program Manager, submit information about manufacturer and vendor history, financial stability, distribution and support systems. Use one form for each product requested. Only first product listed will be considered on forms with more than one product listed.

Specification Section Number: _____ Drawing Number: _____

Para Number: _____ Detail Number: _____

Specified Product: _____

Proposed Substitution: _____

Answer the following questions. Attach an explanation sheet on your company's letterhead when required.

Does the proposed substitution affect dimensions indicated on Drawings?

No _____ Yes _____ (If yes, explain below).

_____

_____

_____

Does the proposed substitution require changes in Drawings and/or design or installation changes?

No _____ Yes _____

If yes, is the cost of these changes included in the proposed amount? No ____ Yes ____

Does the proposed substitution affect other trades? No _____ Yes _____

(If yes, explain who and how)

_____

_____

_____

If the proposed product does affect the work of other trades, has the cost impact on their work been included in the price of the proposed substitution?

No _____ Yes _____

Does the proposed product's guarantee differ from that of the specified product's?

No _____ Yes _____ (If yes, explain below).

_____

_____

_____

Why is this proposal for substitution being submitted? List reasons below.

_____

_____

_____

Attach a listing of 3 projects using proposed substitution completed within the past 5 yrs in geographic and climatic region of Project. One of applications shall have been in service for at least 3 yrs.

Attach product data/brochures and Vendor Qualification Form for the specified and substitute product.

Undersigned has examined Construction Documents, is familiar with specified product, understands indicated application of product, and understands design intent of Engineer. Undersigned states that proposed substitution complies with Construction Documents and will perform at least equally to specified product within limitations stated above. Undersigned accepts responsibility for coordinating application and installation of proposed substitution and waives all claims for additional costs resulting from incorporation of proposed substitution into Project or its subsequent failure to perform according to specified requirements.

Submitted By: _____ _____

Typed Signature

Date: _____

END OF SECTION 01630

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DIVISION 1 – SECTION 01700

FIELD ENGINEERING

PART 1 GENERAL

1.01 SUMMARY

A. Provide such field engineering services as are required for proper completion of the Work including, but not necessarily limited to:

1. Establishing and maintaining lines and levels;

2. Structural design of shores, forms, and similar items provided by the Contractor as part of his means and methods of construction.

All field engineering is incidental to the Item for which it applies. No direct pay will be made for field engineering.

B. Related work:

1. Documents affecting work of this Section include, but are not necessarily limited to, Division 0, Division 1 and other Sections of these Specifications.

2. Additional requirements for field engineering may be described in other Sections of these Specifications.

1.02 SUBMITTALS

A. Upon request of the Owner or Engineer, submit:

1. Data demonstrating qualifications of persons proposed to be engaged for field engineering services.

2. Documentation verifying accuracy of field engineering work.

3. Certification, signed by the Contractor's retained field engineer, certifying that elevations and locations of improvements are in conformance or nonconformance with requirements of the Contract Documents.

1.03 QUALITY ASSURANCE

A. Use adequate numbers of skilled workmen who are thoroughly trained and experienced in the necessary crafts and who are completely familiar with the specified requirements and the methods needed for proper performance of the work of this Section.

1.04 PROCEDURES

A. In addition to other procedures directed by the Contractor for proper performance of the Contractor's responsibilities:

1. Locate and protect control points before starting work on the site.
2. Preserve permanent reference points during progress of the Work.

3. Prior to commencing any work requiring location or grades, the Contractor shall establish

temporary bench marks (TBMs) at an interval not to exceed 1000 feet. TBMs are to be located in areas not anticipated to be disturbed by construction. Provide the Owner or Engineer copies of field notes, including peg test of level, and a listing of the adjusted coordinates and elevations of all TBMs.

4. Do not change or relocate reference points or items of the Work without specific approval from the Owner or Engineer.

5. Promptly advise the Owner or Engineer when a reference point is lost or destroyed, or requires relocation because of other changes in the Work.

    a. Upon direction of the Owner or Engineer, require the field engineer to replace reference stakes or markers.

    b. Locate such replacements according to the original survey control.

END OF SECTION 01700

DIVISION 1 – SECTION 01720

PROJECT RECORD DOCUMENTS

PART 1 GENERAL

1.01 SUMMARY

A. Throughout progress of the Work, maintain an accurate record of changes in the Contract Documents, as described in paragraph 3.01 below and, upon completion of the Work, transfer the recorded changes to a set of Record Documents, as described in paragraph 3.02 below. This shall include Record Drawings.

B. Related work:

1. Documents affecting work of this Section include, but are not necessarily limited to, General Provisions and the Technical Sections of these Specifications.

2. Other requirements affecting Project Record Documents may appear in pertinent other Sections of these Specifications.

1.02 SUBMITTALS

A. The Program Manager's review of the current status of Project Record Documents is a prerequisite to the Program Manager's approval of requests for progress payments and request for final payment under the Contract.

B. Prior to submitting each Application for Payment, secure the Program Manager's review of the current status of the Project Record Documents.

C. The final project Record Documents must be submitted to the Program Manager and secure approval before final payment for demobilization can occur.

1.03 QUALITY ASSURANCE

A. Delegate the responsibility for maintenance of Record Documents to one person on the Contractor's staff as approved by the Program Manager.

B. Accuracy of records:

1. Thoroughly coordinate changes within the Record Documents, making adequate and proper entries on each page of Specifications and each sheet of Drawings and other Documents where such entry is required to show the change properly.

2. Accuracy of records shall be such that future searches for items shown in the Contract Documents may rely reasonably on information obtained from the approved Project Record Documents.

C. Make entries within 24 hours after receipt of information that the change has occurred.

1.04 DELIVERY, STORAGE, AND HANDLING

A. Maintain the job set of Record Documents completely protected from deterioration and from loss and damage until completion of the Work and transfer of all recorded data to the final Project Record Documents.

B. In the event of loss of recorded data, use any means necessary to again secure the data needed to comply with this section.

1. Such means shall include, if necessary in the opinion of the Program Manager, removal and replacement of concealing work or materials by Contractor at Contractor's expense.

PART 2 PRODUCTS

2.01 RECORD DOCUMENTS

A. Job set: Promptly following the Notice to Proceed, secure from the Program Manager at no charge to the Contractor one complete set of all Documents comprising the Contract.

PART 3 EXECUTION

3.01 MAINTENANCE OF JOB SET

A. Immediately upon receipt of the job set described in Paragraph 2.01-A above, identify each of the Documents with the title, "RECORD DOCUMENTS - JOB SET."

B. Preservation:

1. Considering the Contract completion time, the probable number of occasions upon which the job set must be taken out for new entries and for examination, and the conditions under which these activities will be performed, devise a suitable method for protecting the job set to the approval of the Program Manager.

2. Do not use the job set for any purpose except entry of new data and for review by the Program Manager, until start of transfer of data to final Project Record Documents.

3. Maintain the job set at the site of Work or at another site as designated by the Program Manager.

C. Making entries on Drawings:

1. Using an erasable colored pencil (not ink or indelible pencil), clearly describe the change by graphic line and note as required.

2. Date all entries.

3. Call attention to the entry by a "cloud" drawn around the area or areas affected.

4. In the event of overlapping changes, use different colors for the overlapping changes.

D. Make entries in the pertinent other Documents as approved by the Program Manager.

E. Drawings shall clearly show actual installed locations, depth, and sizes of:

1 Pipe work of all descriptions below ground outside of building and structures, including locations of culverts, storm & sewer lines, water lines, cleanouts, manholes, inlets, hydrants, and underground valves.

2. Underground electrical conduits, electrical ducts, and directly buried conductors light cables, FAA cables including locations of pull and junction boxes, electric manholes and handholes, pad mounted electrical equipment, utility poles, electrical outlets, and lighting fixtures.

3. All existing underground facilities unearthed by Contractors operations not accurately shown on the drawing.

F. Conversion of schematic layouts:

1. In some cases on the Drawings, arrangements of conduits, circuits, piping, ducts, and similar items, is shown schematically and is not intended to portray precise physical layout.

a. Final physical arrangement is determined by the Contractor, subject to the Program Manager's review.

b. However, design of future modifications of the facility may require accurate information as to the final physical layout of items, which are shown only schematically, on the Drawings. This information will be provided by the Contractor.

2. Show on the job set of Record Drawings, by dimension accurate to within one half foot, the centerline of each run of items such as are described in subparagraph 3.01-E above.

a. Clearly identify the item by accurate note such as "24 inch R.C. pipe drain", "4" conduit" and the like.

b. Show, by symbol or note, the vertical location of the item ("36 inches deep"), "exposed," and the like.

c. Make all descriptive identification so that it may be related reliably to the Specifications.

3. The Program Manager may waive the requirements for conversion of schematic layouts where, in the Program Manager's judgment, conversion serves no useful purpose. However, do not rely upon waivers being issued except as specifically issued in writing by the Program Manager.

3.02 FINAL PROJECT RECORD DOCUMENTS

A. The purpose of the final Project Record Documents is to provide factual information regarding all aspects of the Work, both concealed and visible, to enable future modification of the Work to proceed without lengthy and expensive site measurement, investigation, and examination.

B. Approval of recorded data prior to transfer to Program Manager:

1. Secure the Program Manager's review of all recorded data.

2. Make required revisions.

C. Transfer of data to other Documents:

1. If the Documents other than Drawings have been kept clean during progress of the Work, and if entries thereon have been orderly to the approval of the Program Manager, the job set of those Documents other than Drawings will be accepted as final Record Documents.

2. If any such Document is not so approved by the Program Manager, secure a new copy of that Document from the Program Manager at the Program Manager's usual charge for reproduction and handling, and carefully transfer the change data to the new copy to the

approval of the Program Manager.

D. Review and submittal:

1. Submit the completed set of Project Record Documents to the Program Manager as described in Paragraph 1.02-C above.

2. Participate in review meetings as required.

3. Make required changes and promptly deliver the final Project Record Documents to the Program Manager.

3.03 CHANGES SUBSEQUENT TO ACCEPTANCE

A. The Contractor has no responsibility for recording changes in the Work subsequent to Final Completion, except for changes resulting from work performed under Warranty.

END OF SECTION 01720

DIVISION 1 – SECTION 01741

CLEANING

PART 1 GENERAL

1.01 SUMMARY

A. Throughout the construction period, maintain the site in a standard of cleanliness including mowing of grass as described in this Section. All demolition or construction debris (FOD) shall be confined within the work site at all times.

B. Related work:

1. Documents affecting work of this Section include, but are not necessarily limited to, Division 0, Division 1 and other Sections of these Specifications.

2. In addition to the standards described in this Section, comply with requirements for cleaning as described in pertinent other Sections of these Specifications.

3. In addition to the standards described in this Section, comply with pertinent requirements of governmental agencies having jurisdiction.

1.02 QUALITY ASSURANCE

A. Conduct a daily inspection, and more often if necessary, to verify that cleanliness requirements are being met.

B. In addition to the standards described in this Section, comply with pertinent requirements of governmental agencies having jurisdiction.

PART 2 PRODUCTS

2.01 CLEANING MATERIALS AND EQUIPMENT

A. Provide required personnel, equipment, and materials needed to maintain the specified standard of cleanliness.

B. In addition to the standards described in this Section, comply with pertinent requirements of governmental agencies having jurisdiction.

2.02 COMPATIBILITY

A. Use only cleaning materials and equipment compatible with the surface being cleaned and as recommended by the manufacturer of the material.

PART 3 EXECUTION

3.01 PROGRESS CLEANING

A. General:

1. Retain stored items in an orderly arrangement allowing maximum access, not impeding traffic or drainage, and providing required protection of materials.

2. Do not allow accumulation of scrap, debris, waste material, and other items not required for construction of this Work.

3. Inspect all haul vehicles leaving the site to make sure no debris can fall from the vehicle during transportation.

4. Provide adequate storage for all items awaiting removal from the job site, observing requirements for fire protection and protection of the ecology.

B. Site:

1. Daily, and more often if necessary, inspect the site and pick up all scrap, debris, and waste material. Remove such items to the place designated for their storage. Contractor shall document all daily inspections.

2. Weekly, and more often if necessary, remove, completely, all accumulated scrap, debris, and waste material from the site.

3. Maintain the site in a neat and orderly condition at all times.

4. Mowing of grass within the construction limits is required at a minimum of every two (2) weeks during the active growing season, or as directed by the Engineer or Owner.

3.02 FINAL CLEANING

A. "Clean," for the purpose of this section, and except as may be specifically provided otherwise, shall be interpreted as meaning the level of cleanliness generally provided by material sweepers and vacuums.

B. Prior to completion of the Work, remove from the job site all tools, surplus materials, equipment, scrap, debris, and waste. Conduct final progress cleaning as described in Article 3.01 above.

C. Site:

1. Unless otherwise specifically directed by the Owner or Engineer, broom clean paved areas on the site and public paved areas adjacent to the site.

2. Completely remove resultant debris.

D. Schedule final cleaning as approved by the Owner or Engineer to enable the Owner to accept a completely clean Work.

3.03 CLEANING DURING OWNER'S OCCUPANCY

A. Should the Owner occupy the Work or any portion thereof, prior to its completion by the Contractor, and acceptance by the Owner, responsibilities for interim and final cleaning shall be as determined by the Engineer or Owner in accordance with the Division 0 and Division 1 Specifications.

3.04 INTERVENTION OF OWNER

A. If the Contractor fails to clean up any debris which is deposited as a result of construction/demolition operations, or fails to mow grass as stipulated, the Airport Authority will, after attempting one notification, immediately do so and the cost thereof will be charged to the Contractor at the rate of two hundred and fifty dollars ($250.00) per hour, per machine and per person additively. The Contractor shall assume full responsibility for failure to perform clean up operations required.

END OF SECTION 01741

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DIVISION 1 - SECTION 01770

CONTRACT CLOSEOUT

PART 1 - GENERAL

1.01 SECTION INCLUDES

A. Procedures and requirements for closing out the Work.

1. Closeout submittals.
2. Final cleaning.
3. Record Documents.
4. Substantial completion.
5. Final inspection.
6. Final payment.
7. Warranties.

1.02 RELATED REQUIREMENTS AND SECTIONS

A. Section 01100 - Summary of Work, Sequence of Construction & Liquidated Damages.

1.03 CLOSEOUT SUBMITTALS

A. Record documents of the constructed work.

B. Certificate of Occupancy.

C. Warranties: This Section and applicable Sections of these Specifications.

D. Contractors Affidavit of Payment of Debts and Claims and Contractors Affidavit of Release of Liens.

E. Consent of Surety to Final Payment.

F. As-built drawings.

1.05 FINAL CLEANING

A. Clean work and storage areas free of trash. Broom clean and hose wash walks and pavements.

1.06 RECORD DOCUMENTS

A. Definition:

1. Dimensioned drawings showing in-place components and systems measured as accurately as practicable.

2. Product data and other documents clearly identifying proprietary product and equipment incorporated into the Work.

B. Maintain at job site one record copy of:

1. Contract Drawings and As-built Drawings.
2. Project Manual.

3. Addenda.
4. Approved shop drawings.
5. Contract Modifications.
6. Field test records.
7. Meeting minutes (notes).

C. Make documents available at all times for inspection by Engineer and Owner.

D. Marking Devices:

1. Use colored felt marking pens for marking prints and product data.

E. Label each document "PROJECT RECORD" in 1" high printed letters.

F. Record information concurrent with construction progress. Do not conceal any work until required information has been recorded.

G. Submittal of Record Documents:

1. At completion of the Work, deliver Record Documents to Owner or Engineer with request for Final Payment.
2. Accompany submittal with transmittal letter indicating:
   a. Date
   b. Project title
   c. Contractor's name and address
   d. Title and number of each record document
3. Submit one reproducible copy and one electronic copy of Record Documents, and provide one copy of other Record Documents.
4. Provide one AutoCAD Diskette

1.07 SUBSTANTIAL COMPLETION

A. When Contractor considers the Work to be substantially complete as defined in Conditions of the Contract, Contractor shall prepare and submit a list (punch list) of items to be completed or corrected. Upon receipt of Contractor's list, Owner or Engineer will decide if the Work is substantially complete and, if necessary, will prepare a supplemental list (punch list) of items to be completed or corrected.

B. Failure to include items on the punch list does not alter responsibility of Contractor to complete work according to Contract Documents.

C. Before Owner or Engineer issues a Certificate of Substantial Completion, Contractor shall provide certificate of Use and Occupancy and evidence of approval from applicable governing authorities.

1.08 FINAL INSPECTION

A. When Owner or Engineer receives written notice that the Work is ready for final inspection, and when final application for payment is received, Owner or Engineer shall promptly inspect to determine if the Work complies with the Contract Documents.

B. Provide Owner or Engineer with written status report of each punch list item before final inspection.

1.09 FINAL PAYMENT

A. Final payment will be made to contractor by Owner within 45 days after:

1. Completion of the Work.
2. Acceptance by Owner and Engineer of all work performed under the Contract.
3. Receipt of Project Record Documents.
4. Receipt of O & M data, manufacturer's instructions, service manual, parts manual, warranties, and other closeout submittals specified. O & M data must include a list of recommended vendors for any non-standard replacement parts and must include a detailed Preventative Maintenance guide with a schedule of suggested efforts.
5. Preparation by Contractor and approval of Owner of final statement of cost of the completed Work. Final statement shall indicate:
   a. Original Contract Sum.
   b. Previous Change Orders.
   c. Deductions for liquidated damages.
   d. Other applicable adjustments to Contract Sum.
   e. Total Contract Sum as adjusted.
   f. Previous Payments.
   g. Final payment remaining due.
6. Upon completion by Contractor of work covered by Contract Documents, and before final payment to Contractor for work performed, Contractor shall deliver to Owner an affidavit, indicating that all labor and material used on or for execution of the Work has been paid.

1.10 WARRANTIES

A. Provide duplicate notarized copies of warranties required by Contract Documents. Accumulate executed documents by subcontractors, suppliers, and manufacturers; provide table of contents and assemble in binder with durable plastic cover properly titled.

B. Warranties are in addition to and not a limitation of other rights Owner may have against Contractor under the Contract Documents.

C. Contractor shall bear costs of correcting work not complying with warranty requirements.

D. Duration of warranties required by individual Sections shall indicate minimum times and shall not relieve Contractor of obligations required under applicable statutes or other Conditions of the Contract.

   1. Warranty period begins on date of Substantial Completion, except where modified by Conditions of the Contract.
   2. Warranties are non-prorated unless stated otherwise in these Specifications.

E. Manufacturer's warranties shall be backed by assets of manufacturer and not a third party.

F. Warranties shall be transferable.

G. Submit warranties to Owner or Engineer for verification and submittal to Owner with Contractor's final Application for Payment.

H. Re-submit warranties that do not comply with Contract Documents.

PART 2 - PRODUCTS (not applicable)

PART 3 - EXECUTION (not applicable)

END OF SECTION 01770

DIVISION 1 – SECTION 01771

AFFIDAVIT OF CONTRACTOR

STATE OF _____

COUNTY OF _____

_____, being duly sworn according to Law,
(Name of Affiant)

deposes and says that he is the _____of
(Title)
_____, the Contractor, in a
(Name of Contractor)
Construction contract entered into between the Contractor and Memphis-Shelby County Airport Authority, the Owner, for the construction of DeWitt Spain Airport Apron Rehabilitation - Construction, MSCAA Project No. 20-1440-01, and that he is authorized to and does make this Affidavit on behalf of said Contractor in order to induce the Owner to make payment to the Contractor, in accordance with the provisions of the said Construction Contract.

Affiant further says that all persons who have furnished materials, labor, and equipment in connection with the construction of the facilities have been paid in full, and that the names of all manufacturers, materialmen, subcontractors and DBE subcontractors that furnished any material and/or services in connection with such construction and the kind of kinds of material and/or services so furnished are as listed hereinafter.

Affiant further certifies that he/she is familiar with the materials used in the construction of and incorporated into, the Project referenced above and attests that no asbestos-containing materials, either friable or otherwise, were used in the process of constructing or incorporated into the construction of the Project.

_____
(Signature of Affiant)

Sworn to and subscribed before me this _____ day of _____20____.

_____
(Notary Public)

My commission expires:_____

Name of Entity Kind of Material and/or Service

END OF SECTION 01771

ISSUED FOR BID

DIVISION 1 – SECTION 01772

FINAL LIEN WAIVER AND RELEASE
PRIME CONTRACTOR

STATE OF TENNESSEE
COUNTY OF SHELBY

The undersigned _____ (hereinafter "Contractor") has entered into a Contract with the Memphis-Shelby County Airport Authority ("Owner") for the construction of improvements known as the:

DeWitt Spain Airport Apron Rehabilitation - Construction
Memphis International Airport
MSCAA Project No. 20-1440-01 (hereinafter "the Project").

Upon the receipt of the sum of $_____, the undersigned forever waives and releases any and all liens or claims of liens it has upon the foregoing described real property on account of labor, materials, equipment or services furnished for said Project. The undersigned certifies that all payments have been made for all work/materials performed to date for all subcontractors and suppliers with the exception of the amount due as a result of the payment amount shown above; and, that all subcontractors and suppliers will be paid all balances due upon receipt of the payment amount shown above. Further, the undersigned does hereby waive, release and relinquish any and all claims or demands against the Owner and Engineer of the above-described Project, the right to assert a mechanic's and materialmen's lien and/or any claim for quantum meruit or unjust enrichment, additional work, verbal agreements, increased cost, scheduling damages, including, but not limited to damages for delay, disruption, acceleration and/or interference, whether existing now or arising in the future.

The undersigned certifies and warrants that it has complied with all federal, state and local tax laws, including Social Security laws and Unemployment Compensation laws and workers' compensation laws insofar as applicable to the performance of the Project. Further, the undersigned certifies and warrants that it has paid all of its subcontractors, vendors, and materialmen for services rendered in connection with the construction and improvement of the Project and that all labor, materials and equipment are free and clear of claims, security interests, indebtedness or encumbrances. The undersigned agrees to indemnify and hold harmless the Owner and the Engineer from and against any and all claims, damages, losses and expenses, including but not limited to, attorney's fees, arising out of or resulting from any non-payment by the undersigned to any subcontractor, laborer, vendor or materialman for the Project.

As of this date, no mechanics' or materialmen's liens have been filed of record arising out of or related to the work performed by the undersigned.

Given under hand and seal this _____ day of _____, 20_____.

CONTRACTOR

_____

By:_____

Title:_____

STATE OF TENNESSEE
COUNTY OF SHELBY

Before me, a notary public of the state and county mentioned, personally appeared _____, with whom I am personally acquainted, and who, upon oath, acknowledged such person to be _____, an officer authorized to execute the instrument, of _____, the within named bargainor, a corporation, and that such officer, as such _____, executed the foregoing instrument for the purposes therein contained, by personally signing the name of the corporation as _____.

Witness my hand and seal, at office, this _____ day of _____, 20_____.

_____
Notary Public

My Commission Expires:

_____

END OF SECTION 01772

DIVISION 1 – SECTION 01774

CONTRACTOR WARRANTY FORM

PROJECT: MSCAA Project No. 20-1440-01, DeWitt Spain Airport Apron Rehabilitation - Construction

LOCATION: Memphis International Airport, Shelby County, Tennessee

OWNER: Memphis-Shelby County Airport Authority

We _____ , Contractor
(Company Name)
for the above-reference project, do hereby warrant all labor and materials furnished and work performed are in accordance with the Contract Documents and authorized modifications thereto, and will be free from defects due to defective materials or workmanship for a period of one year.

This warranty commences on _____ and expires on _____.

This warranty covers that portion of the project described below:

ALL MATERIALS, LABOR, AND EQUIPMENT IN CONNECTION WITH THE CONSTRUCTION OF THE FACILITIES OF THE ABOVE REFERENCED CONTRACT.

The Contractor shall promptly correct all defective Work to comply with the Contract Documents whether observed before or after the substantial completion date and whether or not fabricated, installed or completed. The Contractor shall bear all costs of correcting defective Work.

If, within one (1) year after the substantial completion date, or within such longer period of time as may be prescribed by law or by the terms of any applicable special guarantee or warranty required by the Contract Documents, any of the Work is found to be defective and not in accordance with the Contract Documents, the Contractor shall correct it promptly after receipt of a written notice from the Owner, or the Engineer to do so.

All defective or non-conforming Work shall be removed from the site of the Work if necessary, and the Work shall be corrected to comply with the Contract Documents without cost to the Owner. The Contractor also shall bear the cost of making good all work of other contractors destroyed or damaged by removal or correction of the defective Work of Contractor.

If the Contractor fails to timely and properly correct defective Work, the Owner may correct it and hold the Contractor liable for all costs, expenses and damages, including attorney's fees and litigation costs incurred by Owner in correcting it.

In addition to the foregoing warranty, a warranty period of one (1) year shall apply under the same terms and conditions as the original warranty, to any work, supplied in correction of defective work under warranty pursuant to the provisions of this Section 17.04 and the Contractor shall assign to the Owner any warranties, including extended warranties, which are available in connection with the performance of such correction of defective Work. The warranty period shall commence on the date the Owner accepts the corrective Work of the Contractor.

DATE: _____ FOR: _____
(Company Name)

BY: _____
TITLE: _____

END OF SECTION 01774

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DIVISION 1 – SECTION 01775

CONSENT OF SURETY COMPANY TO FINAL PAYMENT

To: Memphis-Shelby County Airport Authority
2491 Winchester Road, Suite 113
Memphis, TN. 38116-3856

Regarding Contract for: DeWitt Spain Airport Apron Rehabilitation - Construction

Project: 20-1440-01

Dated: _____

CONTRACTOR: _____

In accordance with the provisions of the Contract between the Owner and the Contractor as indicated above, the

_____
(here insert name and address of Surety Company)

_____, SURETY COMPANY,

on bond of _____
(here insert name and address of Contractor)

_____, CONTRACTOR,

hereby approves of the final payment to the Contractor and agrees that final payment to the Contractor shall not relieve the Surety Company of any of its obligations to Memphis-Shelby County Airport Authority, OWNER.

IN WITNESS WHEREOF,
the Surety Company has hereunto set its hand this_____day of _____, 20_____

_____
Surety Company

_____
Signature of Authorized Representative

Attest:
(Seal):

_____
Title

END OF SECTION 01775

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DIVION 1 – SECTION 01783

ELECTRICAL CHARACTERISTICS, CAPACITIES AND WIRING DIAGRAMS

PART 1 GENERAL

1.01 SUMMARY

A. This section describes the electrical characteristics, sizes, capacities, ratings and wiring diagrams required of electrically operated equipment.

B. Related work:

1. Documents affecting work of this Section include, but are not necessarily limited to Division 0, Division 1 and other Sections of these Specifications.

1.02 SUBMITTALS

A. Furnish with each item of electrically operated equipment a wiring diagram showing all necessary electrical connections required to operate the equipment properly, in accordance with drawing and specification requirements.

B. Furnish a composite wiring diagram showing all necessary interlock and related wiring between the various items of electrically operated equipment and their controls, as required to operate interlocked equipment as specified in other sections of these specifications and as indicated.

1.03 CAPACITIES, RATINGS, SIZES, AND OTHER REQUIREMENTS NOT SPECIFIED:

A. For all items of material and/or equipment, the capacities, ratings, sizes, and other requirements thereof not specified shall be as indicated on the Contract drawings.

B. Where capacities, ratings, sizes, and other requirements for materials and/or equipment is neither specified nor indicated on the Contract drawings, refer each case to the Owner or Engineer before ordering the materials and/or equipment involved, or proceeding with the work involved. The Owner's or Engineer's decision shall govern.

1.04 ELECTRICAL CHARACTERISTICS AND SIZES OF ELECTRICALLY OPERATED EQUIPMENT

A. Each electrically operated item furnished under this contract shall operate proper on the electrical supply to which it is to be connected, as indicated on the electrical drawings.

B. All electrically operated equipment shall operate on a 60 hz alternating current supply, unless otherwise indicated. Prior to delivery to the job site, it shall be the joint responsibility of the Contractor under the applicable section and the equipment supplier to determine from the electrical drawings the characteristics of the electrical supply indicated to each individual electrically operated item, and to furnish each electrically operated item accordingly.

1. Where electrical characteristics are specified hereinafter, verify them from the electrical drawings. In the case of discrepancy between the specifications and the electrical drawings, the Electrical drawings shall govern.

2. Where electrical characteristics cannot be determined from the electrical drawings, refer each case to the Owner or Engineer, and the Owner's or Engineer‘s decision shall govern.

END OF SECTION 01783

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DIVISION 1 – SECTION 01784

MANUFACTURER'S SUPERVISION

1.01 DESCRIPTION

A. Work included:

1. Furnishing Manufacturer's Supervision

B. Related Work:

1. Documents affecting work of this Section include, but are not necessarily limited to Division 0, Division 1, and other Sections of these Specifications.

1.02 SERVICES

A. Furnish the services of authorized qualified manufacturer's representatives as required to supervise the installation, testing, initial starting, adjusting, and initial operation of each equipment item or any other item designated by the Contract Documents and included in this Contract.

END OF SECTION 01784

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APPENDIX A

MSCAA
DESIGN GUIDE and CONSTRUCTION STANDARDS

INDEX

Airfield Construction Standards

A. Joints and Joint Sealants

1. All joints to be beveled on new construction and reseal projects.
2. All concrete joint sealants to be a non-sag silicone or preformed material. Silicone is preferred on reseal projects.

B. Sodded Areas

1. All safety areas are to be 100% sod.
2. All areas that have had earth disturbed shall be sodded and fertilized.
3. Any sodded area within 2’ of an apron, pad or drainage structure shall be compacted to a minimum of 95% (Modified Proctor).

C. Drainage

1. Concrete down drains should be installed on any area that is sloped for drainage.
2. Any drain pipes that travel outside the SIDA fence should have proper security grates installed.
3. Outlets should have a run off pad; concrete if preferred but asphalt is acceptable for aprons or run-off pads.
4. The sub-base for concrete down drains, drain inlets or outlets should be compacted to a minimum of 95% (Modified Proctor).
5. All drain and under drain joints or connections should be properly grouted or sealed. All drain inlets and manholes boxes entries shall be properly grouted or sealed inside and outside junction structure.

D. Concrete Aprons

1. All sign bases, junction boxes and manholes on new construction are to have a minimum of a 6 ft. apron around the sign or structure, sloped away from the sign or structure.
2. Aprons should have a minimum thickness of 4”.
3. Aprons should be flush with the structure bases and sloped to be flush with soil. The slope shall not exceed the FAA maximum.
4. The sub bases should be compacted for the structure bases and aprons to a minimum of 95% (Modified Proctor).

E. Perimeter Fence

1. Perimeter fence shall be a minimum of 10’ tall fabric and shall include three-stand, double-sided barbed wire and 18” diameter concentric razor wire secured at 12” spacing.
2. Perimeter fence shall include a 6' paved lane under the fence. This will eliminate washouts, animal intrusions, reduce maintenance, and allow easy inspections by Airport Police.
3. Rolling, automatic gate operators shall be commercially/industrially rated and designed for high-security environments. Operators for gates with openings less than 15 feet must

operate at a minimum speed of 20” per second. Operators for gates with openings 15 feet or wider must include variable frequency drives and operate at a minimum speed of 36” per second.

F. Construction Contractors

1. The Contractor shall maintain all sodded areas through the duration of the contract. The Contractor shall be responsible for the upkeep of contracted areas including grass cutting, rut repair and maintaining proper drainage ditches.
2. Security grates that are installed must be maintained and in good working order by the contractor for the duration of the contract.
3. All areas that were used by the contractor must be left in conditions that will not hinder the normal routine maintenance of Airfield; this includes, but is not limited to debris removal, grading, drainage, and re-seeding or sod.

Airfield Electrical Construction Standards

A. General

1. Work performed shall be accomplished by crews with a minimum of one licensed journeyman per three apprentices.
2. All temporary cable installations shall be protected either by burying cable in grass areas or by installation in conduit for above ground applications. Other methods may be used for short term or emergency situations if approved by the Airfield Maintenance Electrical Supervisor. Location of temporary cables shall be marked sufficiently to prevent damage from construction and maintenance equipment.
3. In all circumstances enough cable shall be provided at light cans, junction cans and hand holes so as to allow a minimum of 3 feet extending above ground for maintenance purposes. The exception to this is in the installation of taxiway centerline lights on SMGCS routes where two interleaved circuits are present in the same light can. In this instance only the circuit that is attached to the transformer in an individual light can, should have the extra conductor provided. This prevents the can from becoming cluttered unnecessarily.
4. Constant current series circuits shall be limited in capacity to a maximum of 20kW. Preferred capacity is 15kW or less.

B. Testing

1. The contractor shall furnish all necessary equipment and appliances for testing the underground cable circuits after installation.
2. The contractor shall demonstrate that all lighting power and control circuits are continuous and free from short circuits and unspecified grounds.
3. The insulation resistance to ground of all non-grounded series circuits shall be not less than 500 MΩ and shall be maintained at the required level by the contractor during the term of the warranty period.
4. Each new series circuit, or new part of existing circuits being extended or replaced, shall be tested as follows:
    i. Low voltage megger tests shall be performed to comply with (c.) above. Circuits shall then be subjected to a Hi-Pot test in accordance with engineer's specifications.
5. All new fixture installations may, at the owner's request, be subjected to photometric testing to certify performance in accordance with FAA specifications.

C. Constant Current Regulators

1. The constant current regulators shall be magnetic designs; the susceptibility to extraneous signals of solid-state designs is not acceptable. The regulators shall not have solid-state controls in the series circuit and shall be designed to prohibit radio communications interference. The regulators shall limit transient current peaks without the use of solid-state series circuit controls with soft-on feature.
2. Each regulator shall include a true RMS ammeter, and ON/OFF/REMOTE switch and brightness controls.

3. In addition, the regulators shall be provided with SPDT contacts rated 2 amperes at 120 volts to indicate the following functions for remote monitoring:
4. REMOTE/LOCAL selected at control switch. Primary Power ON.
5. Constant current regulators, including standby regulators furnished or installed by the contractor shall be provided with seismic restraints and include all necessary equipment including control and monitoring equipment (Crouse-Hinds/Transtech digitrac units) to make the regulators operational.

D. Marking and Labeling

1. Wire identification. The contractor shall furnish and install self-sticking wire labels or identifying tags on all control wires at the point where they connect to the control equipment or to the terminal blocks.
2. Series circuit cables shall be identified with Thomas and Betts ty-rap #TY546MT or approved equivalent suitable for wet environments. Metal tags secured by tie wire or other means shall not be acceptable. All marking means shall be approved by the Airfield Maintenance Electrical Supervisor.
3. All conductors of series circuit conductors shall be marked with their circuit designation at all points where the conductor is accessible.
4. The contractor shall furnish and install engraved plastic labels on the cases of regulators, breakers, and distribution and control relay cases. All circuit breakers or other disconnecting means shall be marked and identified with their circuit designation.
5. Fiber optic runs should include #10 THWN stranded yellow tracer wire for locating purposes and connected in its entirety as a continuous conductor. Alternatively, armored fiber optic cables will be considered in lieu of tracer wire.
6. Underground electrical warning tape shall be installed above all underground conduit installations not concrete encased in unpaved areas. Warning tape shall be located as shown on the plans above the counterpoise wire.

E. Lighting Cans, Junction Cans, Junction Can Plazas and Hand Holes

1. Except in extreme cases where other means are not practical, manholes or hand holes larger than 4 feet x 4 feet x 4 feet deep shall not be used.
2. Hand holes shall be equipped with spring loaded/assisted hinged covers of a design easily opened by one person.
3. The preferred method of connectivity shall be by use of junction can plazas consisting of FAA L-868 cans installed in concrete plazas. Each can shall contain a single circuit with the designation of the circuit imprinted in a brass marker embedded in the concrete adjacent to the can. If deemed necessary, and at the approval of the Airfield Maintenance Electrical Supervisor, more than one circuit may be installed in a conduit/can. Can lids should be flush with concrete plazas with dam rings on the cans.
4. All ducts installed under paved areas shall be encased in concrete.
5. All unused conduits shall have the open ends plugged with removable tapered plugs and be provided with a pull rope equivalent to IDEAL Power-Fish pull line (200 lb strength)

6. Drain lines shall be installed to provide positive drainage to eliminate standing water in airfield lighting bases, junction cans, and hand holes in locations determined by the designer.
7. L-868 cans used for the installation of in-pavement lights shall be of a two-piece design with the top section including a multi-hole ring (VEGA #2419MEM) as manufactured by Jaquith Industries.
8. Fixture hold down bolts shall be all-thread stainless steel, type 304 or as recommended by the fixture manufacturer.
9. Fixture hold down bolts for in-pavement lights shall be tightened to the proper torque per fixture manufacture's specifications. All bolt holes shall be cleaned using a source of compressed air prior to installation of any bolts. Threads on all bolts shall be coated with anti-seize compound approved for use on stainless steel. Bolts shall not extend past the threaded adapter ring or into the can. Final tightening of the bolts shall be done using a properly calibrated torque wrench of the required range and verified by the engineer. Electrically or pneumatically operated wrenches shall not be used to achieve the final torque on bolts.
10. Lock washers installed on hold down bolts for all fixtures shall be two piece 316 or 316L stainless steel washer. CRC type washers shall not be acceptable.
11. All cans shall have factory-installed hubs. Grommet cans are **not** acceptable unless approved for the application by the Airfield Maintenance Electrical Supervisor. Stub-in connections into existing light bases shall be Meyers hub installation.

F. Connectors

1. L-823 connectors used to splice L-824 type C #8 AWG cables shall be Elastimold style *54*-D4-D4 or equivalent. L-823 connectors shall be made waterproof by a double layer of rubber tape (scotch 23 or equal) covered by a double layer of plastic tape (scotch 88 or equal). Heat shrink, is not allowable. One-piece shrink kits that encapsulate the entire splice shall not be used. Provide Scotch 23/Scotch 88 waterproofing at center connection to extend 1-1/2" each side of break and at each end of splice kit.

G. Fixtures

1. Runway and taxiway elevated light fixtures shall use a quartz bi-pin type lamp of the minimum wattage required for the application unless LED fixtures are approved by Airfield Maintenance Electrical Supervisor.
2. In-pavement fixtures should be manufactured of aluminum and utilize no more than two lamps with a maximum total wattage of 100 watts per fixture. L-850C edge lights and fixtures used for stop bars and runway guard lights may exceed this wattage, however.

H. Signs

1. Signs should be re-lampable without the use of tools.
2. Concrete foundations for signs shall contain separate housings for transformers. Transformers shall not be housed under a leg of the sign or any portion of the sign. Sign power should be fed through the sign leg.

3. Where practical, signs should be style 5, size 3, and be installed on a dedicated circuit.
4. All signs installed on the airfield should be marked on each end with 4” vinyl reflective labels with the sign’s designation as shown on the plans.

Facilities Construction Standards

A. General

1. All work shall comply with the applicable construction codes and MSCAA standards. The contractor shall be responsible for construction code permits and shall arrange for all code required inspections. Copies of permits shall be supplied to the Manager of Building Maintenance.
2. Utilities will not be interrupted without prior coordination and approval from the MSCAA Building Maintenance Manager, telephone number (901) 922-8615 or the Maintenance Service Desk at (901) 922-8040. Approval is required for each and every interruption. A minimum of a 24-hour notice is required for utility interruptions.
3. All salvaged equipment shall be returned to MSCAA at their designated location for their use or disposed of off-site as directed by MSCAA.
4. Asbestos Containing Materials (ACMs) are specifically prohibited without specific written approval from MSCAA. Any installation of ACMs without prior written approval must be removed immediately by the installer in accord with local ACM removal regulations.

B. Penetrations

1. All concrete floor and roof penetrations must be accomplished by core drilling. Use of rotary hammer or other impact tools for this purpose is prohibited. Core drilling efforts must be coordinated with tenants occupying space below the cored floor slab. The contractor will be responsible for any damage resulting from core drilling.
2. Sealing of new and pre-existing floor penetrations must be filled full depth with hydraulic cement and sealed with epoxy or polyurethane caulk as noted under the Preferred Brands heading (pages 17 & 18). The installation shall be inspected by the MSCAA Development Division. Contractor shall coordinate with MSCAA Development Division for any x-ray or ultra-sound requirements for concrete floor/roof penetrations. No drilling through concrete beams unless approved by Development.
3. When drilling or core drilling through floors, walls, ceilings etc., the contractor is responsible for inspecting for electrical, plumbing, etc and is fully responsible for all repairs to anything damaged.
4. No drilling or ramset fastening is allowed in pan sections of the concrete structure. Any attachments installed above the ceiling will be suspended from the joist structure only.
5. No holes shall be drilled and no anchors shall be attached to the glazed brick, glazed wall tiles, or metal wall panels. Attachments shall be anchored in the mortar joints exclusively.
6. Penetrations through the roof are typically prohibited. When unavoidable, roof penetrations shall be coordinated with MSCAA and will be the responsibility of the contractor to restore the roof to such a condition as not to invalidate the roof warranty.
7. Hydraulic cement and core drill sealant shall be installed full depth. After curing, epoxy or polyurethane caulk shall be applied at the bottom of the plug and polyurethane caulk shall be applied at the top surface.

C. Signage

1. Signage shall comply with the standards established by MSCAA and final approval shall be the responsibility of MSCAA Development Division.

D. Electrical

1. Fiber optic runs should include #10 THWN stranded yellow tracer wire for locating purposes and connected in its entirety as a continuous conductor. Alternatively, armored fiber optic cables will be considered in lieu of tracer wire.
2. All electrical conductors will be installed in conduit and use of flex conduit is limited to runs of 6 feet or less. Conduit couplings and connectors utilizing setscrew fasteners are prohibited. Conduit shall be concealed from public view wherever possible. All conduits and electrical raceways shall contain an equipment grounding conductor.
3. All electrical conductors #14 AWG & larger shall be stranded copper wire unless otherwise approved in writing by MSCAA.
4. All emergency devices including emergency lights, exit lights, etc., shall be connected to emergency circuits. MSCAA does not allow battery packs.
5. MSCAA does not allow Bodine ballasts in fluorescent lighting fixtures. LED is preferred in all lay-in fixtures. Prior approval by Development must be received for use of fluorescent lay-in fixtures and the lamps shall be T8.
6. All use of cable trays is subject to MSCAA review and approval. Conduit installation must be independently supported and shall not be strapped to cable trays or any of the cable trays' support systems, including hangers and braces.
7. All equipment shall meet the appropriate UL listing for its intended purpose.
8. 23-kV rated cable shall conform to MLG&W standards. This requires cable having an aluminum or copper conductor, extruded conductor shield, ethylene propylene rubber insulation, extruded semi-conducting insulation shield, copper concentric neutral, and polyethylene jacket. The cable shall be suitable for direct burial, conduit/duct and aerial installations. All designers should re-verify MLG&W standards prior to publication of construction documents.

E. Mechanical

1. The use of flex duct shall not exceed more than four (4) feet and banded with metal straps, no tape. Use of flex duct other than at the end of a line or connected to air diffusers must be approved by MSCAA.
2. Controls for the HVAC system shall be open architecture and compatible with the JCI Metasys Extended Architecture System.
3. VAV Boxes shall be pressure dependent, electronic controls with no auxiliary fan or local filter.
4. A copy of the test and balance report shall be submitted to MSCAA Development. An independent contractor shall perform the testing and complete the report.
5. The contractor shall align all motors to the associated pump, gearbox, fan, etc. MSCAA Development and Maintenance shall inspect alignment prior to acceptance. Maximum

allowable angular and parallel misalignment is 0.003.

6. Heat trace cables shall have indicator lights installed in a visible location that illuminate when the cables are in operation.
7. UV lighting in HVAC and HEPA (MERV-14 Rating) filtration systems.

F. Plumbing

1. Brass ball valves shall be installed at the water supply point of origin and in the ceiling directly above any newly installed plumbing fixture where a utility chase wall is not present. If a walk-in utility chase exists, then ball valves shall be installed in the accessible chase no more than five (5) feet above finished floor. There shall be no more than 4 plumbing fixtures on one ball valve. Brass valve tags shall be placed on all newly installed valves clearly identifying the origin and destination.

G. Fire Alarm and Suppression Systems

1. The fire suppression system shall interface with the airport's Simplex Fire Alarm System.
2. All dry sprinkler pipe and fittings must be galvanized. All grooves in piping shall be the correct depth per industry standards.
3. See section Facilities Construction Standards – Construction Contractors for additional requirements.

H. Antennae

1. All work shall comply with the applicable construction codes and MSCAA standards.
2. No antenna is permitted on the roof; it must be installed within the infrastructure on one of the antenna farms or roof mounted antenna racks or in very limited cases with prior approval parapet mounted. Proposed antenna locations must be approved by MSCAA Development.
3. Cables are not allowed on the roof or to run bare down a wall. A conduit from the parapet location down the wall with an LB connector into the wall below the spandrel beam is required. Parapet mount must be properly sealed to prevent leaks through the concrete. Any wall penetrations must also be sealed. Cables from antennas mounted on racks must utilize the conduit pathway at the rack location.
4. Cables above the ceiling must be independently supported from the roof structure and run by a licensed low voltage contractor, or a licensed electrical contractor, in accordance with applicable codes.
5. Installer shall be responsible for construction code permits and shall arrange for all code required inspections. Copies of permits shall be supplied to the Manager of Building Maintenance.
6. MSCAA Maintenance will not provide the escort for antenna work; either installer or Operator must be badged or tenant will have to escort antenna personnel.

I. Miscellaneous

1. Relocation and/or removal of any security device including CCTV cameras, access control

equipment, etc. must be approved by MSCAA Development.

2. Non-shrink grout shall be used with all tile work, up to four (4) feet in height, laid on top of an approved waterproofing membrane.
3. All 12" X 12" ceiling tile shall be installed with the arrow on the back of the tile pointing south.
4. All flammable gas and liquid systems that are piped into buildings shall be properly equipped with seismic shutoff valves. Seismic shutoff valves shall be designed and installed to comply with all governing code requirements, insurance requirements, and MSCAA Construction Standard requirements. In the case of conflict between the listed requirements, the most stringent shall apply.
5. For in-pavement loop installations, loop wire must meet IMSA Spec 51-7. Lead-in wire, if needed, must meet IMSA Spec 50-2. Loop wire shall be one continuous length with no splices from the junction box or control cabinet and back again. The wire shall be twisted by hand four twists per foot in the lead-in slot. Loops must be cut in a rectangular shape, with each 90 degree corner transected with a 45 degree cut to prevent over bending/stressing of the loop wire. Loop saw cuts should be ¼" to 3/8" wide and a minimum of 1½" deep in concrete and 2" deep in asphalt. Loop Lead-in saw cuts should be 3/8" wide and a minimum of 1½" deep in concrete and 2" deep in asphalt. Properly seal the saw cuts with Dow Corning 890 SL self-leveling sealant.
6. The terrazzo floor shall be protected during construction. The removal, cutting, disfigurement or covering of the Terrazzo floor shall be reviewed and approved by MSCAA Development.
7. Only black steel pipe is permitted for use on systems containing diesel fuel, including tank vent stack piping, tank fill piping, and tank drain piping. No other material, including galvanized pipe, is allowed.
8. 90^{o} brushed stainless steel corner protectors shall be installed on all new interior wall construction. The protectors shall be type 304 grade stainless, 22 gauge, 44" tall, 1.5" wings with a 3/8" wall grip edge, and a 1" radius at the top. Protectors shall be installed on top of the cove base and be adhered to the wall with F-26 construction adhesive.
9. Fire rated solid wood blocking that extends from wall stud to wall stud shall be installed for support of framed openings, wall mounted cabinets, wall mounted door hardware, wall mounted monitors, plumbing fixtures, toilet partitions, toilet accessories, mirrors, etc. on all new construction walls or remodels, excluding brick or block walls.
10. All fryers in kitchens must include automated in-line used cooking oil containment systems for proper collection and disposal. Tenants will be responsible for installation, maintenance, and used cooking oil recycling.

J. Construction Contractors

1. Electrical work performed shall be accomplished by crews with a minimum of one licensed journeyman per three apprentices.
2. The Contractor shall be responsible for maintaining a clean construction site and any space used for the removal of debris. The contractor shall be responsible for repair of any damage

caused by construction to as good or better condition.

3. If directed by Development the Contractor shall erect a temporary wall around the construction site. All temporary walls shall be constructed of metal studs; anchored on bottom with double stick tape and anchored to the roof deck on top (attachment to ceiling tiles or grid is prohibited). The outside (public side) of the wall shall be finished floor to ceiling with 5/8" drywall with 2 coats of flat off white latex paint. The bottom of the wall shall be trimmed with 4" black cove base. A 2"x6" chair rail, blocked 2" off the wall, shall be installed 36" to center above finished floor. The chair rail shall be sanded and painted with two coats of bronze paint (PPG Pitt-Tech Acrylic High Gloss DTM Industrial Enamel – Bronze Tone). The Contractor shall retain responsibility during construction to maintain the wall for aesthetic and security issues. MSCAA Development Division shall approve its location, any attachments to terrazzo floors and all signage and/or graphics. For short durations and in areas of limited public visibility, temporary walls may consist of metal studs and BC grade plywood with a high build primer and premium latex paint; use of these materials is allowed only with specific approval from MSCAA Development Division.
4. Walk-off mats shall be used at all access points to the construction area to prevent tracking of dust and debris and is responsible for cleanup if any dirt, dust and/or debris gets outside their construction limits.
5. When accessible to the public, the schedule of construction efforts and removal of debris shall be coordinated so as not to disrupt other tenants or endanger the safety of the public. Final approval shall be the responsibility of MSCAA Development Division. Unless directed otherwise, working at MEM requires a badge; coordinate with MSCAA Operations Division for specific project requirements. For badging information, the Identification Office telephone number is (901) 922-8005.
6. The contractor shall inform MSCAA Development Division, telephone number (901) 922-8033 at least 48 hours prior to startup of construction.
7. A set of completed as-built drawings shall be supplied to Development upon completion of the project.
8. Fire Alarm System – the Contractor shall contact Simplex to verify that the designer worked with Simplex during the design. If design is the responsibility of the Contractor, Contractor shall contact Simplex to design the installation.
9. A pre-test of the modifications to the fire alarm system shall be conducted with Simplex and the Contractor. This pre-test must be scheduled and successfully completed at least 24 hours in advance of any test with the Memphis Fire Department. MSCAA's Development Maintenance and Communications will participate in the pre-test, so close coordination is required. A minimum of 72 hours advanced notification is required to both Simplex and MSCAA to schedule the pre-test. The pre-test must be performed after hours. Upon completion of the pre-test, Simplex will provide written confirmation of the successful completion of the pre-test, a copy of which is to be provided to the MFD fire marshal, and a copy is to be provided to MSCAA.
10. The test with the Memphis Fire Department for occupancy must be performed after hours and closely coordinated with MSCAA Development, Maintenance and t Communications. Provide MSCAA a copy of any documentation from MFD, including deficiencies noted

with the fire system, or approval of the system.

Painting Standards

A. Airfield

1. Airfield painting shall comply with the latest revision of the P-620 specification. Thermoplastic markings are not acceptable.

B. Roads

1. Road painting shall comply with the latest revision of the TT-P-1952 specification. Thermoplastic markings are not acceptable.

C. Paint Vendors

1. This vendor list is provided for reference only in regards to the specific products listed in the following paragraphs. The list is not exhaustive or exclusive as equivalent vendors will be considered by MSCAA Paint Shop.
2. PPG Architectural Finishes, Inc. (1525 Three Place, Memphis, TN, 38116)
3. Sherwin-Williams (3850 Lamar Avenue, Suite 1, Memphis, TN)
4. Farrell-Calhoun (3185 Millbranch Avenue, Memphis, TN)

D. Terminal, Concourses, and South Parking Garage

1. Exterior White Fasciae, Cargo Docks, Ramp, Walls, and Columns
   i. Sherwin-Williams Universal Primer (or equivalent)
   ii. PPG Pitt-Tech Acrylic Satin – White
   iii. Sherwin-Williams A-100 Acrylic Satin – White
2. Exterior CMU Walls
   i. Block Filler
   ii. PPG Pitt-Tech Acrylic Satin – White
   iii. Sherwin-Williams A-100 Acrylic Satin – White
3. Interior Walls
   i. Sherwin-Williams B31W4400 Promar 400 Interior Latex Semi-Gloss – White
   ii. Farrell-Calhoun Acrylic Interior Semi-Gloss Latex Enamel 650 – Carriage House
   iii. Offices (including Airport Police, most of Building Maintenance, and Cargo Building Offices): Farrell-Calhoun Acrylic Interior Semi-Gloss Latex Enamel 650 – Carriage House
   iv. Offices (Mezzanine & Apron level concourse B): Farrell-Calhoun Interior Premium Eggshell Latex Enamel 370 – Snowglory
   v. Gypsum Ceilings/Walls: Pittsburgh Paints PPG 1006-1 Color: Gypsum Various Sheens
   vi. Aluminum Curtainwall: Valspar Sherwin Williams Fluorpon Special Color: Special White 391B495

4. Doors and Frames
    i. Brown Doors: Sherwin Williams Pro Industrial Acrylic Semi-Gloss – Kodiak Olive
    ii. Green Doors: Sherwin Williams Pro Industrial Acrylic Semi-Gloss – Blarney Stone
    iii. Brown Frames: Sherwin Williams Pro Industrial Acrylic Semi-Gloss – Bronze Tone
    iv. Grey Frames and doors: Farrell-Calhoun Interior Alkyd Enamel Semi-Gloss – Zen Retreat
    v. White Frames and doors (Concourse B): Farrell-Calhoun Interior Alkyd Enamel Semi-Gloss - Gypsum
5. Window Bases
    i. Farrell-Calhoun Acrylic Interior Semi-Gloss Latex Enamel 650 – Carriage House
6. Exterior Metal Structures
    i. Alkyd Industrial Gloss Enamel – White
    ii. Alkyd Industrial Gloss Enamel – Farrell Calhoun Zen Retreat
7. Interior Metal Structure (Concourse B)
    a. PT-2 Valspar Super Special White
8. Rotunda Columns (located in the "Y" of the B Concourse)
    a. PT-2 Valspar Super Special White
9. ID Office
    i. Walls: Farrell-Calhoun Interior Premium Eggshell Latex Enamel 370 – Carriage House
    ii. Doors and Frames: match Terminal & Concourses doors and frames
10. Management Work Room
    i. Walls: Farrell-Calhoun Interior Premium Eggshell Latex Enamel 370 – Carriage House
    ii. Doors and Frames: match Terminal & Concourses doors and frames
11. FIS
    i. Walls: Farrell-Calhoun Acrylic Interior Semi-Gloss Latex Enamel 650 – Carriage House
    ii. Doors: PPG Pitt-Tech Acrylic Satin DTM Industrial Enamel 90-475 – Quick Silver
    iii. Frames: PPG Pitt-Tech Acrylic Satin DTM Industrial Enamel 90-709/05 – Dark Silver
12. Painted Floors (Building Maintenance areas)
    i. Farrell-Calhoun Floor and Deck Enamel 702 – Medium Gray

E. Administration Building

1. Walls
    i. Ceilings: Farrell-Calhoun Interior Premium Eggshell Latex Enamel 370 – Zurich White

ii. Walls: Farrell-Calhoun Interior Premium Eggshell Latex Enamel 370 – Carriage House

2. Interior Doors and Frames

i. Sherwin-Williams Semi-Gloss Oil Base 1019 – Grey Statue

F. Airfield Maintenance Building

1. Walls

i. Walls: Farrell-Calhoun Acrylic Interior Semi-Gloss Latex Enamel 650 – Carriage House

2. Doors and Frames

i. Doors: PPG Pitt-Tech Acrylic Satin DTM Industrial Enamel 90-475 – Quick Silver

ii. Frames: PPG Pitt-Tech Acrylic Satin DTM Industrial Enamel 90-709/05 – Dark Silver

G. Miscellaneous

1. De-Ice Tanks

i. Farrell-Calhoun Premium Alkyd Industrial Gloss Enamel 800 – White

2. Exterior Light, Sign Pole, Sign Bases, and Bollards

i. PPG Alkyd Industrial Enamel Gloss Z-Line – Bronze Tone

3. Ticket Spitters and Bollards

i. Farrell-Calhoun Premium Alkyd Industrial Gloss Enamel 800 – Safety Zone Yellow

4. Colored Metal Surfaces

i. Red: Farrell-Calhoun Premium Alkyd Industrial Gloss Enamel 800 – International Red

ii. Orange: Farrell-Calhoun Premium Alkyd Industrial Gloss Enamel 800 – International Orange

iii. Yellow: Farrell-Calhoun Premium Alkyd Industrial Gloss Enamel 800 – Safety Zone Yellow

Preferred Equipment

A. Architectural Finishes

1. Flooring: VCT – Armstrong
2. Cove Base
    i. Terminal Building: Armstrong or Roppe
    ii. Administration Building: Johnsonite Rubber 700 Series; 4” high; #24 Grey Haze
    iii. Offices: Flexco Rubber wallflowers series; 4” high; #03 Charcoal
3. 4” Rubber Wall Base
    i. Manufacturer: Roppe
    ii. Color: 123 Charcoal
4. 3/8” Epoxy Terrazzo TZ-3
    i. Manufacturer: Key Resin
    ii. Color: KEY 100-1779 Gull Wing Grey
    iii. Location: Concourse B
5. 3/8” Epoxy Terrazzo TZ-1
    i. Manufacturer: Key Resin
    ii. Color: KEY 001-563 White Diamond
    iii. Location: Concourse B
6. 3/8” Epoxy Terrazzo TZ-2
    i. Manufacturer: Key Resin
    ii. Color: Key 28-27 Hearthstone
    iii. Location: Concourse B
7. 3/8” Epoxy Terrazzo TZ-4
    i. Manufacturer: Key Resin
    ii. Color: KEY 100-675 Pewter
    iii. Location: Concourse B
8. 3/8” Epoxy Terrazzo TZ-5
    i. Manufacturer: Key Resin
    ii. Color: KEY 100-2018 Whale Gray
    iii. Location: Concourse B
9. 3/8” Epoxy Terrazzo TZ-6
    i. Manufacturer: Key Resin

ii. Color: KEY 001-563 White Diamond
iii. Location: Concourse B

10. 3/8” Epoxy Terrazzo TZ-7
    i. Manufacturer: Key Resin
    ii. Color: KEY 001-754 Whiteish
    iii. Location: Concourse A, B, & C Terminals
11. 3/8” Epoxy Terrazzo TZ-8
    i. Manufacturer: Key Resin
    ii. Color: KEY 012 Black
    iii. Location: Concourse B
12. 3/8” Epoxy Terrazzo TZ-9
    i. Manufacturer: Key Resin
    ii. Color: KEY 001-753 White Glass
    iii. Location: Concourse B
13. Accent Wall Tile T-1A
    i. Manufacturer: Fireclay
    ii. Product: Glazed Wall Tile White Clay Body (3”X12”)
    iii. Color: White Wash (V1)
    iv. Grout Color: Laticrete #89 Smoke Grey
    v. Location: Concourse B
14. Accent Wall Tile T-1B
    i. Manufacturer: Fireclay
    ii. Product: Glazed Wall Tile White Clay Body (3”X12”)
    iii. Color: Foggy Morning
    iv. Grout Color: Laticrete #89 Smoke Grey
    v. Location: Concourse B
15. Accent Wall Tile T-1C
    i. Manufacturer: Fireclay
    ii. Product: Glazed Wall Tile White Clay Body (3”X12”)
    iii. Color: Powder Blue
    iv. Grout Color: Laticrete #89 Smoke Grey
    v. Location: Concourse B
16. Accent Wall Tile T-1D

i. Manufacturer: Fireclay
ii. Product: Glazed Wall Tile White Clay Body (3”X12”)
iii. Color: Mayan Blue
iv. Grout Color: Laticrete #89 Smoke Grey
v. Location: Concourse B

17. Accent Wall Tile T-1E
    i. Manufacturer: Fireclay
    ii. Product: Glazed Wall Tile White Clay Body (3”X12”)
    iii. Color: Martinique
    iv. Grout Color: Laticrete #89 Smoke Grey
    v. Location: Concourse B
18. Porcelain Tile T-2 (restroom Floor)
    i. Manufacturer: Casalgrande Padana
    ii. Product: Balsaltina 18”X18” Naturale Finish
    iii. Color: Linosa
    iv. Grout Color: Laticrete #45 Raven
    v. Location: Concourse B
19. Ceiling Tile
    i. Armstrong 2’ x 2’, Cortega Angled Tegular 704A (2’ x 2’ x 5/8”)
    ii. Armstrong 2’ x 2’, Fissured Square Lay-in 756A (2’ x 2’ x 5/8”)
    iii. Armstrong 2’ x 4’, Cortega Second Look 2765 (2’ x 4’ x ¾”)
    iv. Armstrong 44”X 48”, Optima Techzone
    v. Armstrong 2’ X 2’, Ultima
20. Ceiling Grid: Armstrong Prelude
    i. Mains: 7300
    ii. 4’ Ts: XL7348
    iii. 2’ Ts: XL7328
    iv. Wall mold: 7800
21. Ceiling Grid: Armstrong Suprafine XL
    i. Location: Concourse B
22. Ceiling Metal Panel:
    i. Accent Ceilings & Walls
    ii. Perforated Aluminum Acoustic Backing Torsion Spring Hinged Pans

iii. Color: Ultra White

iv. Location: Concourse B

23. Ceiling Linear Metal

i. Accent Ceilings & Walls

ii. Pattern: Barcode

iii. Color: 8424 Walnut

iv. Location: Concourse B

24. Carpet (Hold Rooms)

i. Style Name: Resonance

ii. Style Number: J0118

iii. Color: 00406 Saddle

iv. Vendor: Continental Flooring (800-825-1221 Ext 206)

v. The pattern for the carpet is to run perpendicular to the concourse for hold room installations.

25. Carpet (Offices)

i. Style Name: Live Wire

ii. Style Number: 54733

iii. Color: 33506 Animated

iv. Vendor: Continental Flooring (800-825-1221 Ext 206)

26. Carpet (MEM Executive Offices)

i. Style Name: Ripple Effect

ii. Style Number: J0116

iii. Color: 00501 Laughs & Yawns

iv. Vendor: Continental Flooring (800-825-1221 Ext 206)

27. Carpet CPT-1 (Concourse B)

i. Manufacturer: Interface

ii. Product: Custom Soundwave Verse Sample

iii. No: 265317-005

28. Carpet Tile CPT-1A (Concourse B)

i. Manufacturer: Interface

ii. Product: Custom Groundwaves Verse Samples

iii. No: 265317-008

29. Carpet Tile CPT-1B (Concourse B)

i. Manufacturer: Interface
ii. Product: Custom Off Line Sample
iii. No: 265317-007

30. Carpet Tile CPT-1 (Concourse B)
    i. Manufacturer: Interface
    ii. Product: Custom Off Line Sample
    iii. No: 265317-002
31. Carpet Tile CPT-1D (Concourse B)
    i. Manufacturer: Interface
    ii. Product: Custom SL910 Sample
    iii. No: 265317-013
32. Wood Paneling (Concourse B)
    i. Strait Grain
    ii. Species: White Oak
    iii. Color: Custom
33. Quartz QZ-1 (Concourse B)
    i. Manufacturer: Silestone
    ii. Color: Blanco Maple
34. Quartz QZ-2 (Concourse B)
    i. Manufacturer: Silestone
    ii. Color: Cemento Spa. Polished Finish
35. Quartz QZ-3 (Concourse B)
    i. Manufacturer: Cambria
    ii. Color: Berwyn
36. Quartz QZ-4 (Concourse B)
    i. Manufacturer: Cambria
    ii. Color: Whitehall
37. Quartz QZ-5 (Concourse B)
    i. Manufacturer: Silestone
    ii. Color: Cemento Spa. Polished Finish
38. Quartz QZ-6 (Concourse B)
    i. Manufacturer: Silestone
    ii. Color: Whitehall

39. Quartz QZ-7 (Concourse B)
    i. Manufacturer: Silestone
    ii. Color: Whitehall
40. Curtain Wall (Concourse B)
    i. Manufacturer: Kawneer
    ii. Product: 1600 System 2
    iii. Color: Interior Valspar Super Special White / Exterior Clear Anodized
41. Epoxy Flooring (Concourse B)
    i. Manufacturer: BASF Building Systems
    ii. Product: BASF Masterdeal 2500 LT Duty
    iii. Color: Gray
42. Epoxy Flooring (Concourse B)
    i. Manufacturer: Dex-O-Tex
    ii. Product: Color Flake L
    iii. Color: BX 520
43. Exterior Aluminum Composite Metal Paneling (Concourse B)
    i. Manufacturer: Alucobond
    ii. Product: Alucobond Plus – fire rated core
    iii. Colors:
        1. Type 1: Titanium Metallic II
        2. Type 3A: Southwest Gold Metallic
        3. Type 3B: Harvest Gold Mica
        4. Type 3C: Driftwood Mica

B. Plumbing & Restrooms

1. Flush valves: Sloan, Royal
2. Electronic flush valve retrofits:
    i. Urinals: Zurn ZRK-C-3.5, 3.5 GPF
    ii. Water Closets: Zurn ZRK-C-3.5, 3.5 GPF
3. Plumbing fixtures: Crane, American Standard, Kohler
4. Partitions: Accurate, Stainless Steel, No sight design, overhead braced, Continuous, Hinge type-Integral, Hinge In-swing/out-swing standard closed position, Floor mounted
5. Sinks: American Standard, 0355.012 Lucerne wall mounted Lav. sink w/4" centers

6. Service Sinks: 8” centers w/ ZURN Z841M1 Faucet
7. Urinals: 6501.010 wash brook urinal American Standard white. Zurn Retro Flush Valve.
8. Water Closets
    i. Wall-mounted: American Standard 2257.103 af wall toilet 4 bolt wall mount, white
    ii. Floor-mounted: Kohler K-4368
9. Lavatories
    i. Non-ADA: American Standard, vandal resistant lavatory faucet with grid drain 2385.130 polished chrome
    ii. ADA: Delta – 511-WFHDF
10. Faucets: Sloan Optima EBF-85M infrared
11. Water closet gaskets: Wade Part # M-8 for wall hung closets
12. Backflow devices: Watts
13. Water coolers: Halsey Taylor – model #HAC8FS-Q(SS) wall-mounted
14. Toilet Accessories: Bobrick
    i. Recessed towel dispenser and waste receptacle: B-3961
    ii. Surface mounted toilet tissue dispenser: B-2888
    iii. Sanitary napkin disposal: B-270
    iv. Heavy duty robe hook: B-2116
    v. Handicap tilt mirror: B-293 (24” x 36”)
    vi. Grab bars: stainless steel with Snap Flange
15. Toilet Accessories: Non-Bobrick
    i. Foam Dispenser – Spartan Chemical Company 975700
    ii. Toilet paper dispenser: Shoreline 830 from Memphis Chemical (not for use in public restrooms)
    iii. Toilet Seat Cover Cabinet: Franklin Brass #1988 (Stainless Steel)
16. Eye Wash Station: Bradley S19314F
17. Angle Stops: Brasscraft

C. Doors

1. Exterior: Steelcraft Door; 16 gauge metal, galvanized; fully reinforced for door closer and continuous gear hinge; with 24” x 32” window prep (if specified)
    a. Standard doors shall be 3.0’ x 7.0’.
    b. Jet Bridge doors shall be 4.0’ x 7.0’.
2. Interior: 3070 (3.0’ x 7.0’) solid core wooden door with prep for continuous gear hinge; with 24” x 32” window prep (if specified)

3. Window Kits (if specified): Anemostat #LOPRO Visionlite 24”x32” with Tempered Glass
4. Metal Frames: Fit door openings to frame for a Steelcraft door or solid core wooden door with fully reinforced frame for door closer and continuous gear hinge
5. Threshold: Aluminum to fit door frame
6. Drip Caps: 16 ad if outside door
7. Closers:
    a. Standard Doors: LCN model 4041, arm RW/ PA, finish to match existing areas adjustment size 1-6 PC 23
    b. Jet Bridge Doors: Dorma 1816HT Series with smoke detector
8. Hinges:
    a. New doors shall have reinforcement on the hinge side and hinges shall be continuous geared hinges by National Guard Products, Stanley, or PBB. Minimum 0.120-inch thick hinge leaves with minimum overall width of 4 inches; fabricated to full height of door and frame. Fabricate hinges non-handed and to template screw locations. Continuous hinges guaranteed for the life of the opening.
        1. At electrified hardware locations provide electric transfer continuous hinges with a 12” removable hinge modification accessible without de-mounting door from the frame and Molex standardized plug connectors to accommodate up to 12 wires. Connectors plug directly to through-door wiring harnesses for connection to electric locking devices and power supplies. Provide sufficient number of concealed wires to accommodate electric function of specified hardware. Preferred hardware is Von Duprin EPT10.
    b. Existing doors without reinforcement on the hinge side shall use hinges by Stanley FBB 179-4.5 x 4.5 x USP x NRP
9. Lock Prep: Yale 6-pin lockset-PB5407LN 694X497 Finish – US 10B
10. Keyways: 6-pin LFIC Cores with SA keyway
11. Panic Hardware: Dorma 9000 Series or Von Duprin RX QEL 98NL-F
12. Flush Bolts: Trimco, Burns, or Ives. Provide manual flush bolts with top rod of sufficient length to allow bolt location approximately six feet from the floor. Furnish dust proof strikes for bottom bolts. Surface bolts to be 8” in length and U.L. listed for labeled fire doors.
13. Low voltage door operators: Dorma ED900 Series or LCN 9000 Series

D. Electrical

1. Wire: THHN or equal for insulation
2. VFDs: PowerFlex 400 by Allen-Bradley including latest harmonic distortion units w/ Metasys board
3. High Voltage Substations: General Electrical, Cutler Hammer
4. Panels, breakers, and contactors: Westinghouse, ITE (Siemens), Square D, Allen Bradley,

Cutler Hammer

5. Devices: Leviton, Bryant, P&S, Hubbell
6. Device Covers: Stainless Steel
7. Lighting: G.E, Phillips, Sylvania, Lithonia
8. Fittings (no Set screws, couplings, or connectors): Raco, Steel City
9. Conduit/Wire: No MC or BX cable other than 6' or less to be used as whips from junction box to item being fed

E. Mechanical

1. Heaters: Trane, McQuay
2. Electronic Controls: Johnson Controls (FEC, NAE, BACnet MS/TP), Barber Coleman, Trane, McQuay
3. Valves, Hot/Chill Water: Johnson Controls, Barber Coleman, Honeywell
4. AHUs: Trane
5. Boilers: Cleaver Brooks
6. Chillers: Trane
7. Pumps: Peerless, Bell & Gossett, Aurora, Ingersoll Rand, Pyramid Pump, Grundfos
8. VAV Boxes (All VAVs shall be pressure dependent with electronic controls): Environmental Tech, Varitrane Systems, Tuttle & Bailey
9. Electronic Thermostats: TE-6700, BACnet MS/TP, N2, Johnson Control
10. Cooling Towers: Marley, BAC

F. Miscellaneous

1. Joint Seals and Floor Penetration Seals: Evazote 380 E. S. P. with Hindered Amine Light Stabilizer
2. Automatic Perimeter Fence Gate Operators: HySecurity

APPENDIX B

APRON REHABILITATION

100% DESIGN REPORT

GENERAL DEWITT SPAIN AIRPORT

MEMPHIS, TENNESSEE

MSCAA PROJECT NO. 20-1440-00

TAKE OFF WITH US.
Memphis
INTERNATIONAL AIRPORT

Prepared By:

POWERS HILL DESIGN
CIVIL ENGINEERING. CIVIL RESPONSIBILITY.

NEEL-SCHAFFER
Solutions you can build upon

November 2024

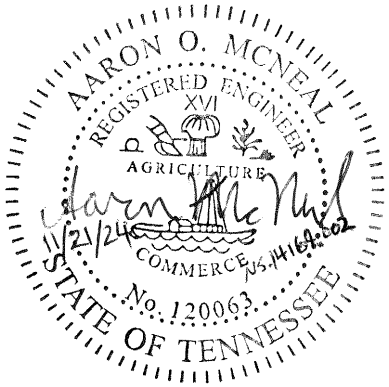


Table of Contents

Appendix D – Apron Parking and Circulation Layouts

Appendix E – FAARField Pavement Designs

Appendix F – Construction Safety and Phasing

Appendix G – Opinion of Probable Cost

Section 1 - Project Data

Sponsor Contact	Memphis – Shelby County Airport Authority (MSCAA) 2787 N 2nd St. Memphis, TN 38127
Project Name:	DeWitt Spain Airport Apron Rehabilitation

Section 2 - Design Standards

The project was designed using design standards developed by the Federal Aviation Administration (FAA) for design, development, and construction on airports. These standards include:

AC 150/5300-13B	Airport Design
AC 150/5320-5D	Surface Drainage Design
AC 150/5320-6G	Airport Pavement Design and Evaluation
AC 150/5340-1M	Marking of Paved Areas on Airports
AC 150/5370-10H	Standards for Specifying Construction of Airports
AC 150/5370-2G	Operational Safety on Airports During Construction
AC 150/5370-13A	Off-Peak Construction of Airport Pavements Using Hot Mix Asphalt

Section 3 - Design Criteria

The design criteria used to develop detailed construction plans and specifications includes information provided by the FAA, TDOT, the Airport and other sources.

These criteria include:

Aircraft Approach Category (AAC):	B
Airplane Design Group (ADG):	II
Design Aircraft, Geometrics:	King Air 200, Gross Weight 12,500 pounds
Design Aircraft, Pavements:	Design Aircraft Information – Table 1

Section 4 - Description of Work

The purpose of the project is to rehabilitate the northern portion of the Terminal Ramp and correct some grade deficiencies.

The scope of work for the proposed project was reduced during the 30% review process due to budget constraints but is generally described as Alternative 2 - Apron North of TWY A3. The work includes reconstruction with grade changes utilizing Full Depth Reclamation for approximately 67% of the project area, and the work also includes a 2" Mill and Overlay with some asphalt leveling for approximately 33% of the project area. See **Overall Site Plan (Sheet C3.00) in Appendix A** for the project limits.

Section 5 - Project Funding

The proposed project is funded through federal grants with local and State matching funds. The Federal grant is through the United States Department of Transportation through the Federal Aviation Administration's (FAA's) Airport Improvement Program (AIP) and FAA's Airport Improvement Grant (AIG) (originating from the Bipartisan Infrastructure Law (BIL)). A summary of the funding sources is provided in Table 5-1.

Table 5-1
Funding Summary

Funding Source	Amount	Scope
FAA AIP FY22 - FY25	$600,000	Rehabilitate Terminal Apron
FAA AIG FY22 - FY25	$1,171,000	Rehabilitate Terminal Apron
TDOT FY22 - FY25	$588,500	Rehabilitate Terminal Apron
MSCAA FY22 - FY25	$262,167	Rehabilitate Terminal Apron
FAA AIG FY26 (Construction Amendment)	$292,000	Rehabilitate Terminal Apron
TDOT FY26 (Construction Amendment)	$588,500	
MSCAA FY26 (Construction Amendment)	$97,833	Rehabilitate Terminal Apron
Total	$3,600,000	

There are three important points to note about the funding plan:

1. MSCAA may need to plan to cash flow the FAA AIG FY26, TDOT FY26, and local MSCAA FY26 portion of the project until the construction amendment grant can be executed.
2. Also of importance is the AIG FY22 funding must be obligated by September 30, 2025 otherwise it will be lost. To accomplish this the project should ideally be bid in early 2025.
3. Since the project will have grant funding from two different FAA funding sources and one planned construction amendment in a subsequent year for reimbursement, close coordination will be needed with TDOT to make sure the "useable unit of work" can be clearly defined for each grant.

Section 6 - Topographic Survey

A topographic survey was performed as part of design in order to identify existing physical features of the pavements, shoulders, lighting, and surrounding area and to determine existing grades and cross slopes. The topographic survey was used in evaluation of the existing grades and geometric criteria, as well as development of the design drawings.

Section 7 - Geotechnical Investigation

A Geotechnical Investigation was prepared in order to determine the existing pavement structure, in-situ subgrade conditions, and depth and severity of pavement distresses. The Geotechnical Investigation includes visual observation, pavement cores, soil borings, laboratory testing, and engineering analysis. The Geotechnical Investigation showed a highly variable pavement structure of the existing apron with 2.25" to 7.25" of hot mix asphalt on 0" to 15.5" cement treated base course on subgrade with a design CBR value of 8. A copy of the Geotechnical Investigation is included in **Appendix B** along with photographs of the pavement cores.

It is normal to see some minor variation in thicknesses due to construction tolerances and occasional point repairs, but the variability observed in the cores for these pavement sections is abnormal suggesting the apron was constructed in phases over time. This was confirmed with a desktop review of historical aerials as presented on **Exhibit 3 in Appendix A**.

Section 8 - Condition of Existing Pavement

The Pavement Condition Index (PCI) information from TDOT's 2020 Pavement Management Plan is summarized in Table 8-1 below, along with projected PCI and distress types present. A PCI number is a numerical score of how well the pavement is performing (i.e., 100 for new pavement down to 0 for completely failed pavement), and is based on a visual inspection using standardized methods outlined in FAA AC 150/5380-7B. TDOT typically sets the critical PCI for aprons, taxiways, and taxilanes at 60, which means the goal is to maintain the pavement above a PCI of 60. The location of the studied pavement sections are presented on **Exhibit 1 in Appendix A**, and the 2019 PCI information is presented graphically on **Exhibit 2 in Appendix A**. A copy of the 2020 Pavement Management Plan can be found at https://idea.appliedpavement.com/hosting/tennessee/.

Table 8-1 – PCI Information (Data source is TDOT 2020 Pavement Management Report)

Pavement Section	2019 Pavement Condition Index (PCI)	Drop in PCI / Year	2024 Projected Pavement Condition Index (PCI)	Distress Type
APME-001	76	1.5	69	L&T Cracking, Oil Spillage, Patching, Raveling, Swelling

Sample Photographs of the pavement sections can be viewed in **Appendix C**.

Section 9 - Horizontal Alignment and Dimensional Requirements

Apron Alignment / Orientation

The existing apron alignment / orientation is parallel with the runway and parallel taxiway. Modifying the alignment / orientation or geometry is unnecessary at this point in time, although the ALP shows future expansion.

Apron Dimensions

The northern portion of the Terminal Ramp is approximately 450 feet long (north to south from Taxiway A3 centerline) and is approximately 405 feet wide (East to West measuring from the Terminal's proposed 12-foot canopy).

Apron Circulation

The apron is abutted by the Terminal Building and three hangars on the east, turf on the northern and western sides, and additional ramp space and a Fuel Island to the south. There are two connector taxiways from the parallel taxiway as well as two taxiways at the northeast corner of the Terminal Ramp providing access to aircraft hangar storage areas.

Apron Parking Position Layout and TLOFA

The existing apron layout does not meet current FAA ADG I standards, therefore we developed alternative apron parking and circulation plans for the airport's consideration. Both alternative scenarios provide an ADG II (max wingspan 79') main loop circulation from the parallel taxiway at the north apron entrance, around the terminal ramp, to the fuel farm, and back to the parallel taxiway at Taxiway A3 as requested by the airport. This has a 110' TLOFA which is moderately larger than existing conditions. A matrix of alternatives comparing existing conditions and two alternative plans can be found in **Appendix D** along with a schematic layout of each alternative.

The existing conditions layout provides 51 'small' aircraft parking positions, but does not meet current separation standards. Option 1 provides 28 'medium' parking positions for full ADG I standards (up to 49' wingspan). The loss of parking positions from existing conditions to Option 1 would be substantial (51 down to 28), or 45% reduction in capacity. 'Small' aircraft was defined as a Cessna 172 with a 28' length and a 36' wingspan for this analysis, and 'medium' aircraft was defined as a Malibu Piper with a 29' length and a 43' wingspan.

Option 2 makes an assumption that TDOT will allow the airport to reduce/modify the TLOFA by using an aircraft smaller than ADG I. A Cessna 172 with a 36' wingspan was used to reduce/modify the TLOFA to be 66' versus 79' for full ADG I. The parking positions would also be smaller (46' wide vs 59' wide for ADG I). The loss of parking positions from existing conditions to Option 2 would be moderate (51 down to 43), or 15% reduction in capacity.

Reducing the TLOFA between the rows of aircraft creates a risk that a larger aircraft could taxi into an area that is too narrow for them, which could result in improper wingtip clearance or collision. The existing layout also creates the same risk, so the airport is currently operating under this condition. Proceeding with a reduced TLOFA would be an ongoing risk management consideration for the airport.

There is potentially a third alternative which is to just match existing conditions. It is riskier than the two options presented, but the operational impact of a 15%-45% parking capacity reduction must be weighed against the risk of continuing to operate with non-standard wingtip clearance.

During the 30% review process, the Airport decided to proceed with Option 2.

Taxilane Centerline Radii

A 40-foot centerline radius was typically used, which correlates to a Taxiway Design Group (TDG) 2A (minimum 37-foot radius).

Ground Service Equipment Route

The Ground Service Equipment (GSE) route on the northern portion of the apron is being omitted as it is not required.

Section 10 - Vertical Alignment and Transverse Grades

The purpose of the FAA Apron Surface Gradient standards is to make sure the grades accommodate aircraft towing and taxiing while promoting positive drainage of surface water. Flatter slopes will better facilitate aircraft maneuvering when parking the aircraft at tiedown locations.

Pavement section APME-001 has longitudinal and transverse grade/slope deficiencies in locations where aircraft taxi and park. The maximum pavement slope in any direction should be 2% for this classification

of airport according to FAA AC 150/5300-13B. Some areas of the apron have grades up to 5% as shown on **Exhibit 4 in Appendix A**. If an aircraft is not tied down and chocked properly, it could roll and create an insurance claim or a safety issue, not to mention the difficulty in manually maneuvering an aircraft on steep pavement if necessary.

The FAA provides the following standards in Chapter 5 of AC 150/5300-13B:

1. Provide a minimum 0.5 percent apron gradient to facilitate aircraft maneuvering operations and apron drainage.
2. Comply with NFPA 415, Standard on Airport Terminal Buildings, Fueling Ramp Drainage, and Loading Walkways, pavement slope standards where fueling operations occur.
3. Limit maximum grade change to 2 percent.
4. Design and construct apron grades for positive drainage of surface water to inlets or off the apron pavement edge.
5. Design an edge drop-off of 1.5-inch ±1/2-inch between paved and unpaved surfaces to promote drainage off the pavement surface.

The FAA provides also provides recommended practices in Chapter 5 of AC 150/5300-13B to include:

1. Provide a 10-foot-wide shoulder at the edge of the apron with a 1-3 percent slope to promote flow of surface water away from the apron pavement. Consider paved shoulders if there is an erosion risk in this area. Beyond the shoulder edge, provide a 3-5 percent slope to facilitate the flow of surface water away from the apron area.
2. The other recommended practices related to longitudinal slope cannot be fully accommodated due to the various design constraints, but a maximum 2% longitudinal grade across the apron can be met, which will be significantly improved from the 5% +/- existing slope. **Exhibit 5 in Appendix A** shows the fill necessary to achieve this design.

Section 11 - Pavement Design

The geotechnical investigation in **Appendix B** provided preliminary FAARField pavement design information of the pavement rehabilitation based on the anticipated aircraft fleet mix in Table 11-1. The airport confirmed the below fleet mix during the 30% review process.

Table 11-1 – Design Aircraft Information

Aircraft Name	Gross Wt., lbs.	Annual Departures	% Annual Growth
Skyhawk-172	2,558	100	0.00
Skylane-182	3,110	500	0.00
Bonanza-F-33A	3,412	1,200	0.00
Stationair-206	3,612	150	0.00
Sarat. PA-32R-301	3,616	600	0.00
Baron-E-55	5,424	300	0.00
SuperKingAir-B200	12,500	300	0.00
Citation-V	16,500	750	0.00
S-25 Generic Single Gear	25,000	1,500	0.00
D-35 Generic Dual Gear	35,000	750	0.00
		Total: 6,150 Departures (12,300 Operations)	

After the 30% schematic design review process, design development progressed narrowing the scope to just the apron section north of Taxiway A3 which only has two pavement sections to address. Therefore, the pavement designs were further refined in FAARField and resulted in the following recommendations:

1) Areas with minor grade changes: 2" mill with 2" overlay (with leveling as needed for minor grade changes)
2) Areas with minor grade changes and only 2" existing asphalt surface course: minimum 12" full depth reclamation (mechanical stabilization), followed by removal of excess material (yielding 8" FDR base course), followed by 4" P-401 surface course
3) Areas with major grade changes and only 2" existing asphalt surface course: 12" full depth reclamation (mechanical stabilization) (yielding 12" FDR base course), followed by variable depth P-208 aggregate base course, followed by 4" P-401 surface course.

The pavement rehabilitation and reconstruction has been designed in accordance with AC 150/5320-6. FAARField pavement design information can be found in **Appendix E**.

Typically, pavements with a PCI above 40 would receive a mill and overlay and not be reconstructed because that would short circuit the life cycle. However, when pavements are only constructed with 2" HMA surface course, it cannot be milled and overlaid without substantial risk of cost escalation during construction. This is because the residual underlying non-HMA base course is typically moist and therefore weaker than its original construction, and is not likely to support construction equipment loading. At best, an airport might get by with limited full depth patching, but at worst, an airport might end up reconstructing the entire project area without the economic advantage of competitive bidding.

It is our opinion that a combination of Major Rehabilitation and Reconstruction is warranted on this project due to the various pavement sections of the apron, PCI data from TDOT, core data from the geotechnical investigation, the pavement construction history, as well as the necessity to make significant grade corrections to meet current FAA apron grading standards. A site plan of the apron and proposed work is shown on **Paving Plan (Sheet C4.01) in Appendix A**.

We do not anticipate requiring load restrictions on the existing pavement structure during construction. However, it is recommended that the Contractor develop a varying traffic pattern that will distribute the load of construction traffic over the duration of the project to alleviate the chance of pavement structure failure. Also, no heavy equipment should be allowed to make any abrupt directional changes on the pavement structure.

Section 12 - Drainage Design

In order to accommodate the apron grade changes, the existing storm drain inlet at the northwest corner of the apron must be relocated to the proposed low spot in the turf area. The existing inlet will be converted to an at-grade junction box, and a new drop inlet will be constructed on the alignment of the existing storm drain pipe in the proposed low spot. The proposed drainage design appears to accommodate the Taxiway A (parallel taxiway) relocation preliminary design; however, the design would need to be updated to reflect the revised inlet location and grading.

Section 13 - Structural Design

The existing storm drain inlet is a brick structure, so City of Memphis standard drawings for a brick drain structure will be used for the modification of the existing structure and for the construction of the proposed inlet. The proposed drain inlet will be a brick structure installed over the existing storm drain.

Section 14 - Airfield Lighting

Airfield lighting is not anticipated to be impacted by construction.

Section 15 - Pavement Markings

A pavement marking plan was developed in accordance with FAA AC 150/5340-1M - Standards for Airport Markings which details marking color, dimensions, and locations. A 6" black border will be installed on each side of the 6" wide yellow taxiway/taxilane centerlines but not the parking tees. FAA Standard Specification P-620 - Runway and Taxiway Painting was used to specify materials, application, and workmanship for pavement marking.

Taxiway and taxilane centerline markings as well as parking tees are specified to be retro-reflective. The Contractor will paint the temporary taxiway/taxilane centerline and parking tees at an initial application rate without reflective media at the end of each phase. Reflectorized final markings will be placed at the full application rate with reflective media after full cure of the new pavement (i.e., 30 to 60 days).

Section 16 - Turfing

Sod will be placed on all disturbed areas since the area will be very small and the sod will allow the Contractor to remove silt fence from the TLOFA in order to proceed to the next phase (otherwise construction time and apron closure will be extended). The Contractor and Owner's Representative need to be diligent in limiting the Contractor's land disturbance. The sod will also help prevent erosion which is typical of the longer stabilization time period associated with seeding and mulch.

Section 17 - Modifications to FAA Design, Construction and Equipment Standards (MOS)

FAA Order 5300.1G, Modifications to Agency Airport Design, Construction, and Equipment Standards defines a Modification of Standards (MOS) as follows: *"Any deviation from, or addition to standards, applicable to airport design, material, and construction standards, or equipment projects resulting in an acceptable level of safety, useful life, lower costs, greater efficiency, or the need to accommodate an unusual local condition on a specific project through approval on a case-by case basis."*

The Preliminary Engineering Phase of this project has revealed a few conditions which may require a MOS. The known potential MOS's are summarized in Table 17-1.

Table 17-1 Potential Modifications to FA Design, Construction and Equipment Standards			
Standard	**Reference FAA Document**	**Modification**	**Requested Resolution**
Direct Access to Runway	AC 150/5300-13B Par. 4.3.5	Taxiway A3 provides direct access from the apron to Runway 17-35.	Suggest the Parallel taxiway Relocation project address the issue.
Taxilane Object Free Area	AC 150/5300-13B Par. 4.5.1.3 and Appendix J.4	Reduced TLOFA as discussed in **Section 9 - Horizontal Alignment and Dimensional Requirements**	MSCAA to ask TDOT if a MOS is required, or if the documentation in this design report is satisfactory.
Apron Grades	AC 150/5300-13B Par. 5.9.2	FAA recommends parking positions be limited to 1% slope and taxilanes be limited to 1.5% slope, however only 2% slope can be accommodated, which is improved from the existing 5% slope.	FAA's recommendation is not a standard or requirement. No action needed, but documenting for full disclosure.

Section 18 - Safety and Phasing/Sequencing of Construction

A detailed Construction Safety and Phasing Plan (CSPP) has been prepared for this project and serves to establish the complete requirements for operational safety during construction. These plans will be submitted to the Airport and FAA. The CSPP was prepared in accordance with FAA AC 150/5370-2G - Operational Safety on Airports During Construction, and a copy can be reviewed in Technical Supplement TS-130 in the project technical specifications. The construction phasing will generally occur as outlined below:

- Phase 0: Intended to include mobilization of equipment and materials, as well as performance of administrative requirements such as permitting, shop drawings, mix designs, schedule development, and preparation of the Contractor Safety Plan Compliance Document (SPCD).
- Phase 1 abandon aircraft tie-downs in the area and perform micro-milling on a portion of the apron which will then be thoroughly cleaned and re-opened to air operations (ref: FAA AC 150/5370-13A discussed below).
- Phase 2 remove aircraft tie-downs, perform full depth reclamation on a portion of the apron, perform grade changes, drainage work, asphalt paving, tie-down installation, and initial coat non-reflectorized markings.
- Phase 3 perform asphalt leveling and the final asphalt overlay in the milling areas as well as tie-down installation and initial coat non-reflectorized markings where required.
- There will be a pause in construction between Phase 3 and 4 where the apron is fully operational with non-reflectorized pavement markings until the asphalt cures enough to prevent staining of the final pavement markings from oils in the asphalt.
- Phase 4 performs the final pavement marking application (reflectorized yellow) after the asphalt curing period has elapsed.

Detailed restrictions including phasing requirements/constraints, concurrent phasing limitations, air operations area closures, and suggested NOTAMs are specified in the Safety and Phasing Plans as shown in **Appendix F**.

Critical information will be conveyed to the contractor in the bid documents and during the preconstruction meeting, including requirements for coordination procedures with the Airport prior to air operation area closures, FOD warnings, work area limits, haul routes, staging areas, stockpile areas, personnel and equipment restrictions, and grading requirements within the taxiway safety area (i.e., no edge drops over 3 inches deep and no slopes steeper than 5% when the taxilane/apron is active).

A 7460-1 Notice of Proposed Construction Form will be submitted to the FAA for this project and a copy will be included in **Appendix F**. The Airport will issue the Notice to Airmen (NOTAM) as necessary during construction of the project.

One challenging aspect of construction will be phasing of the paving plan in the milling areas which requires micro-milling for smooth pavement for aircraft to operate on as well as temporary transition ramps from milled to un-milled surfaces subject to maximum slopes. The transition ramps have been designed following the guidance in FAA AC 150/5370-13A Off-Peak Construction of Airport Pavements Using Hot-Mix Asphalt (reference paragraph 40 - Milled Surfaces). Construction cleanup prior to opening to aircraft will be vital to prevent a FOD hazard to aircraft operating on the milled surface.

Refer to the next section for additional construction safety considerations.

Section 19 - Construction Impact on Airport Operations and Navigation Aids

NAVAIDs

The existing airport NAVAIDs are not anticipated to be impacted by construction.

Airport Operations

As discussed in the previous section, some air operation areas will need to be closed for the project. Construction will remain outside of the parallel taxiway object free area, so the parallel taxiway will not need to be closed during construction on the apron. The terminal apron will need to be closed for a significant portion of construction, but access to the fuel island and hangar areas has been provided as much as possible, although there will be some short-term impacts.

Fuel Island Access

Based on the anticipated construction schedule discussed in Section 28 later in this report, there will be 53 days of field work. The fuel farm will not be accessible 7 days (13% of the field work time), but will be accessible to Group I aircraft with wingspan less than 49 feet 43 days (87% of the field work time).

Section 20 - Utility Relocations

Utility relocations are not anticipated on this project.

Section 21 - Miscellaneous Work Items

Site Access

Site access will be achieved from North Second Avenue through the main gate near the Terminal. There will be periods of time where the Contractor will haul across the active taxilane on the apron where the Contractor must yield to aircraft. A flagger is recommended during these periods of time, and the Contractor must closely monitor the haul route for FOD.

Section 22 - Sources of Materials

Adequate material sources are expected to be available for this project; however, the current economic issues with supply chain challenges and inflation could have an impact on the source of some materials.

Section 23 - Availability of Contractors

It is anticipated that one or more local contractors will be available to bid and perform the work; however, the current economic issues with labor shortages could have an impact on labor availability for the contractors.

Section 24 - Non-AIP/AIG Items

All work in the project is eligible for Federal Airport Improvement Program (AIP) and Airport Improvement Grant (AIG) reimbursement.

Section 25 - Work By Others

Concurrent work by others is not anticipated during this project.

Section 26 - Environmental Considerations

An Erosion Control Plan has been prepared for the project. In addition, an NPDES Notice of Intent and Storm Water Pollution Prevention Plan (SWPPP) will be required for this project. No other environmental permitting is anticipated.

We understand MSCAA has already procured a Categorical Exclusion for this project through TDOT in order to satisfy NEPA requirements.

Section 27 - FAA DBE Program

MSCAA has established a DBE Program in accordance with 49 CFR Part 26. This DBE Program will recommend a DBE Goal and the Contractors will be required to meet the requirements of the DBE Program for the work.

Section 28 - Contract Time

A preliminary construction schedule has been developed to provide a reasonable contract time for the proposed work. The preliminary construction schedule considers anticipated production rates, allowed areas of concurrent work, phasing, and other factors such as weather delays and operational requirements.

The total contract time for the project is 102 calendar days which excludes a 30 to 60 calendar day curing period for the asphalt prior to final pavement markings. It also excludes the one-day closure for final pavement markings which can be handled as a substantial completion punch list item required prior to the Contractor receiving Final Completion and commencing the warranty period. Here is a breakdown of the Contract Time:

- Phase 0 - 45 consecutive calendar days (once field work begins, any unused Phase 0 time shall be waived and cannot be used during field work)
- Phase 1 - 7 consecutive calendar days
- Phase 2 - 45 consecutive calendar days
- Phase 3 - 5 consecutive calendar days (overlay, install tie-downs, and pavement markings)
- Contract Time Ends at Termination of Phase 3 (102 consecutive calendar days)
- 30 to 60 days asphalt cure period
- Owner's Representative will develop a Substantial Completion Punchlist at the end of Phase 3, and Contractor shall have 30 consecutive calendar days to complete the punch list. Warranty period shall not begin until all Punchlist items are complete and accepted by the Airport (excluding final pavement markings to be placed 30 - 60 days after paving).
- Phase 4 - 1 day closure, but no contract time (punch list item) (final pavement markings)

Liquidated damages will be established by the MSCAA.

Section 29 - Engineer's Opinion of Probable Construction Cost

An Opinion of Probable cost for the recommended project is approximately $3.3M including a 10% contingency. Details can be reviewed in **Appendix G**. TDOT has programmed $3.6M for construction.

Appendix A - Exhibits

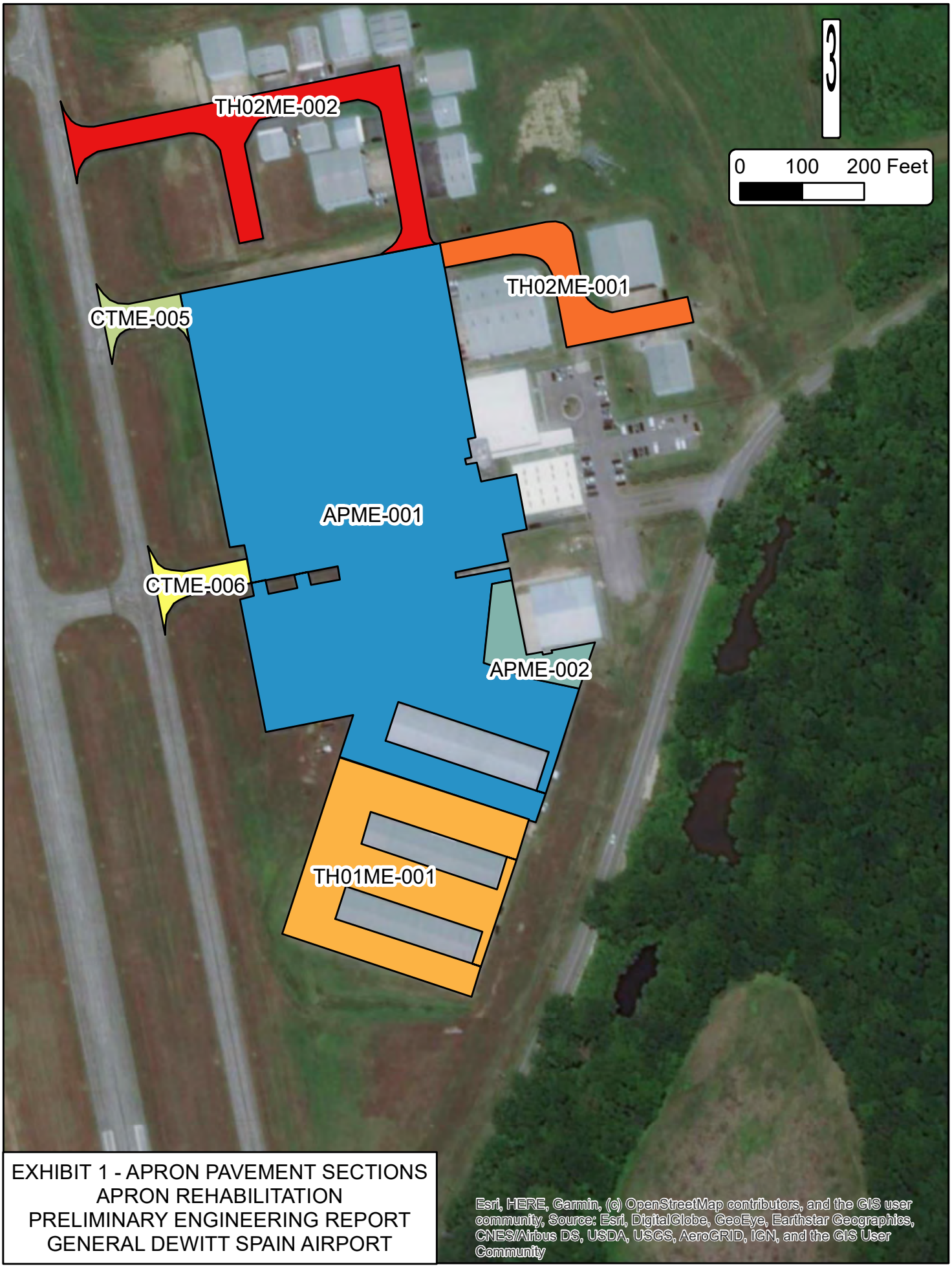


EXHIBIT 1 - APRON PAVEMENT SECTIONS
APRON REHABILITATION
PRELIMINARY ENGINEERING REPORT
GENERAL DEWITT SPAIN AIRPORT

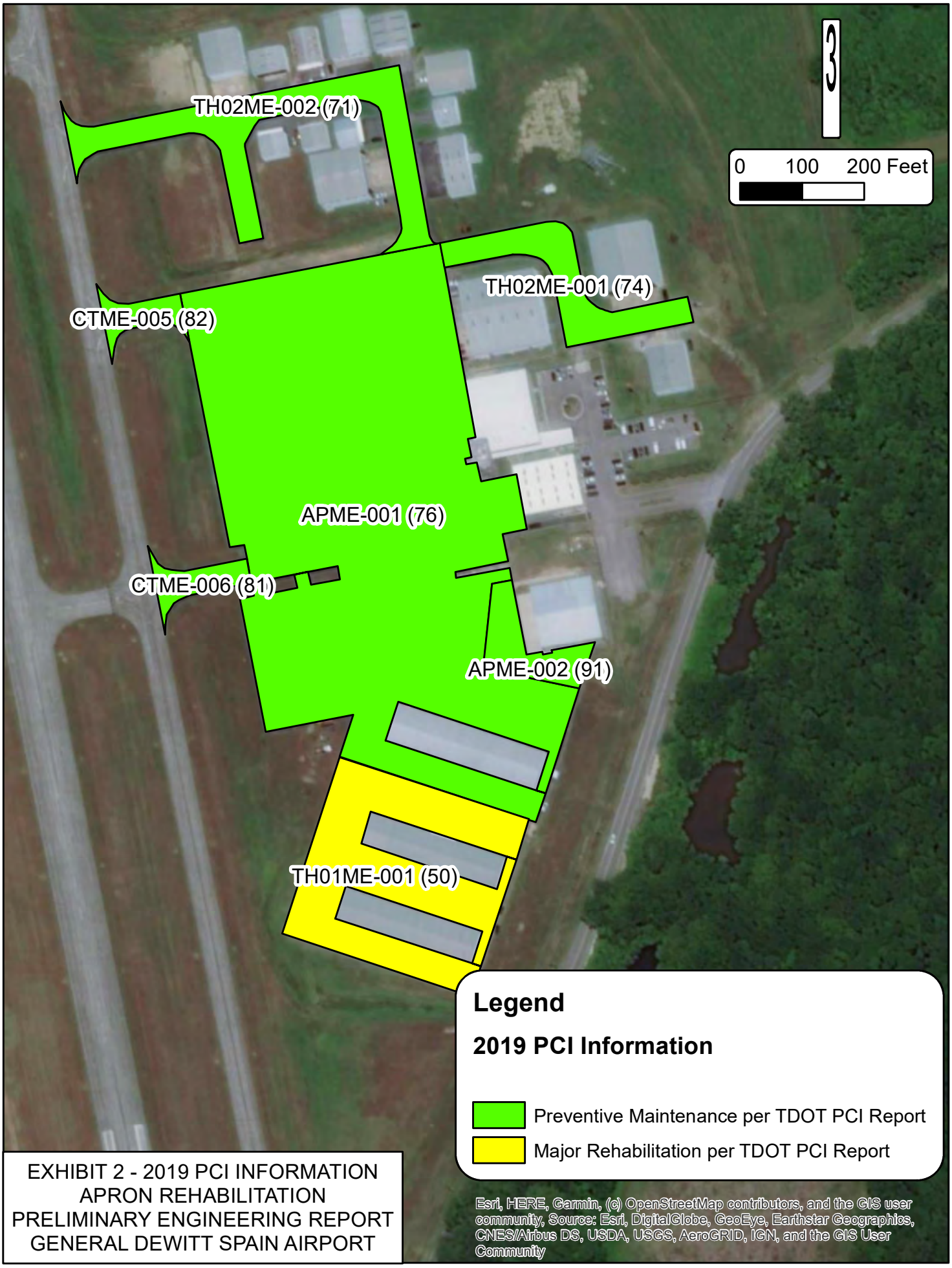
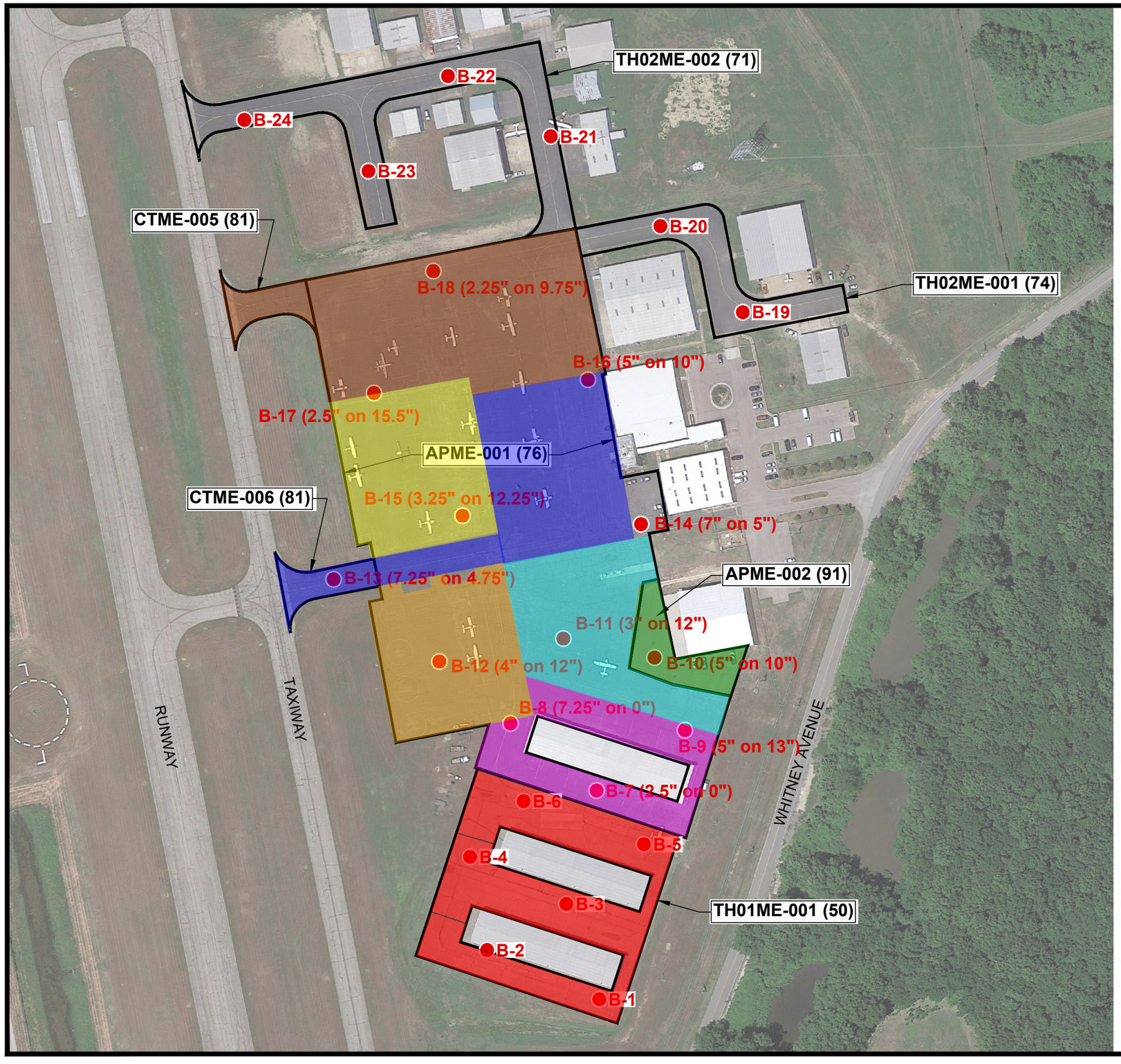


EXHIBIT 2 - 2019 PCI INFORMATION
APRON REHABILITATION
PRELIMINARY ENGINEERING REPORT
GENERAL DEWITT SPAIN AIRPORT



NOTES

1. Plan adapted from a drawing dated January 2019, titled "Pavement Condition Index Map" prepared by Applied Pavement Technology and "Geotechnical Exploration" by Geotechnology, Inc. dated July 26, 2021.

2. Borings were located in the field with reference to site features and are shown approximate only.

LEGEND

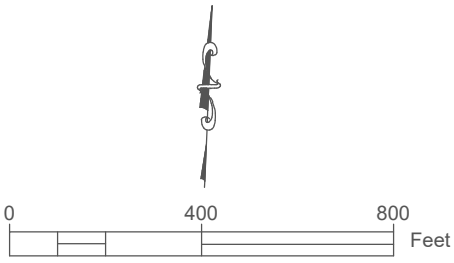
- Boring Location (Asphalt Depth on Base Depth)
- ~1971 Original Construction
- ~1973 Expansion 1
- ~1973 Expansion 2
- ~1973-81 Expansion 3
- ~1973-81 Expansion 4
- ~1973-81 Expansion 5
- ~2007 Expansion 6
- ~2015 Reconstruction

N

0 80 160 320

SCALE IN FEET

Exhibit 3 - Apron Construction History with Boring Locations



Slopes Table			
Number	Minimum Slope	Maximum Slope	Color
1	0.00%	2.00%	
2	2.00%	3.00%	
3	3.00%	4.00%	
4	4.00%	5.00%	
5	5.00%	33.00%	

EXHIBIT 4 – PAVEMENT SLOPE ANALYSIS
APRON REHABILITATION
PRELIMINARY ENGINEERING REPORT
GENERAL DEWITT SPAIN AIRPORT

LEGEND

- EXISTING EOP
- EXISTING BUILDING
- WORK LIMITS
- EXISTING CONTOUR
- PROPOSED CONTOUR
- SF — SF — SILT FENCE

GRAPHIC SCALE (IN FEET)
50' 0 25' 50' 100'

Elevations Table

Number	Minimum Elevation	Maximum Elevation	Area	Color
1	0"	0"	232938.41	
2	0"	2"	26557.79	
3	2"	4"	15377.27	
4	4"	6"	12981.20	
5	6"	8"	17560.06	
6	8"	10"	10493.48	
7	10"	12"	6850.62	
8	12"	14"	4861.94	
9	14"	16"	4128.49	
10	16"	18"	5581.37	
11	18"	19"	545.13	

EX. AREA INLET
TOP=219.39
FL=215.54

XIWAY A

EX. 30" RCP

EX. 30" RCP

EX. AREA INLET
TOP=220.87
FL=217.69

EX. 18" RCP
FL=221.97

EX. 1

0+00 1+00 2+00 3+00 5+00 7+00 8+00 9+00 10+00 10+50

STA 0+00
N: 340488.13
E: 758051.03

STA 10+50
N: 341518.66
E: 757849.79

EX. ELECTRICAL MANHOLE
TOP=224.58

EX. WELCOME SIGN

EX. WELCOME SIGN

EX. 24" RCP

EX. AREA INLET
TOP=222.59
FL=217.32

EX. AREA INLET
TOP=222.43
FL=216.94

EX. HANGAR

EX. HANGAR
FFE=224.00

EX. 24" RCP

EX. 15" RCP

EX. AREA INLET
TOP=222.77
FL=218.39

EX. 15" RCP

EX. HANGAR
FFE=225.00

EX. HANGARS

EX. HANGAR
FFE=227.70

(2) EX. 21" RCP

EX. AREA INLET
TOP=222.07
FL=219.62

EX. SEWER LINE (TYP.)

EX. SMH
TOP=226.10
FL=223.10

EX. ELECTRIC

EX. WATER METER

EX. TERMINAL BLDG.
FFE=228.60

(2) EX. 15" PVC

(2) EX. 12" RCP

EX. OVERHEAD ELECTRIC (TYP.)

EX. HANGAR
FFE=226.90

EX. BLDG.
FFE=228.00

EX. HANGAR
FFE=227.60

EX. HANGAR
FFE=226.80

EX. HANGAR
FFE=227.90

EX. HANGARS

EX. FENCE (TYP.)

EX. SMH
TOP=227.08
FL=222.37

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MARK	DATE	DESCRIPTION

MSCAA PROJ. NO.
20-1440-00

PROJECT:
DEWITT SPAIN AIRPORT APRON REHABILITATION

SHEET TITLE:
EXHIBIT 5: PAVEMENT DEPTH ANALYSIS

DWG. FILE NAME

DATE
APRIL 2023

SCALE
1" = 50'

SHEET NO.
CX.XX

LEGEND

- EXISTING EOP
- EXISTING BUILDING
- WORK LIMITS
- FULL DEPTH RECLAMATION
- MILL & OVERLAY
- HAUL ROUTE
- STAGING AREA

GRAPHIC SCALE (IN FEET)
50' 0 25' 50' 100'

TAXIWAY A

EX. TAXIWAY LIGHT (TYP.)

TRANSITIONAL MILL & OVERLAY

TRANSITIONAL MILL & OVERLAY

0+00 1+00 2+00 3+00 4+00 5+00 6+00 6+50

STA 0+00
N: 340880.71
E: 757974.37

STA 10+50
N: 341518.66
E: 757849.79

FULL DEPTH RECLAMATION WITH GRADE CHANGE

MILL & OVERLAY

EX. HANGAR

EX. HANGAR

EX. HANGAR

EX. FUEL DISPENSER

EX. HANGARS

EX. HANGAR

FUTURE 12' CANOPY

EX. TERMINAL BLDG.

TRANSITIONAL MILL & OVERLAY

EX. HANGAR

EX. HANGAR

EX. HANGARS

EX. HANGAR

EX. BLDG.

EX. HANGAR

EX. FENCE (TYP.)

STAGING AREA

NORTH SECOND ST.

EX. HANGAR

EX. HANGAR

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REVISIONS

MARK	DATE	DESCRIPTION

MSCAA PROJ. NO. **20-1440-00**

PROJECT:
DEWITT SPAIN AIRPORT APRON REHABILITATION

SHEET TITLE:
OVERALL SITE PLAN

DWG. FILE NAME

DATE: NOV. 2024
SCALE: 1" = 50'
SHEET NO.: C3.00

LEGEND

- EXISTING EOP
- EXISTING BUILDING
- TYPICAL SECTION 1: P-101 2" MILL & P-401 2" OVERLAY
- TYPICAL SECTION 2: P-101 2" MILL & P-401 2" OVERLAY WITH LEVELING (0" - 3.1" THICKNESS)
- TYPICAL SECTION 3: P-207 FDR (REMOVE EXCESS MATERIAL AS REQUIRED TO MEET GRADES), P-401 2 - 2" LIFTS ASPHALT
- TYPICAL SECTION 4: P-207 FDR, P-208 BASE COURSE FOR GRADE CHANGE (UP TO 1.28' FILL), P-401 2 - 2" LIFTS ASPHALT

GRAPHIC SCALE (IN FEET)
30' 0 15' 30' 60'

EX. TAXIWAY LIGHT (TYP.)

TRANSITIONAL MILL & OVERLAY

STA:5+42.80
OFF:2.24'R

STA:1+45.96
OFF:27.33'R

0+00 1+00 2+00 3+00 4+00 5+00 6+00 6+50

STA 0+00
N: 340880.71
E: 757974.37

STA 10+50
N: 341518.66
E: 757849.79

EX. ELECTRICAL MANHOLE

TRANSITIONAL MILL & OVERLAY

NOTES:

1. OWNER'S REPRESENTATIVES MAY ADJUST TYPICAL SECTION LIMITS AS NEEDED TO BETTER FIT FIELD CONDITIONS.
2. STOCKPILED ASPHALT MILLINGS SHALL BE UNIFORMLY INCORPORATED INTO THE P-207 FDR BASE COURSE.
3. ANY EXCESS P-207 FDR BASE COURSE MATERIAL CUT TO FACILITATE THE 4" ASPHALT PAVING SHALL BE PLACED AND COMPACTED IN AREAS WHERE P-208 BASE COURSE MUST BE IMPORTED (I.E., NO MATERIAL TO BE HAULED OFFSITE).

FULL DEPTH RECLAMATION WITH GRADE CHANGE

EX. ELECTRICAL MANHOLE

EX. AREA INLETS

MILL & OVERLAY

EX. SEWER MH

EX. FUEL DISPENSER

EX. ELECTRICAL MANHOLE

EX. TERMINAL BLDG.

EX. ELECTRIC

FUTURE 12' CANOPY

EX. HANGAR

TRANSITIONAL MILL & OVERLAY

EX. HANGAR

EX. HANGAR

EX. HANGAR

EX. BLDG.

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MARK	DATE	DESCRIPTION

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PROJECT:
DEWITT SPAIN AIRPORT APRON REHABILITATION

SHEET TITLE:
PAVING PLAN

DWG. FILE NAME

DATE: NOV. 2024
SCALE: 1" = 30'
SHEET NO. C4.01

Appendix B – Geotechnical Investigation

GEOTECHNICAL EXPLORATION
DEWITT SPAIN AIRPORT APRON REHABILITATION
MEMPHIS, TENNESSEE

Prepared for:

POWERS HILL DESIGN, LLC
MEMPHIS, TENNESSEE

Prepared by:

GEOTECHNOLOGY, INC.
MEMPHIS, TENNESSEE

Date:

JULY 26, 2021

Geotechnology Project No.:

J038313.01

SAFETY
QUALITY
INTEGRITY
PARTNERSHIP
OPPORTUNITY
RESPONSIVENESS

GEOTECHNOLOGY INC
FROM THE GROUND UP

July 26, 2021

Ms. Nisha Powers, P.E.
Powers Hill Design, LLC
80 Monroe Avenue, Suite 420
Memphis, Tennessee 38103

Re: Geotechnical Exploration
DeWitt Spain Airport Apron Rehabilitation
Memphis, Tennessee
Geotechnology Project No. J038313.01

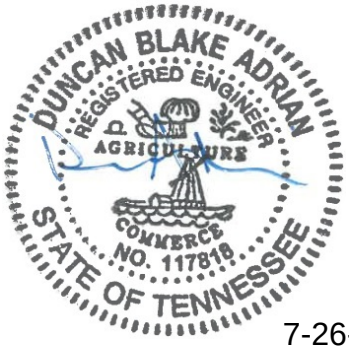
Dear Ms. Powers:

Presented in this report are the results of the geotechnical exploration performed by Geotechnology, Inc. for the proposed rehabilitation of the existing DeWitt Spain Airport Apron in Memphis, Tennessee. The report includes our understanding of the project, observed site conditions, conclusions and/or recommendations, and support data as listed in the Table of Contents.

We appreciate the opportunity to provide geotechnical services for this project. If you have any questions regarding this report, or if we can be of any additional service to you, please do not hesitate to contact us.

Respectfully submitted,

GEOTECHNOLOGY, INC.



Duncan Adrian, P.E.
Project Manager

7-26-21

JDM/DBA/ASE/DMS:dba

Copies submitted: Client (email)

TABLE OF CONTENTS

LIST OF TABLES

GEOTECHNICAL EXPLORATION
DEWITT SPAIN AIRPORT APRON REHABILITATION
MEMPHIS, TENNESSEE

July 26, 2021 | Geotechnology Project No. J038313.01

1.0 INTRODUCTION

Geotechnology, Inc. has prepared this geotechnical exploration report for Powers Hill Design, LLC (PHD) for the proposed rehabilitation to the existing DeWitt Spain Airport Apron located in Memphis, Tennessee. Our services documented in this report were provided in general accordance with the scope of services as discussed in our Proposal P038313.01, dated May 25, 2021. Our services were authorized by the signed acceptance of PHD's Professional Services Agreement on May 3, 2021.

The purposes of the geotechnical exploration were to develop a general subsurface profile at the site and prepare recommendations for the geotechnical aspects of the design and construction of the project as defined in our proposal. Our scope of services included site reconnaissance, geotechnical borings, laboratory testing, engineering analyses, and preparation of this report.

A copy of "Important Information about This Geotechnical-Engineering Report," published by the Geotechnical Business Council of the Geoprofessional Business Association, is included in Appendix A for your review. The publication discusses report limitations and ways to manage risk associated with subsurface conditions.

2.0 SITE DESCRIPTION

The General DeWitt Spain Airport is located at 2787 North Second Street in Memphis, Tennessee as shown on Figure 1 (Site Location and Topography) in Appendix B. The airport consists of runways, taxiways, aircraft hangars, administrative buildings, and an asphalt apron surrounding the administrative buildings and hangars. The site is bordered to the west by the Maynard C. Stiles Waste Water Treatment Plant and the Mississippi River, to the south and east by Whitney Avenue, and to the north by commercial development. The site is prone to flooding during Mississippi River high water events and was inundated during the 2011 Mississippi River flood.

3.0 PROJECT INFORMATION

The project consists of the rehabilitation of the asphalt apron at the airport. The existing apron shows signs of distress, including cracking and depressions; some of these distressed areas have been repaired by sealing or patching. A Pavement Condition Index (PCI) map prepared by Applied Pavement Technology in December 2018 and January 2019 was provided to Geotechnology, and the map was overlaid on the boring location plan as shown in Figure 3 in Appendix B. The name of each pavement section is displayed on Figure 3. The PCI number is shown in parenthesis at

the end of the section name. For example, TH02ME-002 (71) is the northmost pavement section and has a PCI of 71. Based on the provided PCI map, the majority of the apron has a PCI between 71 and 91 which indicates preventative maintenance, such as sealing cracks and patching, is typically recommended. However, the south portion of the apron, TH01ME-001 (50), has a PCI of 50 which indicates reconstruction may be required.

It is our understanding different options will be considered for pavement rehabilitation including mill and overlay, full depth reclamation (FDR), and removal and replacement. The project will be designed in accordance with the Federal Aviation Administration (FAA) Advisory Circular (AC) No. 150/5320-6G. Preliminary pavement designs using the FAA pavement design software, FAARFIELD[1], are required for the proposed pavement rehabilitation.

4.0 GEOTECHNICAL EXPLORATIONS

4.1 Geotechnical Exploration

The geotechnical exploration consisted of 24 borings, designated as Borings B-1 through -24, located in the existing asphalt-paved apron at the airport. The borings were located in the field by a Geotechnology representative. The boring locations shown on Figure 2 and Figure 3 in Appendix B are approximate; if elevations or more precise locations are required, the client should retain a registered surveyor to establish boring locations and elevations.

The borings were drilled May 14 through 19, 2021 using a truck-mounted rotary drill rig (CME 75) and a GeoProbe 7822DT advancing hollow-stem augers as indicated in the boring logs presented in Appendix C. Sampling of the soils was accomplished ahead of the augers at the depths indicated on the boring logs, using 2-inch-outside-diameter (O.D.) split-spoons and 3-inch-O.D., thin-walled Shelby tube samplers in general accordance with the procedures outlined by ASTM D1586 and ASTM D1587, respectively. Standard Penetration Tests (SPTs) were performed using an automatic hammer to obtain the standard penetration resistance, or N-value[2], of the sampled material. Dynamic Cone Penetration (DCP) was performed on the subgrade material directly beneath asphalt or base material (if present) in all borings. Bulk samples were also obtained from two borings.

A Geotechnology representative recorded the subsurface profile noting the soil types and stratifications, groundwater, SPT results, and other pertinent data. Observations for groundwater were made in the borings during drilling.

[1] *FAA Rigid and Flexible Iterative Elastic Layer Design* (FAARFIELD) *program,* version 2.0.0.e

[2] The standard penetration resistance, or N-value, is defined as the number of blows required to drive the split-spoon sampler 12 inches with a 140-pound hammer falling 30 inches. Since the split-spoon sampler is driven 18 inches or until refusal, the blows for the first 6 inches are for seating the sampler, and the number of blows for the final 12 inches is the N-value. Additionally, “refusal” of the split-spoon sampler occurs when the sampler is driven less than 6 inches with 50 blows of the hammer.

Representative portions of the split-spoon samples were placed in glass jars to preserve sample moisture. The Shelby tubes were capped and taped at their ends to preserve sample moisture and unit weight, and the tubes were transported and stored in an upright position. The glass jars, bulk samples, and Shelby tubes were marked and labeled in the field for identification, then returned to our laboratory in Memphis.

5.0 LABORATORY REVIEW AND TESTING

Laboratory testing was performed on soil samples to assess engineering and index properties. The soil testing consisted of moisture contents (ASTM D2216), Atterberg limits (ASTM D4318), grain size (sieve) distribution (ASTM D422), unconsolidated-undrained triaxial compression (UU; ASTM D2850), standard Proctor compaction (ASTM D698), California Bearing Ratio (CBR; ASTM D1883), and relative density (ASMT D4253 and ASTM D4254). Most of the laboratory test results are presented on the boring logs in Appendix C. The Atterberg limit, grain size, UU, Proctor, and relative density test results are also provided in Appendix D.

The boring logs were prepared by a geotechnical engineer from the field logs, visual classifications of the soil samples in the laboratory, and laboratory test results. Terms and symbols used on the boring logs are presented in the Boring Log: Terms and Symbols in Appendix C. Stratification lines on the boring logs indicate approximate changes in strata. The transition between strata could be abrupt or gradual.

6.0 EXISTING PAVEMENT STRUCTURE AND BASE

The existing pavement sections at the boring locations consisted of asphalt of varying thickness. Base material consisting of cement treated base was encountered below the asphalt in all borings except Borings B-3, -5, -7, and -8 in which coarse-grained material was encountered below the asphalt. Cores of the asphalt were recovered from Borings B-2, -5, -8, -10, -13, -15 through -18, -20, and -24; photographs of the recovered cores are included in Appendix E. A crack was observed in the asphalt core sample at Boring B-8 and appeared to extend about ½ inch into the core sample. Presented in Table 1 are measured thicknesses of the asphalt pavement and base material encountered in the borings. Additionally, we included the correlated CBR value from the dynamic cone penetration testing (DCP) performed on the subgrade material underlying the asphalt and base material. More information about the subgrade and DCP testing is presented in Section 7.0.

Table 1. Asphalt and Base Material Thicknesses.

Apron Section [a]	Location	Boring	Thickness (inches)		Subgrade
			Asphalt	Base Material	Correlated CBR Value from DCP
TH01ME-001(50)	South Side of Apron	B-1	3	9	>10
		B-2[b]	2 ¼	9 ¾	6
		B-3	2	0 [c]	>10
		B-4	2	10	>10
		B-5[b]	2	0[c]	>10
		B-6	2	10	>10
APME-001(76)	Central Portion of Apron	B-7	2 ½	0[c]	>10
		B-8[b]	7 ¼	0[c]	>10
		B-9	5	13	>10
		B-11	3	12	>10
		B-12	4 ½	12	>10
		B-14	7	5	>10
		B-15[b]	3 ¼	12 ¼	>10
		B-16[b]	5	10	>10
		B-17[b]	2 ½	15½	>10
		B-18[b]	2 ¼	9¾	>10
AMPE-002(91)	Newer Apron Section – East Side	B-10[b]	4	15	>10
CTME-006(81)	Connecting Taxiway	B-13[b]	7 ¼	4 ¾	>10
TH02ME-001(74)	East Drive Area	B-19	5 ½	9	6
		B-20[b]	5 ¾	13 ¼	>10
TH02ME-002(71)	North Drive Area	B-21	5	9	>10
		B-22	4	11	>10
		B-23	4 ½	8 ½	>10
		B-24[b]	4 ¾	13 ¼	>10

[a] As designated on Figure 3 in Appendix B – Pavement Condition Index (PCI) shown in parenthesis
[b] Asphalt core recovered at boring location.
[c] No base material encountered; coarse-grained soils encountered below asphalt.

7.0 SUBGRADE MATERIAL

Below the asphalt and base materials, the soil stratigraphy at the boring locations generally consisted of coarse-grained soils underlain by fine-grained soil to the maximum depth of exploration (10 feet). However, fine-grained soils were encountered under the pavement and base material in Borings B-2, B-19, B-20, B-21 and B-24. More specific descriptions of the soil layers are provided below and in the boring logs in Appendix C.

Interbedded fine- and coarse-grained soils classified as low plasticity “lean” clay (CL), high plasticity “fat” clay (CH), poorly graded sand (SP), and clayey sand (SC) were encountered below the asphalt pavement and base materials in the borings. Moisture contents of the tested fine-grained soils ranged from 15 to 42 percent. Atterberg limits performed on select fine-grained samples yielded liquid limits (LL) of 43 to 81 percent and plasticity indices (PI) of 22 to 51 percent. SPT N-values measured in the fine-grained soils ranged from 2 to 21 blows per foot, indicative of soft to very stiff consistencies. SPT N-values measured in the coarse-grained soils ranged from 1 to 32 bpf, indicative of very loose to dense consistencies

CBR Results. Composite bulk fine-grained soil samples of auger cuttings were collected from Boring B-21. Atterberg limits and standard Proctor compaction tests were performed on the composite sample collected from Boring B-21. California Bearing Ratio (CBR) tests were conducted on soaked samples remolded in standard CBR molds using compaction of 25 and 56 blows per layer. The test results are summarized in the following table.

Table 2. Summary of Compaction and CBR Test Results.

Boring No.	Depth (ft.)	USCS	Liquid Limit (%)	Plasticity Index (%)	Proctor Results		CBR Results				Percent Compaction (%)
					Maximum Dry Unit Weight (pcf)	Optimum Moisture Content (%)	Blows Per Layer	Dry Unit Weight (pcf)	Moisture Content (%)	CBR	
B-21	1 – 5	CL	47	24	106.9	17.0	25	99.4	21.4	5.1	93.0
							56	107.6	18.1	13.6	100.7

Composite bulk coarse-grained soil samples of auger cuttings were collected from Boring B-15. Maximum and minimum index unit weights were obtained for the bulk sample collected from Boring B-15. The maximum unit weight using a vibratory table was 123.9 pcf; the minimum unit weight was 97.1. A plot of the relative density versus unit weight results is included in Appendix C.

Dynamic Cone Penetration Testing Results. Dynamic cone penetration testing (DCP) was performed on the subgrade material in every boring. The results of the blow counts and measured penetration were used to correlate a CBR value per ASTM D6951, Standard Test Method for Use of the Dynamic Cone Penetrometer in Shallow Pavement Applications. The correlated CBR values ranged from approximately 6 to greater than 10.

7.1 Groundwater

Groundwater was encountered in Borings B-1 through -3, -5 through -10, -12, -15 to -18, -23, and -24 at depths of approximately 4½ to 9 feet and was not encountered in the other borings during the exploration. Groundwater levels will vary over time due to the effects of seasonal variations in precipitation, influence of the Mississippi River, or other factors not evident at the time of

exploration. This site was inundated during the 2011 Mississippi River flood, and may flood during future high-water events.

8.0 CONCLUSIONS AND RECOMMENDATIONS

Geotechnology has prepared the following conclusions and recommendations based on our understanding of the proposed project, the field and laboratory data presented in this report, engineering analyses, and our experience and judgment.

8.1 Site Preparation and Earthwork

The following paragraphs outline site grading recommendations for the site.

Site Grading. Cut and fill areas of the site shall be prepared in accordance with the FAA AC No. 150/5320-6G for aircrafts weighing less than 60,000 pounds. The subgrade shall be proof-rolled with a loaded dump truck to detect zones of unsuitable soils. Soft areas that develop should be removed and replaced with compacted soil.

Subgrade Compaction. Presented in the following tables are the compaction requirements for cohesionless and cohesive soils output from the FAARFIELD software (see Appendix F) along with Geotechnology recommended subgrade compaction values. Cohesionless soils are generally defined as soils that do not exhibit a well-defined moisture density relationship; cohesive soils are generally defined as soils that do exhibit a well-defined moisture density relationship. We recommend the Geotechnology recommended values be considered for rehabilitation of the pavement structure.

Table 3. Subgrade Compaction Requirements - Cohesionless Soils.

Parameter	FAARFIELD Output				Geotechnology Recommended
Minimum Percent of Maximum Dry Unit Weight[a] (%)	100	95	90	85	See Note Below[b]
Depth of Compaction From Top of Subgrade (inches)	0	0–14	14–28	28-45	

[a] Relative density evaluated from the maximum and minimum index densities measured by ASTM D4253 and D4254, respectively.
[b] The subgrade shall be compacted to 75 percent of the maximum dry density to a depth of approximately 24 inches below the subgrade as determined by ASTM D4253 and ASTM D4254. Refer to Appendix C for a plot of relative density versus unit weight.

Table 4. Subgrade Compaction Requirements - Cohesive Soils.

Parameter	FAARFIELD Output			Geotechnology Recommended		
Minimum Percent of Maximum Dry Unit Weight[a] (%)	90	85	80	100	95	90
Depth of Compaction From Top of Subgrade (inches)	0–9	9-18	18-27	0–9	9-18	18-27

[a] In reference to the standard Proctor maximum dry unit weight as measured by ASTM D698.

Should subgrade soils not naturally have the required densities, the soils should be compacted from the surface, or removed and replaced to achieve the densities presented in the tables, or covered with select or subbase material so that the uncompacted subgrade is at a depth where the in-place densities are satisfactory.

Preparation of Fill Areas. In areas where filling may be required to achieve design grade, the areas should be stripped of topsoil, soft soils, and other deleterious materials. The resulting subgrade should be compacted to the recommendations presented in the Subgrade Compaction Requirements tables.

Fill Materials and Placement. Fill material should consist of natural soils classifying as silt, lean clay, silty sand, or clayey sand (ML, CL, SM, or SC), have a maximum LL of 45 and a PI of no more than 20. Such materials should be free from organic matter, debris, or other deleterious materials, and have a maximum particle size of 2 inches.

Fill and backfill should be placed in level lifts, up to 8 inches in loose thickness. For cohesive soils, each lift should be moisture-conditioned to within 2 percent of the optimum moisture content as measured by ASTM D698, and compacted to at least the minimum percent compactions presented in Table 4. Moisture-conditioning can include: aeration and drying of wetter soils, wetting drier soils, and/or mixing drier and wetter soils into a uniform bled. For cohesionless soils, the soils should be compacted to at least the minimum relative densities presented in Table 3. Thinner lifts should be used for lighter compaction equipment.

Maintaining the moisture content of subgrade soils within 2 percent of the optimum moisture content is important during and after construction of the pavement structure. Silty and clayey subgrade soils should not be allowed to become wet or dry during or after construction, and measures should be taken to hinder water from ponding on these soils and to reduce drying of these soils.

Asphalt, concrete, or fill should not be placed over frozen or saturated soils, and frozen or saturated soils should not be used as compacted fill or backfill. Upon completion of earthwork, disturbed areas should be stabilized.

8.2 Pavement Evaluation and Rehabilitation Options

The pavement recommendations provided in this section are based on a design life of 20 years, the anticipated traffic mix, the method described in the FAA AC No. 150/5320-6G for aircraft weighing less than 60,000 pounds and utilizing FAARFIELD. Pavement designs were based on a subgrade CBR value of 8 based on DCP to CBR conversions collected from the upper soils in the borings, the laboratory testing results, and our experience with the soils at the site. The traffic data used in the design is presented in the following table.

Table 5. Design Aircraft Traffic Mix

FAARFIELD Aircraft Name	Gross Weight, Lb.	Annual Departures	Growth Rate
Skyhawk-172	2,558	100	0%
Skylane-1-82	3,110	500	
Bonanza-F-33A	3,412	1,200	
Stationair-206	3,612	150	
Sarat.PA-32R-301	3,616	600	
Baron-E-55	5,424	300	
SuperKingAir-B200	12,590	300	
Citation-V	16,500	750	
Citation-CJ1	10,500	500	

One pavement overlay design and two new flexible pavement designs are presented in Table 6. The FAARFIELD output for each option is presented in Appendix F. The overlay design is based on the assumption that the top 2-inches of the existing pavement structure will be milled prior to overlaying new asphalt surface layers. Some sections of the pavement will require complete removal and reconstruction due to the relatively thin pavement sections encountered in the borings, primarily the southmost pavement area designated as TH01ME-001(50) and the south section of area of AMPE-002(76) near Boring B-7.

The overlay design was performed by modeling the existing asphalt layer as a user-defined base material with an estimated modulus of 100,000 pounds per square inch (psi). Additional testing, such as Falling Weight Deflectometer, may be used to verify this assumption. Based on the guidance in the FAA AC No. 150/5320-6G, the user-defined layer for the existing asphalt is considered non-standard and will require FAA approval to be utilized in the pavement design. Additionally, the full-depth reclamation asphalt pavement design (Option 3) is considered a non-standard pavement section and will also require FAA approval. Based on FAA AC No. 150/5320-6G, engineering judgement is required for the selection of an appropriate modulus value for the FDR layer. Based on the provided typical recommended values, which range from 25,000 to 500,000 psi, we modeled the FDR using a user-defined material with an estimated modulus of 50,000 psi, which is equivalent to a CBR value of about 33 or greater. The pavement overlay and new pavement designs should be reviewed and approved by the pavement engineer.

Preparation of the subgrade for new pavement sections should be in accordance with FAA guidelines and as described in this report. The subgrade shall be proof-rolled with a loaded dump truck to detect zones of unsuitable soils. Soft areas should be removed and replaced with compacted soil. Once the subgrade is prepared, it should be promptly paved to protect it from the weather.

Table 6. Pavement Rehabilitation Options

Layer Type	Option 1 - Overlay Mill 2 Inches of Asphalt Surface / Overlay [a]	Option 2 - Removal and Reconstruction	Option 3 - Full Depth Reclamation (FDR [b])
Asphalt Surface[c] (P-401/P-403)	At least 3.5 inch overlay	4 inches	4 inches
Aggregate Base (P-208)	-	7 inches	-
FDR – Recycled Asphalt Aggregate Base Course (P-207)	-	-	At least 7 inches

[a]In areas where approximately 2 inches of asphalt were noted, the entire asphalt section should be removed and reconstructed using the Option 2. Design is based on 2 inches of asphalt remaining and 6 inches of base material. This will not appropriate for Area TH01ME-0001(50) and the section of AMPE-002(76) near Boring B-7. Other options should be considered in these areas.

[b]Assuming all pavement sections including asphalt and underlying base are completely pulverized, mixed, spread, and compacted. The addition of aggregate and/or chemical stabilization with cement, asphalt, or fly ash should be discussed with the contractor performing the work. We have assumed the FDR section will achieve a modulus value of at least 50,000 psi. FDR material should meet specifications in AC 150/5370-10, item P-207. Per AC 150/5370-10, Item P-207, prior to full production, construction of a control strip is required to demonstrate the equipment and process to be used to pulverize, mix, spread and compact the FDR material.

[c] In areas subject to spillage of fuel, hydraulic fluid, or other solvents, it is best practice to use a solvent-resistant surface such as P-501, P-404, or P-629.

Discussion and Construction Considerations. Based on the PCI values provided to Geotechnology, the apron and taxiway areas are generally in a condition that requires preventative maintenance. However, the southmost section designated TH01ME-001(50) has a PCI of 50 which indicates complete reconstruction is recommended. The asphalt layer in area TH01ME-001(50) is generally thinner than the minimum 3-inch recommended by FAA for flexible pavement structures, and some borings have little to no base layer underlying the asphalt. We presented several options for rehabilitation including milling and overlaying, a reconstruction option, and a full depth reclamation option. The milling and overlay option will require some sections of the pavement to be removed and reconstructed as the asphalt section is approximately 2 inches, primarily the southmost pavement area designated as TH01ME-001(50).

Full depth reclamation (FDR) methods can be considered for rehabilitation of sections of the apron or the entire apron. The benefits of FDR include not exposing the underlying subgrade to weather and reducing the amount of material needed to construct the pavement base course. However, the FDR option may require specialized equipment and also requires the contractor to construct a control strip to demonstrate the equipment and process to be used to pulverize, mix, spread and compact the FDR material. The asphalt and base thicknesses vary across the apron, and the contractor should consider this when preparing plans for full depth reclamation. Constructability issues should be reviewed for this option. The existing utilities and structures may create limitations for the FDR equipment and may limit the depth of pulverization. Some areas may

require more aggregate and/or chemical stabilization. The FDR material should meet specifications in AC 150/5370-10, item P-207.

The costs and benefits of each option should be discussed with the design team. The design team can consider rehabilitation of some sections and preventative maintenance for others. Preventative maintenance is generally always the most economical option when considering pavement rehabilitation, but the pavement will continue to degrade with time and use. Preventative maintenance should follow the guidelines and procedures for maintaining airports outlined in AC 150/5380-6C. Mill and overlay may be the next most economical option, but the southmost pavement area will require reconstruction as discussed previously in this section.

9.0 RECOMMENDED ADDITIONAL SERVICES

The conclusions and recommendations given in this report are based on: Geotechnology's understanding of the proposed design and construction, as outlined in this report; site observations; interpretation of the exploration data; and our experience. Since the intent of the design recommendations is best understood by Geotechnology, we recommend that Geotechnology be included in the final design and construction process, and be retained to review the project plans and specifications to confirm that the recommendations given in this report have been correctly implemented. We recommend that Geotechnology be retained to participate in pre-bid and preconstruction conferences to reduce the risk of misinterpretation of the conclusions and recommendations in this report relative to the proposed construction of the subject project.

Since actual subsurface conditions between boring locations could vary from those encountered in the borings, our design recommendations are subject to adjustment in the field based on the subsurface conditions encountered during construction. Therefore, we recommend that Geotechnology be retained to provide construction observation services as a continuation of the design process to confirm the recommendations in this report and to revise them accordingly to accommodate differing subsurface conditions. Construction observation is intended to enhance compliance with project plans and specifications. It is not insurance, nor does it constitute a warranty or guarantee of any type. Regardless of construction observation, contractors, suppliers, and others are solely responsible for the quality of their work and for adhering to plans and specifications.

10.0 LIMITATIONS

This report has been prepared on behalf of, and for the exclusive use of, the client for specific application to the named project as described herein. If this report is provided to other parties, it should be provided in its entirety with all supplementary information. In addition, the client should make it clear that the information is provided for factual data only, and not as a warranty of subsurface conditions presented in this report.

Geotechnology has attempted to conduct the services reported herein in a manner consistent with that level of care and skill ordinarily exercised by members of the profession currently practicing in the same locality and under similar conditions. The recommendations and

conclusions contained in this report are professional opinions. The report is not a bidding document and should not be used for that purpose.

Our scope for this phase of the project did not include any environmental assessment or investigation for the presence or absence of wetlands or hazardous or toxic materials in the soil, surface water, groundwater, or air, on or below or around this site. Any statements in this report or on the boring logs regarding odors noted or unusual or suspicious items or conditions observed are strictly for the information of our client. Our scope did not include an assessment of the effects of flooding and erosion of creeks or rivers adjacent to or on the project site.

Our scope did not include: any services to investigate or detect the presence of mold or any other biological contaminants (such as spores, fungus, bacteria, viruses, and the by-products of such organisms) on and around the site; or any services, designed or intended, to prevent or lower the risk of the occurrence of an infestation of mold or other biological contaminants.

The analyses, conclusions, and recommendations contained in this report are based on the data obtained from the geotechnical exploration. The field exploration methods used indicate subsurface conditions only at the specific locations where samples were obtained, only at the time they were obtained, and only to the depths penetrated. Consequently, subsurface conditions could vary gradually, abruptly, and/or nonlinearly between sample locations and/or intervals.

The conclusions or recommendations presented in this report should not be used without Geotechnology's review and assessment if the nature, design, or location of the facilities is changed, if there is a lapse in time between the submittal of this report and the start of work at the site, or if there is a substantial interruption or delay during work at the site. If changes are contemplated or delays occur, Geotechnology must be allowed to review them to assess their impact on the findings, conclusions, and/or design recommendations given in this report. Geotechnology will not be responsible for any claims, damages, or liability associated with any other party's interpretations of the subsurface data or with reuse of the subsurface data or engineering analyses in this report.

The recommendations included in this report have been based in part on assumptions about variations in site stratigraphy that can be evaluated further during earthwork and foundation construction. Geotechnology should be retained to perform construction observation and continue its geotechnical engineering service using observational methods. Geotechnology cannot assume liability for the adequacy of its recommendations when they are used in the field without Geotechnology being retained to observe construction.

APPENDIX A – IMPORTANT INFORMATION ABOUT THIS GEOTECHNICAL-ENGINEERING REPORT

DRAFT

Important Information about This

Geotechnical-Engineering Report

Subsurface problems are a principal cause of construction delays, cost overruns, claims, and disputes.

While you cannot eliminate all such risks, you can manage them. The following information is provided to help.

Geotechnical Services Are Performed for Specific Purposes, Persons, and Projects

Geotechnical engineers structure their services to meet the specific needs of their clients. A geotechnical-engineering study conducted for a civil engineer may not fulfill the needs of a constructor — a construction contractor — or even another civil engineer. Because each geotechnical- engineering study is unique, each geotechnical-engineering report is unique, prepared *solely* for the client. No one except you should rely on this geotechnical-engineering report without first conferring with the geotechnical engineer who prepared it. *And no one — not even you* — should apply this report for any purpose or project except the one originally contemplated.

Read the Full Report

Serious problems have occurred because those relying on a geotechnical-engineering report did not read it all. Do not rely on an executive summary. Do not read selected elements only.

Geotechnical Engineers Base Each Report on a Unique Set of Project-Specific Factors

Geotechnical engineers consider many unique, project-specific factors when establishing the scope of a study. Typical factors include: the client's goals, objectives, and risk-management preferences; the general nature of the structure involved, its size, and configuration; the location of the structure on the site; and other planned or existing site improvements, such as access roads, parking lots, and underground utilities. Unless the geotechnical engineer who conducted the study specifically indicates otherwise, do not rely on a geotechnical-engineering report that was:

- not prepared for you;
- not prepared for your project;
- not prepared for the specific site explored; or
- completed before important project changes were made.

Typical changes that can erode the reliability of an existing geotechnical-engineering report include those that affect:

- the function of the proposed structure, as when it's changed from a parking garage to an office building, or from a light-industrial plant to a refrigerated warehouse;
- the elevation, configuration, location, orientation, or weight of the proposed structure;
- the composition of the design team; or
- project ownership.

As a general rule, *always* inform your geotechnical engineer of project changes—even minor ones—and request an assessment of their impact. *Geotechnical engineers cannot accept responsibility or liability for problems that occur because their reports do not consider developments of which they were not informed.*

Subsurface Conditions Can Change

A geotechnical-engineering report is based on conditions that existed at the time the geotechnical engineer performed the study. *Do not rely on a geotechnical-engineering report whose adequacy may have been affected by*: the passage of time; man-made events, such as construction on or adjacent to the site; or natural events, such as floods, droughts, earthquakes, or groundwater fluctuations. *Contact the geotechnical engineer before applying this report to determine if it is still reliable.* A minor amount of additional testing or analysis could prevent major problems.

Most Geotechnical Findings Are Professional Opinions

Site exploration identifies subsurface conditions only at those points where subsurface tests are conducted or samples are taken. Geotechnical engineers review field and laboratory data and then apply their professional judgment to render an opinion about subsurface conditions throughout the site. Actual subsurface conditions may differ — sometimes significantly — from those indicated in your report. Retaining the geotechnical engineer who developed your report to provide geotechnical-construction observation is the most effective method of managing the risks associated with unanticipated conditions.

A Report's Recommendations Are Not Final

Do not overrely on the confirmation-dependent recommendations included in your report. *Confirmation-dependent recommendations are not final,* because geotechnical engineers develop them principally from judgment and opinion. Geotechnical engineers can finalize their recommendations *only* by observing actual subsurface conditions revealed during construction. *The geotechnical engineer who developed your report cannot assume responsibility or liability for the report's confirmation-dependent recommendations if that engineer does not perform the geotechnical-construction observation required to confirm the recommendations' applicability.*

A Geotechnical-Engineering Report Is Subject to Misinterpretation

Other design-team members' misinterpretation of geotechnical-engineering reports has resulted in costly

problems. Confront that risk by having your geotechnical engineer confer with appropriate members of the design team after submitting the report. Also retain your geotechnical engineer to review pertinent elements of the design team's plans and specifications. Constructors can also misinterpret a geotechnical-engineering report. Confront that risk by having your geotechnical engineer participate in prebid and preconstruction conferences, and by providing geotechnical construction observation.

Do Not Redraw the Engineer's Logs

Geotechnical engineers prepare final boring and testing logs based upon their interpretation of field logs and laboratory data. To prevent errors or omissions, the logs included in a geotechnical-engineering report should *never* be redrawn for inclusion in architectural or other design drawings. Only photographic or electronic reproduction is acceptable, *but recognize that separating logs from the report can elevate risk.*

Give Constructors a Complete Report and Guidance

Some owners and design professionals mistakenly believe they can make constructors liable for unanticipated subsurface conditions by limiting what they provide for bid preparation. To help prevent costly problems, give constructors the complete geotechnical-engineering report, *but* preface it with a clearly written letter of transmittal. In that letter, advise constructors that the report was not prepared for purposes of bid development and that the report's accuracy is limited; encourage them to confer with the geotechnical engineer who prepared the report (a modest fee may be required) and/or to conduct additional study to obtain the specific types of information they need or prefer. A prebid conference can also be valuable. *Be sure constructors have sufficient time* to perform additional study. Only then might you be in a position to give constructors the best information available to you, while requiring them to at least share some of the financial responsibilities stemming from unanticipated conditions.

Read Responsibility Provisions Closely

Some clients, design professionals, and constructors fail to recognize that geotechnical engineering is far less exact than other engineering disciplines. This lack of understanding has created unrealistic expectations that have led to disappointments, claims, and disputes. To help reduce the risk of such outcomes, geotechnical engineers commonly include a variety of explanatory provisions in their reports. Sometimes labeled "limitations," many of these provisions indicate where geotechnical engineers' responsibilities begin and end, to help others recognize their own responsibilities and risks. *Read these provisions closely.* Ask questions. Your geotechnical engineer should respond fully and frankly.

Environmental Concerns Are Not Covered

The equipment, techniques, and personnel used to perform an *environmental* study differ significantly from those used to perform a *geotechnical* study. For that reason, a geotechnical-engineering report does not usually relate any environmental findings, conclusions, or recommendations; e.g., about the likelihood of encountering underground storage tanks or regulated contaminants. *Unanticipated environmental problems have led to numerous project failures.* If you have not yet obtained your own environmental information, ask your geotechnical consultant for risk-management guidance. *Do not rely on an environmental report prepared for someone else.*

Obtain Professional Assistance To Deal with Mold

Diverse strategies can be applied during building design, construction, operation, and maintenance to prevent significant amounts of mold from growing on indoor surfaces. To be effective, all such strategies should be devised for the *express purpose* of mold prevention, integrated into a comprehensive plan, and executed with diligent oversight by a professional mold-prevention consultant. Because just a small amount of water or moisture can lead to the development of severe mold infestations, many mold- prevention strategies focus on keeping building surfaces dry. While groundwater, water infiltration, and similar issues may have been addressed as part of the geotechnical- engineering study whose findings are conveyed in this report, the geotechnical engineer in charge of this project is not a mold prevention consultant; *none of the services performed in connection with the geotechnical engineer's study were designed or conducted for the purpose of mold prevention. Proper implementation of the recommendations conveyed in this report will not of itself be sufficient to prevent mold from growing in or on the structure involved.*

Rely, on Your GBC-Member Geotechnical Engineer for Additional Assistance

Membership in the Geotechnical Business Council of the Geoprofessional Business Association exposes geotechnical engineers to a wide array of risk-confrontation techniques that can be of genuine benefit for everyone involved with a construction project. Confer with you GBC-Member geotechnical engineer for more information.

GEOTECHNICAL BUSINESS COUNCIL
of the Geoprofessional Business Association

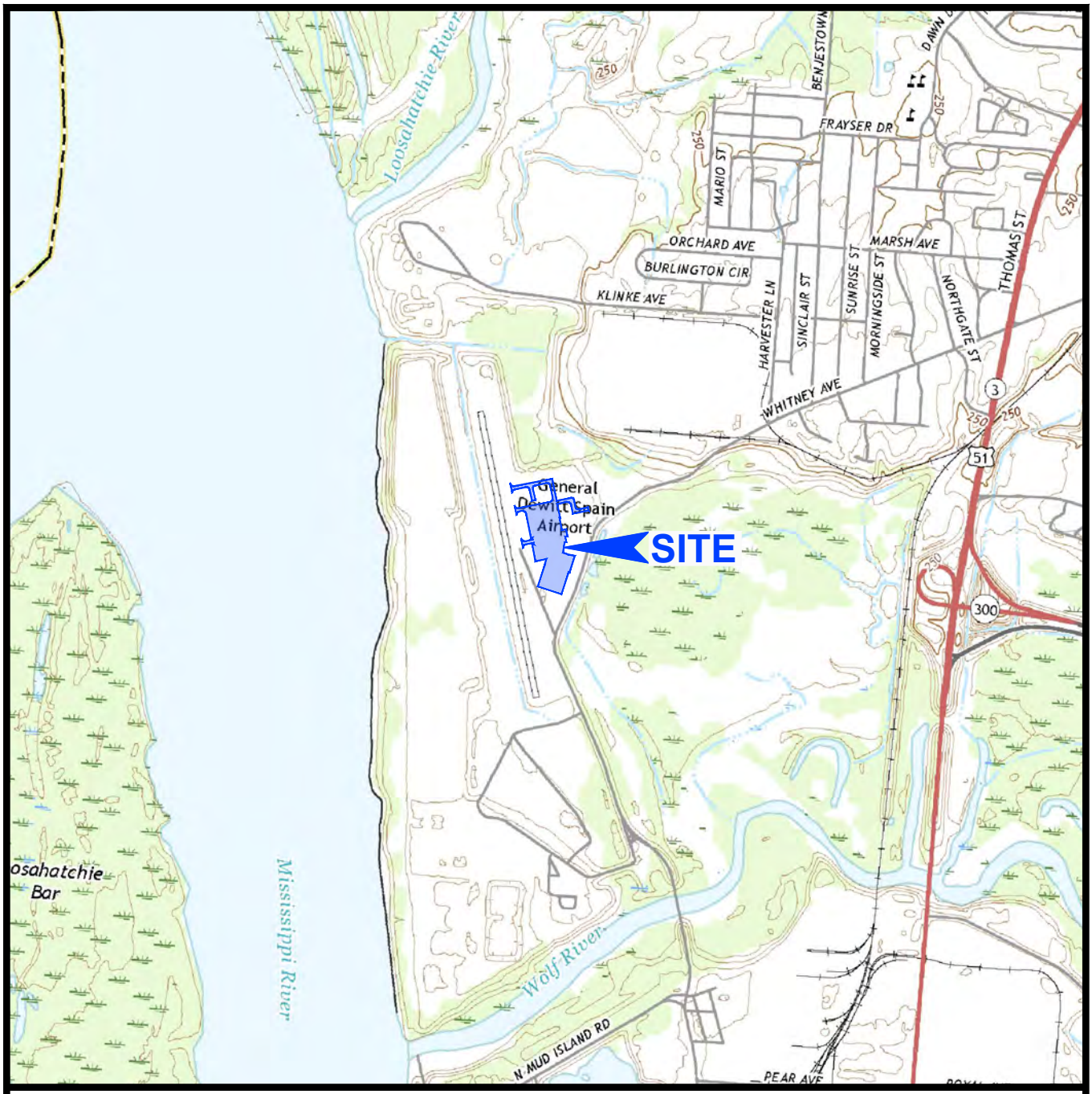
8811 Colesville Road/Suite G106, Silver Spring, MD 20910
Telephone: 301/565-2733 Facsimile: 301/589-2017
e-mail: info@geoprofessional.org www.geoprofessional.org

APPENDIX B – FIGURES

Figure 1 – Site Location and Topography

Figure 2 – Aerial Photograph of Site and Exploration Locations

DRAFT



NOTES

1. Plan adapted from a 7.5 minute U.S.G.S. map for Northwest Memphis, Tennessee-Arkansas quadrangle, last revised in 2016.

0 2,000 4,000

SCALE IN FEET

N

Drawn By: WAH	Ck'd By:DBA	App'vd By:ASE
Date: 6-3-21	Date:6-17-21	Date:6-17-21

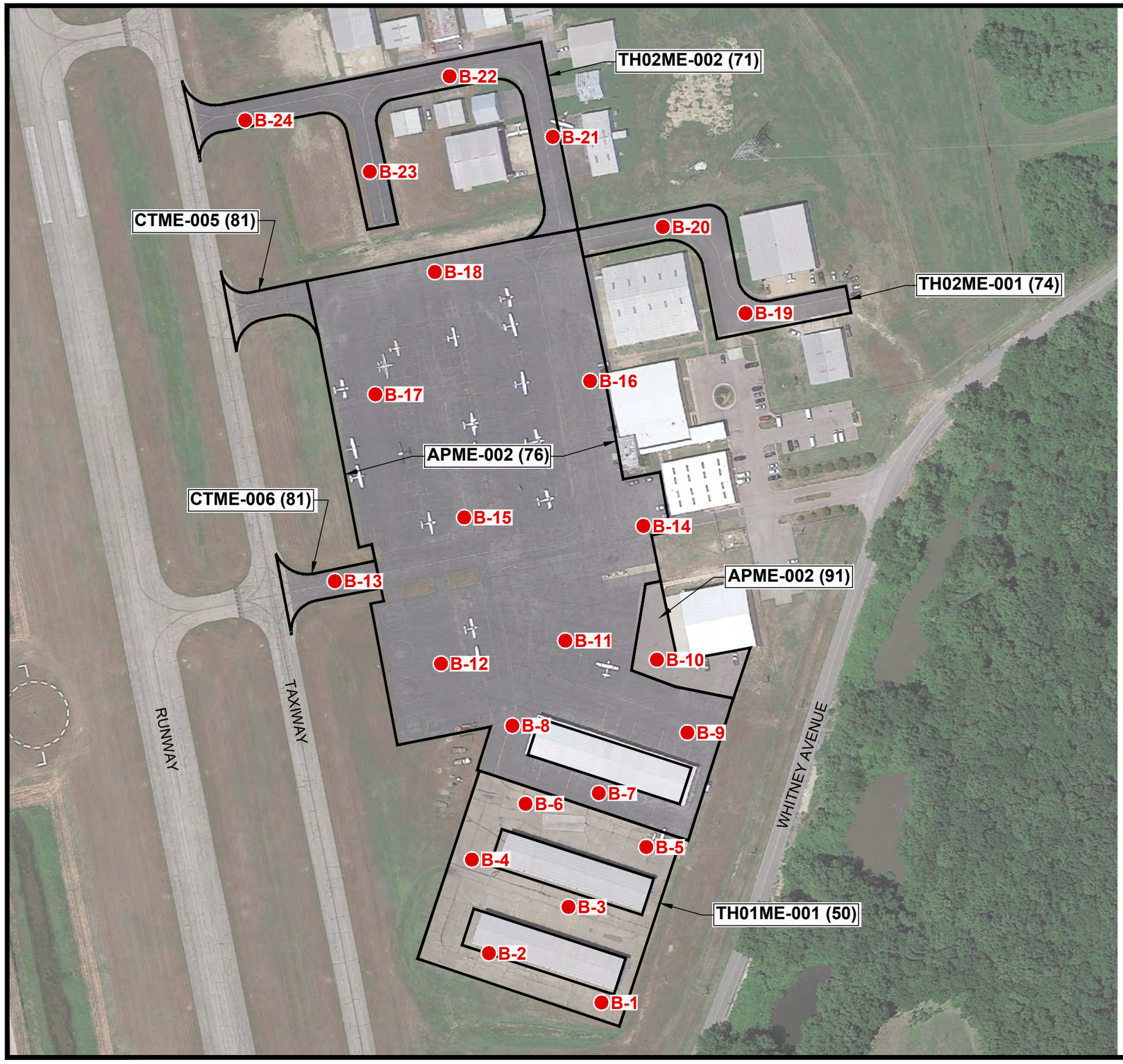
GEOTECHNOLOGY INC
FROM THE GROUND UP

Apron Remediation
DeWitt Spain Airport
Memphis, Tennessee

SITE LOCATION AND TOPOGRAPHY

Project Number J038313.01	FIGURE 1

DRAFT



NOTES

1. Plan adapted from a drawing dated January 2019, titled "Pavement Condition Index Map" prepared by applied pavement TECHNOLOGY.

2. Borings were located in the field with reference to site features and are shown approximate only.

LEGEND

● Boring Location

N

0 80 160 320

SCALE IN FEET

Drawn By: WAH	Ck'd By: DBA	App'vd By: ASE
Date: 6-3-21	Date: 6-17-21	Date:6-17-21

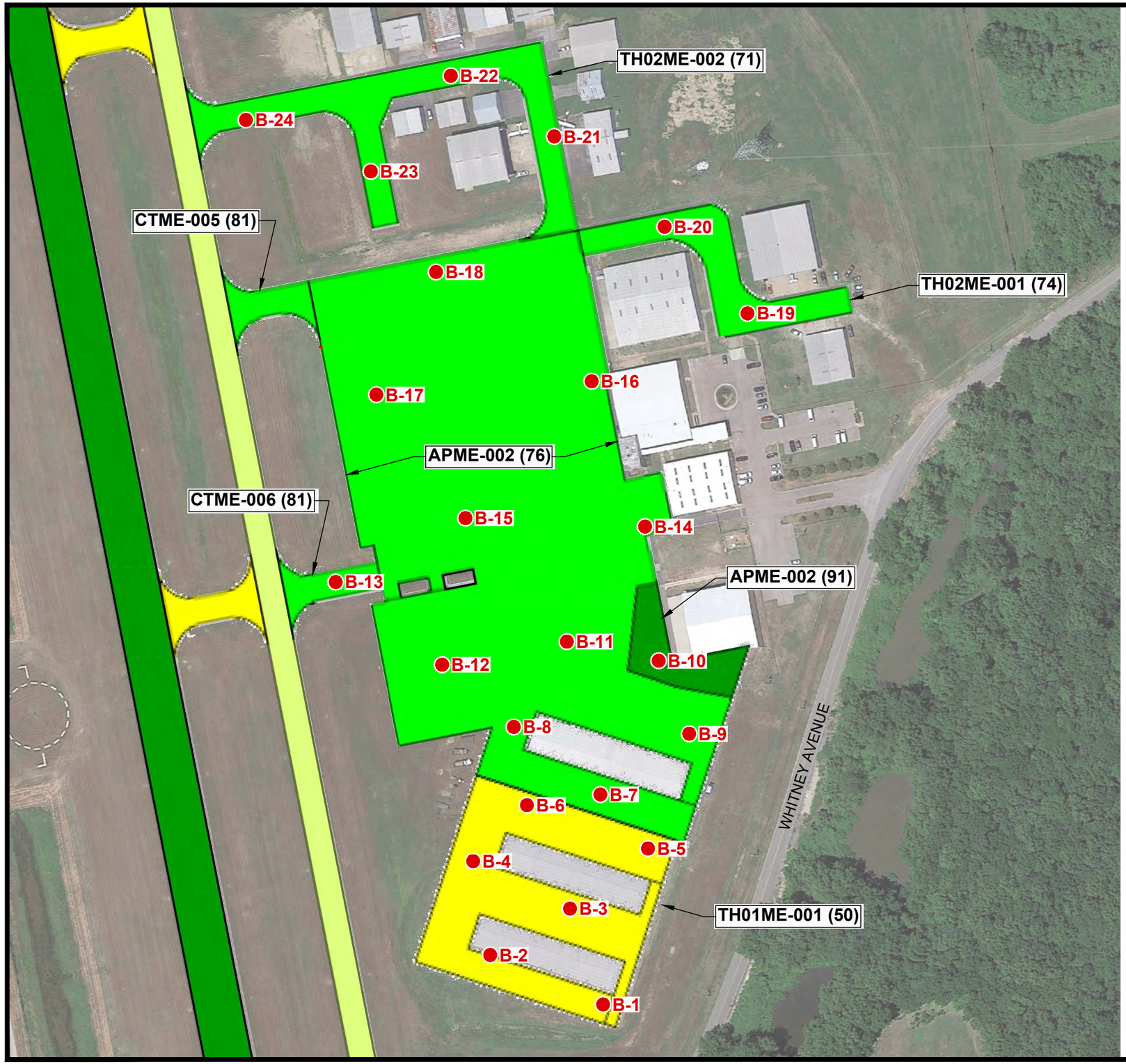
GEOTECHNOLOGY INC
FROM THE GROUND UP

Apron Remediation
General DeWitt Spain Airport
Memphis, Tennessee

AERIAL PHOTOGRAPH OF SITE AND BORING LOCATIONS

Project Number J038313.01	FIGURE 2

DRAFT



NOTES

1. Plan adapted from a drawing dated January 2019, titled "Pavement Condition Index Map" prepared by applied pavement TECHNOLOGY.
2. Borings were located in the field with reference to site features and are shown approximate only.

LEGEND

● Boring Location

PAVEMENT CONDITION INDEX

PCI	REPAIR
100	Preventative Maintenance
85	
70	
55	Major Rehabilitation
40	
25	
10	Reconstruction
0	

N

0 80 160 320

SCALE IN FEET

Drawn By: WAH	Ck'd By:DBA	App'vd By:ASE
Date: 6-15-21	Date:6-17-21	Date:6-17-21

GEOTECHNOLOGY INC
FROM THE GROUND UP

Apron Remediation
General DeWitt Spain Airport
Memphis, Tennessee

PLAN OF SITE AND PAVEMENT CONDITION INDEX

Project Number	
J038313.01	FIGURE 3

APPENDIX C – BORING INFORMATION

Boring Log Terms and Symbols

Boring Logs

DRAFT

Surface Elevation: _____ Completion Date: 5/19/21

Datum NA

DEPTH IN FEET	DESCRIPTION OF MATERIAL	GRAPHIC LOG	DRY UNIT WEIGHT (pcf) SPT BLOW COUNTS CORE RECOVERY/RQD	SAMPLES
	ASPHALT: 3 inches			
	Base Material: Cement treated base - 9 inches			
	Medium dense, tan SAND - SP		9-9-12	SS2
			4-5-6	SS3
5				
	Soft, gray, FAT CLAY - CH		1-1-2	SS4
			1-1-3	SS5
10	Boring terminated at 10 feet.			

SHEAR STRENGTH, tsf

△ - UU/2 ○ - QU/2 □ - SV

0.5 1.0 1.5 2.0 2.5

STANDARD PENETRATION RESISTANCE

(ASTM D 1586)

▲ N-VALUE (BLOWS PER FOOT)

WATER CONTENT, %

PL 10 20 30 40 50 LL

NOTE: STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARIES BETWEEN SOIL TYPES AND THE TRANSITION MAY BE GRADUAL. GRAPHIC LOG FOR ILLUSTRATION PURPOSES ONLY.

GROUNDWATER DATA

ENCOUNTERED AT 7 FEET ▽

DRILLING DATA

___ AUGER 3 3/4 HOLLOW STEM

WASHBORING FROM ___ FEET

KJB DRILLER SWF LOGGER

CME 75 DRILL RIG

HAMMER TYPE Auto

REMARKS:

Drawn by: EJH	Checked by: JDM	App'vd. by: DBA
Date: 5/20/21	Date: 6/17/21	Date: 6/17/21

GEOTECHNOLOGY INC
FROM THE GROUND UP

Dewitt-Spain Airport Apron Rehabilitation
Memphis, Tennessee

LOG OF BORING: B- 1

Project No. J038313.01

LOG OF BORING 2002.WL J038313.01.GPJ GTINC 0638301.GPJ 6/17/21

Surface Elevation: _____ Completion Date: 5/19/21

Datum NA

DEPTH IN FEET	DESCRIPTION OF MATERIAL	GRAPHIC LOG	DRY UNIT WEIGHT (pcf) SPT BLOW COUNTS CORE RECOVERY/RQD	SAMPLES
	ASPHALT: 2.25 inches Base Material: Cement treated base - 9.75 inches			
	Stiff, gray, sandy, FAT CLAY - CH		3-4-5	SS2
5	Loose, gray SAND - SP 2.0% passing No. 200 sieve		2-2-4	SS3
	Soft, gray, FAT CLAY - CH ▽		1-2-2	SS4
	Very loose, gray SAND - SP		1-0-1	SS5
10	Boring terminated at 10 feet.			

SHEAR STRENGTH, tsf

△ - UU/2 ○ - QU/2 □ - SV

0.5 1.0 1.5 2.0 2.5

STANDARD PENETRATION RESISTANCE

(ASTM D 1586)

▲ N-VALUE (BLOWS PER FOOT)

WATER CONTENT, %

PL 10 20 30 40 50 LL

NOTE: STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARIES BETWEEN SOIL TYPES AND THE TRANSITION MAY BE GRADUAL. GRAPHIC LOG FOR ILLUSTRATION PURPOSES ONLY.

GROUNDWATER DATA

ENCOUNTERED AT 6.5 FEET ▽

DRILLING DATA

___ AUGER 3 3/4 HOLLOW STEM

WASHBORING FROM ___ FEET

KJB DRILLER SWF LOGGER

CME 75 DRILL RIG

HAMMER TYPE Auto

REMARKS:

Drawn by: EJH	Checked by: JDM	App'vd. by: DBA
Date: 5/20/21	Date: 6/17/21	Date: 6/17/21

GEOTECHNOLOGY INC
FROM THE GROUND UP

Dewitt-Spain Airport Apron Rehabilitation
Memphis, Tennessee

LOG OF BORING: B- 2

Project No. J038313.01

LOG OF BORING 2002.WL J038313.01.GPJ GTINC 0638301.GPJ 6/17/21

Surface Elevation: _____ Completion Date: 5/19/21

Datum NA

DEPTH IN FEET	DESCRIPTION OF MATERIAL	GRAPHIC LOG	DRY UNIT WEIGHT (pcf) SPT BLOW COUNTS CORE RECOVERY/RQD	SAMPLES
	ASPHALT: 2 inches - No base			
	Medium dense, tan SAND - SP			
			6-12-12	SS2
			2-6-6	SS3
5				
	Soft, gray, FAT CLAY - CH		1-1-2	SS4
			1-2-2	SS5
10	Boring terminated at 10 feet.			

SHEAR STRENGTH, tsf

△ - UU/2 ○ - QU/2 □ - SV

0.5 1.0 1.5 2.0 2.5

STANDARD PENETRATION RESISTANCE

(ASTM D 1586)

▲ N-VALUE (BLOWS PER FOOT)

WATER CONTENT, %

PL 10 20 30 40 50 LL

NOTE: STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARIES BETWEEN SOIL TYPES AND THE TRANSITION MAY BE GRADUAL. GRAPHIC LOG FOR ILLUSTRATION PURPOSES ONLY.

GROUNDWATER DATA

ENCOUNTERED AT 6 FEET ▽

DRILLING DATA

___ AUGER 3 3/4 HOLLOW STEM

WASHBORING FROM ___ FEET

KJB DRILLER SWF LOGGER

CME 75 DRILL RIG

HAMMER TYPE Auto

REMARKS:

Drawn by: EJH	Checked by: JDM	App'vd. by: DBA
Date: 5/20/21	Date: 6/17/21	Date: 6/17/21

GEOTECHNOLOGY INC
FROM THE GROUND UP

Dewitt-Spain Airport Apron Rehabilitation
Memphis, Tennessee

LOG OF BORING: B- 3

Project No. J038313.01

LOG OF BORING 2002.WL J038313.01.GPJ GTINC 0638301.GPJ 6/17/21

DRAFT

Surface Elevation: _____ Completion Date: 5/19/21

Datum NA

DEPTH IN FEET	DESCRIPTION OF MATERIAL	GRAPHIC LOG	DRY UNIT WEIGHT (pcf) SPT BLOW COUNTS CORE RECOVERY/RQD	SAMPLES
	ASPHALT: 2 inches Base Material: Cement treated base - 10 inches			
	Medium dense, tan SAND - SP		8-11-12	SS2
5	Soft, gray, FAT CLAY - CH		1-1-2	SS3
	Loose, tan SAND - SP		1-2-3	SS4
10	Medium stiff, gray to gray and orange, FAT CLAY - CH Boring terminated at 10 feet.		2-3-5	SS5

SHEAR STRENGTH, tsf

Δ - UU/2 ○ - QU/2 □ - SV

0.5 1.0 1.5 2.0 2.5

STANDARD PENETRATION RESISTANCE

(ASTM D 1586)

▲ N-VALUE (BLOWS PER FOOT)

WATER CONTENT, %

PL 10 20 30 40 50 LL

NOTE: STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARIES BETWEEN SOIL TYPES AND THE TRANSITION MAY BE GRADUAL. GRAPHIC LOG FOR ILLUSTRATION PURPOSES ONLY.

GROUNDWATER DATA

X FREE WATER NOT ENCOUNTERED DURING DRILLING

DRILLING DATA

___ AUGER 3 3/4 HOLLOW STEM

WASHBORING FROM ___ FEET

KJB DRILLER SWF LOGGER

CME 75 DRILL RIG

HAMMER TYPE Auto

REMARKS:

Drawn by: EJH	Checked by: JDM	App'vd. by: DBA
Date: 5/20/21	Date: 6/17/21	Date: 6/17/21

GEOTECHNOLOGY INC
FROM THE GROUND UP

Dewitt-Spain Airport Apron Rehabilitation
Memphis, Tennessee

LOG OF BORING: B- 4

Project No. J038313.01

LOG OF BORING 2002.WL J038313.01.GPJ GTINC 0638301.GPJ 6/17/21

DRAFT

Surface Elevation: _____ Completion Date: 5/19/21

Datum NA

DEPTH IN FEET	DESCRIPTION OF MATERIAL	GRAPHIC LOG	DRY UNIT WEIGHT (pcf) SPT BLOW COUNTS CORE RECOVERY/RQD	SAMPLES
	ASPHALT: 2 inches - No base			
	Medium dense, tan SAND - SP		7-8-12	SS2
			3-8-8	SS3
5				
	Soft, gray, FAT CLAY - CH ▽		1-1-2	SS4
	Loose, gray SAND - SP			
	little clay		2-2-4	SS5
10	Boring terminated at 10 feet.			

SHEAR STRENGTH, tsf

△ - UU/2 ○ - QU/2 □ - SV

0.5 1.0 1.5 2.0 2.5

STANDARD PENETRATION RESISTANCE

(ASTM D 1586)

▲ N-VALUE (BLOWS PER FOOT)

WATER CONTENT, %

PL 10 20 30 40 50 LL

NOTE: STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARIES BETWEEN SOIL TYPES AND THE TRANSITION MAY BE GRADUAL. GRAPHIC LOG FOR ILLUSTRATION PURPOSES ONLY.

GROUNDWATER DATA

ENCOUNTERED AT 7 FEET ▽

DRILLING DATA

___ AUGER 3 3/4 HOLLOW STEM

WASHBORING FROM ___ FEET

KJB DRILLER SWF LOGGER

CME 75 DRILL RIG

HAMMER TYPE Auto

REMARKS:

Drawn by: EJH	Checked by: JDM	App'vd. by: DBA
Date: 5/20/21	Date: 6/17/21	Date: 6/17/21

GEOTECHNOLOGY INC
FROM THE GROUND UP

Dewitt-Spain Airport Apron Rehabilitation
Memphis, Tennessee

LOG OF BORING: B- 5

Project No. J038313.01

LOG OF BORING 2002.WL J038313.01.GPJ GTINC 0638301.GPJ 6/17/21

Surface Elevation: _____ Completion Date: 5/19/21

Datum NA

DEPTH IN FEET	DESCRIPTION OF MATERIAL	GRAPHIC LOG	DRY UNIT WEIGHT (pcf) SPT BLOW COUNTS CORE RECOVERY/RQD	SAMPLES
	ASPHALT: 2 inches Base Material: Cement treated base - 10 inches			
	Medium dense, gray SAND - SP 2.6% passing No. 5 sieve		5-9-9	SS2
5	Soft to medium stiff, gray, FAT CLAY - (CH)		3-2-2	SS3
			1-2-3	SS4
	Soft, gray, FAT CLAY - CH sand seam		3-2-1	SS5
10	Boring terminated at 10 feet.			

SHEAR STRENGTH, tsf
△ - UU/2 ○ - QU/2 □ - SV
0.5 1.0 1.5 2.0 2.5

STANDARD PENETRATION RESISTANCE
(ASTM D 1586)
▲ N-VALUE (BLOWS PER FOOT)

WATER CONTENT, %
PL 10 20 30 40 50 LL

81 >>

NOTE: STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARIES BETWEEN SOIL TYPES AND THE TRANSITION MAY BE GRADUAL. GRAPHIC LOG FOR ILLUSTRATION PURPOSES ONLY.

GROUNDWATER DATA

ENCOUNTERED AT 7 FEET ▽

DRILLING DATA

___ AUGER 3 3/4 HOLLOW STEM
WASHBORING FROM ___ FEET
KJB DRILLER SWF LOGGER
CME 75 DRILL RIG
HAMMER TYPE Auto

REMARKS:

Drawn by: EJH	Checked by: JDM	App'vd. by: DBA
Date: 5/20/21	Date: 6/17/21	Date: 6/17/21

GEOTECHNOLOGY INC
FROM THE GROUND UP

Dewitt-Spain Airport Apron Rehabilitation
Memphis, Tennessee

LOG OF BORING: B- 6

Project No. J038313.01

LOG OF BORING 2002.WL J038313.01.GPJ GTINC 0638301.GPJ 6/17/21

Surface Elevation: _____ Completion Date: 5/19/21

Datum NA

DEPTH IN FEET	DESCRIPTION OF MATERIAL	GRAPHIC LOG	DRY UNIT WEIGHT (pcf) SPT BLOW COUNTS CORE RECOVERY/RQD	SAMPLES
	ASPHALT: 2.5 inches - No base			
	Medium dense to loose, gray SAND - SP			
			7-12-12	SS2
			6-7-7	SS3
5		▽		
			1-1-2	SS4
	Soft to medium stiff, gray, FAT CLAY - CH		1-2-3	SS5
10	Boring terminated at 10 feet.			

SHEAR STRENGTH, tsf

△ - UU/2 ○ - QU/2 □ - SV

0.5 1.0 1.5 2.0 2.5

STANDARD PENETRATION RESISTANCE

(ASTM D 1586)

▲ N-VALUE (BLOWS PER FOOT)

WATER CONTENT, %

PL 10 20 30 40 50 LL

NOTE: STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARIES BETWEEN SOIL TYPES AND THE TRANSITION MAY BE GRADUAL. GRAPHIC LOG FOR ILLUSTRATION PURPOSES ONLY.

GROUNDWATER DATA

ENCOUNTERED AT 5 FEET ▽

DRILLING DATA

___ AUGER 3 3/4 HOLLOW STEM

WASHBORING FROM ___ FEET

KJB DRILLER SWF LOGGER

CME 75 DRILL RIG

HAMMER TYPE Auto

REMARKS:

Drawn by: EJH	Checked by: JDM	App'vd. by: DBA
Date: 5/20/21	Date: 6/17/21	Date: 6/17/21

GEOTECHNOLOGY INC
FROM THE GROUND UP

Dewitt-Spain Airport Apron Rehabilitation
Memphis, Tennessee

LOG OF BORING: B- 7

Project No. J038313.01

LOG OF BORING 2002.WL J038313.01.GPJ GTINC 0638301.GPJ 6/17/21

Surface Elevation: _____ Completion Date: 5/19/21

Datum NA

DEPTH IN FEET	DESCRIPTION OF MATERIAL	GRAPHIC LOG	DRY UNIT WEIGHT (pcf) SPT BLOW COUNTS CORE RECOVERY/RQD	SAMPLES
	ASPHALT: 7.25 inches - No base			
	Medium dense to very loose, tan to gray SAND - SP some clay		8-13-14	SS2
			6-8-10	SS3
5		▽		
	0.0% passing No. 200 sieve little lignite		1-1-2	SS4
	Soft, gray, FAT CLAY - CH		1-1-1	SS5
10	Boring terminated at 10 feet.			

SHEAR STRENGTH, tsf
△ - UU/2 ○ - QU/2 □ - SV
0.5 1.0 1.5 2.0 2.5

STANDARD PENETRATION RESISTANCE
(ASTM D 1586)
▲ N-VALUE (BLOWS PER FOOT)

WATER CONTENT, %
PL 10 20 30 40 50 LL

NOTE: STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARIES BETWEEN SOIL TYPES AND THE TRANSITION MAY BE GRADUAL. GRAPHIC LOG FOR ILLUSTRATION PURPOSES ONLY.

GROUNDWATER DATA

ENCOUNTERED AT 6 FEET ▽

DRILLING DATA

___ AUGER 3 3/4 HOLLOW STEM
WASHBORING FROM ___ FEET
KJB DRILLER SWF LOGGER
CME 75 DRILL RIG
HAMMER TYPE Auto

REMARKS:

Drawn by: EJH	Checked by: JDM	App'vd. by: DBA
Date: 5/20/21	Date: 6/17/21	Date: 6/17/21

GEOTECHNOLOGY INC
FROM THE GROUND UP

Dewitt-Spain Airport Apron Rehabilitation
Memphis, Tennessee

LOG OF BORING: B- 8

Project No. J038313.01

LOG OF BORING 2002.WL J038313.01.GPJ GTINC 0638301.GPJ 6/17/21

Surface Elevation: _____ Completion Date: 5/18/21

Datum NA

DEPTH IN FEET	DESCRIPTION OF MATERIAL	GRAPHIC LOG	DRY UNIT WEIGHT (pcf) SPT BLOW COUNTS CORE RECOVERY/RQD	SAMPLES
	ASPHALT: 5 inches			
	Base Material: Cement treated base - 13 inches			
	Medium dense to very loose, tan to gray SAND - SP		7-12-14	SS2
			7-8-8	SS3
5			2-2-3	SS4
			1-1-2	SS5
10	Boring terminated at 10 feet.			

SHEAR STRENGTH, tsf

△ - UU/2 ○ - QU/2 □ - SV

0.5 1.0 1.5 2.0 2.5

STANDARD PENETRATION RESISTANCE

(ASTM D 1586)

▲ N-VALUE (BLOWS PER FOOT)

WATER CONTENT, %

PL 10 20 30 40 50 LL

NOTE: STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARIES BETWEEN SOIL TYPES AND THE TRANSITION MAY BE GRADUAL. GRAPHIC LOG FOR ILLUSTRATION PURPOSES ONLY.

GROUNDWATER DATA

ENCOUNTERED AT 7 FEET ▽

DRILLING DATA

___ AUGER 3 3/4 HOLLOW STEM

WASHBORING FROM ___ FEET

KJB DRILLER SWF LOGGER

CME 75 DRILL RIG

HAMMER TYPE Auto

REMARKS:

Drawn by: EJH	Checked by: JDM	App'vd. by: DBA
Date: 5/20/21	Date: 6/17/21	Date: 6/17/21

GEOTECHNOLOGY INC
FROM THE GROUND UP

Dewitt-Spain Airport Apron Rehabilitation
Memphis, Tennessee

LOG OF BORING: B- 9

Project No. J038313.01

LOG OF BORING 2002.WL J038313.01.GPJ GTINC 0638301.GPJ 6/17/21

Surface Elevation: _____ Completion Date: 5/18/21

Datum NA

DEPTH IN FEET	DESCRIPTION OF MATERIAL	GRAPHIC LOG	DRY UNIT WEIGHT (pcf) SPT BLOW COUNTS CORE RECOVERY/RQD	SAMPLES
	ASPHALT: 4 inches			
	Base Material: Cement treated base - 15 inches			
	Medium dense to very loose, tan SAND - SP		8-14-15	SS2
			6-7-7	SS3
5			1-1-2	SS4
			1-2-2	SS5
10	Boring terminated at 10 feet.			

SHEAR STRENGTH, tsf

△ - UU/2 ○ - QU/2 □ - SV

0.5 1.0 1.5 2.0 2.5

STANDARD PENETRATION RESISTANCE

(ASTM D 1586)

▲ N-VALUE (BLOWS PER FOOT)

WATER CONTENT, %

PL 10 20 30 40 50 LL

NOTE: STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARIES BETWEEN SOIL TYPES AND THE TRANSITION MAY BE GRADUAL. GRAPHIC LOG FOR ILLUSTRATION PURPOSES ONLY.

GROUNDWATER DATA

ENCOUNTERED AT 6.5 FEET ▽

DRILLING DATA

___ AUGER 3 3/4 HOLLOW STEM

WASHBORING FROM ___ FEET

KJB DRILLER SWF LOGGER

CME 75 DRILL RIG

HAMMER TYPE Auto

REMARKS:

Drawn by: EJH	Checked by: JDM	App'vd. by: DBA
Date: 5/20/21	Date: 6/17/21	Date: 6/17/21

GEOTECHNOLOGY INC
FROM THE GROUND UP

Dewitt-Spain Airport Apron Rehabilitation
Memphis, Tennessee

LOG OF BORING: B-10

Project No. J038313.01

LOG OF BORING 2002.WL J038313.01.GPJ GTINC 0638301.GPJ 6/17/21

Surface Elevation: _____ Completion Date: 5/18/21

Datum NA

DEPTH IN FEET	DESCRIPTION OF MATERIAL	GRAPHIC LOG	DRY UNIT WEIGHT (pcf) SPT BLOW COUNTS CORE RECOVERY/RQD	SAMPLES
	ASPHALT: 3 inches			
	Base Material: Cement treated base - 12 inches			
	Medium dense, tan to gray SAND - SP		6-12-14	SS2
			5-8-9	SS3
5				
			1-2-2	SS4
	Soft, gray, FAT CLAY - CH		1-1-1	SS5
10	Boring terminated at 10 feet			

SHEAR STRENGTH, tsf

△ - UU/2 ○ - QU/2 □ - SV

0.5 1.0 1.5 2.0 2.5

STANDARD PENETRATION RESISTANCE

(ASTM D 1586)

▲ N-VALUE (BLOWS PER FOOT)

WATER CONTENT, %

PL 10 20 30 40 50 LL

NOTE: STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARIES BETWEEN SOIL TYPES AND THE TRANSITION MAY BE GRADUAL. GRAPHIC LOG FOR ILLUSTRATION PURPOSES ONLY.

GROUNDWATER DATA

X FREE WATER NOT ENCOUNTERED DURING DRILLING

DRILLING DATA

___ AUGER 3 3/4 HOLLOW STEM

WASHBORING FROM ___ FEET

KJB DRILLER SWF LOGGER

CME 75 DRILL RIG

HAMMER TYPE Auto

REMARKS:

Drawn by: EJH	Checked by: JDM	App'vd. by: DBA
Date: 5/20/21	Date: 6/17/21	Date: 6/17/21

GEOTECHNOLOGY INC
FROM THE GROUND UP

Dewitt-Spain Airport Apron Rehabilitation
Memphis, Tennessee

LOG OF BORING: B-11

Project No. J038313.01

LOG OF BORING 2002.WL J038313.01.GPJ GTINC 0638301.GPJ 6/17/21

Surface Elevation: _____ Completion Date: 5/18/21

Datum NA

DEPTH IN FEET	DESCRIPTION OF MATERIAL	GRAPHIC LOG	DRY UNIT WEIGHT (pcf) SPT BLOW COUNTS CORE RECOVERY/RQD	SAMPLES
	ASPHALT: 4.5 inches			
	Base Material: Cement treated base - 12 inches			
	Medium dense to very loose, tan to gray SAND - SP		6-10-11	SS2
	0.6% passing No. 200 sieve		5-8-7	SS3
5			1-1-1	SS4
			1-1-1	SS5
10	Boring terminated at 10 feet.			

SHEAR STRENGTH, tsf
Δ - UU/2 ○ - QU/2 □ - SV
0.5 1.0 1.5 2.0 2.5

STANDARD PENETRATION RESISTANCE
(ASTM D 1586)
▲ N-VALUE (BLOWS PER FOOT)

WATER CONTENT, %
PL 10 20 30 40 50 LL

NOTE: STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARIES BETWEEN SOIL TYPES AND THE TRANSITION MAY BE GRADUAL. GRAPHIC LOG FOR ILLUSTRATION PURPOSES ONLY.

GROUNDWATER DATA

ENCOUNTERED AT 7 FEET ▽

DRILLING DATA

___ AUGER 3 3/4 HOLLOW STEM
WASHBORING FROM ___ FEET
KJB DRILLER SWF LOGGER
CME 75 DRILL RIG
HAMMER TYPE Auto

REMARKS:

Drawn by: EJH	Checked by: JDM	App'vd. by: DBA
Date: 5/20/21	Date: 6/17/21	Date: 6/17/21

GEOTECHNOLOGY INC
FROM THE GROUND UP

Dewitt-Spain Airport Apron Rehabilitation
Memphis, Tennessee

LOG OF BORING: B-12

Project No. J038313.01

LOG OF BORING 2002.WL J038313.01.GPJ GTINC 0638301.GPJ 6/17/21

Surface Elevation: _____ Completion Date: 5/17/21

Datum NA

DEPTH IN FEET	DESCRIPTION OF MATERIAL	GRAPHIC LOG	DRY UNIT WEIGHT (pcf) SPT BLOW COUNTS CORE RECOVERY/RQD	SAMPLES
	ASPHALT: 7.25 inches			
	Base Material: Cement treated base - 4.75 inches			
	Medium dense to very loose, tan to gray SAND - SP		8-12-19	SS2
			8-7-8	SS3
5			1-1-3	SS4
	Soft, gray, FAT CLAY - CH		1-1-1	SS5
10	Boring terminated at 10 feet.			

SHEAR STRENGTH, tsf

△ - UU/2 ○ - QU/2 □ - SV

0.5 1.0 1.5 2.0 2.5

STANDARD PENETRATION RESISTANCE

(ASTM D 1586)

▲ N-VALUE (BLOWS PER FOOT)

WATER CONTENT, %

PL 10 20 30 40 50 LL

NOTE: STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARIES BETWEEN SOIL TYPES AND THE TRANSITION MAY BE GRADUAL. GRAPHIC LOG FOR ILLUSTRATION PURPOSES ONLY.

GROUNDWATER DATA

X FREE WATER NOT ENCOUNTERED DURING DRILLING

DRILLING DATA

___ AUGER 3 3/4 HOLLOW STEM

WASHBORING FROM ___ FEET

KJB DRILLER SWF LOGGER

CME 75 DRILL RIG

HAMMER TYPE Auto

REMARKS:

Drawn by: EJH	Checked by: JDM	App'vd. by: DBA
Date: 5/20/21	Date: 6/17/21	Date: 6/17/21

GEOTECHNOLOGY INC
FROM THE GROUND UP

Dewitt-Spain Airport Apron Rehabilitation
Memphis, Tennessee

LOG OF BORING: B-13

Project No. J038313.01

LOG OF BORING 2002.WL J038313.01.GPJ GTINC 0638301.GPJ 6/17/21

Surface Elevation: _____ Completion Date: 5/17/21

Datum NA

DEPTH IN FEET	DESCRIPTION OF MATERIAL	GRAPHIC LOG	DRY UNIT WEIGHT (pcf) SPT BLOW COUNTS CORE RECOVERY/RQD	SAMPLES
	ASPHALT: 7 inches			
	Base Material: Cement treated base - 5 inches			
	Medium dense, tan SAND - SP		7-15-16	SS2
5	Medium dense to loose, tan, GRAVELLY SAND - SP		14-14-18	SS3
			3-5-7	SS4
			1-2-4	SS5
10	Boring terminated at 10 feet.			

SHEAR STRENGTH, tsf

△ - UU/2 ○ - QU/2 □ - SV

0.5 1.0 1.5 2.0 2.5

STANDARD PENETRATION RESISTANCE

(ASTM D 1586)

▲ N-VALUE (BLOWS PER FOOT)

WATER CONTENT, %

PL 10 20 30 40 50 LL

NOTE: STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARIES BETWEEN SOIL TYPES AND THE TRANSITION MAY BE GRADUAL. GRAPHIC LOG FOR ILLUSTRATION PURPOSES ONLY.

GROUNDWATER DATA

X FREE WATER NOT ENCOUNTERED DURING DRILLING

DRILLING DATA

___ AUGER 3 3/4 HOLLOW STEM

WASHBORING FROM ___ FEET

KJB DRILLER SWF LOGGER

CME 75 DRILL RIG

HAMMER TYPE Auto

REMARKS:

Drawn by: EJH	Checked by: JDM	App'vd. by: DBA
Date: 5/20/21	Date: 6/17/21	Date: 6/17/21

GEOTECHNOLOGY INC
FROM THE GROUND UP

Dewitt-Spain Airport Apron Rehabilitation
Memphis, Tennessee

LOG OF BORING: B-14

Project No. J038313.01

LOG OF BORING 2002.WL J038313.01.GPJ GTINC 0638301.GPJ 6/17/21

Surface Elevation: _____ Completion Date: 5/17/21

Datum NA

DEPTH IN FEET	DESCRIPTION OF MATERIAL	GRAPHIC LOG	DRY UNIT WEIGHT (pcf) SPT BLOW COUNTS CORE RECOVERY/RQD	SAMPLES	SHEAR STRENGTH, tsf (△ - UU/2, ○ - QU/2, □ - SV; 0.5 1.0 1.5 2.0 2.5) / STANDARD PENETRATION RESISTANCE (ASTM D 1586) ▲ N-VALUE (BLOWS PER FOOT) / WATER CONTENT, % PL 10 20 30 40 50 LL
	ASPHALT: 3.25 inches Base Material: Cement treated base - 12.25 inches				
	Medium dense, tan to gray SAND - SP 3.7% passing No. 200 sieve		8-12-16	SS2	▲
			7-11-12	SS3	▲
5			2-6-6	SS4	▲
	Soft, gray, FAT CLAY - CH ▽		1-1-2	SS5	▲
10	Boring terminated at 10 feet.				

NOTE: STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARIES BETWEEN SOIL TYPES AND THE TRANSITION MAY BE GRADUAL. GRAPHIC LOG FOR ILLUSTRATION PURPOSES ONLY.

GROUNDWATER DATA

ENCOUNTERED AT 9 FEET ▽

DRILLING DATA

___ AUGER 3 3/4 HOLLOW STEM
WASHBORING FROM ___ FEET
KJB DRILLER SWF LOGGER
CME 75 DRILL RIG
HAMMER TYPE Auto

REMARKS: Composite bucket samples recovered for relative density testing.

Drawn by: EJH	Checked by: JDM	App'vd. by: DBA
Date: 5/20/21	Date: 6/17/21	Date: 6/17/21

GEOTECHNOLOGY INC
FROM THE GROUND UP

Dewitt-Spain Airport Apron Rehabilitation
Memphis, Tennessee

LOG OF BORING: B-15

Project No. J038313.01

LOG OF BORING 2002.WL J038313.01.GPJ GTINC 0638301.GPJ 6/17/21

Surface Elevation: _____ Completion Date: 5/17/21

Datum NA

DEPTH IN FEET	DESCRIPTION OF MATERIAL	GRAPHIC LOG	DRY UNIT WEIGHT (pcf) SPT BLOW COUNTS CORE RECOVERY/RQD	SAMPLES
	ASPHALT: 5 inches			
	Base Material: Cement treated base - 10 inches			
	Medium dense, tan SAND - SP		6-11-13	SS2
			7-11-12	SS3
5				
			4-6-7	SS4
	Soft, gray, FAT CLAY - CH		1-1-1	SS5
10	Boring terminated at 10 feet.			

SHEAR STRENGTH, tsf

△ - UU/2 ○ - QU/2 □ - SV

0.5 1.0 1.5 2.0 2.5

STANDARD PENETRATION RESISTANCE

(ASTM D 1586)

▲ N-VALUE (BLOWS PER FOOT)

WATER CONTENT, %

PL 10 20 30 40 50 LL

NOTE: STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARIES BETWEEN SOIL TYPES AND THE TRANSITION MAY BE GRADUAL. GRAPHIC LOG FOR ILLUSTRATION PURPOSES ONLY.

GROUNDWATER DATA

ENCOUNTERED AT 8.5 FEET ▽

DRILLING DATA

___ AUGER 3 3/4 HOLLOW STEM

WASHBORING FROM ___ FEET

KJB DRILLER SWF LOGGER

CME 75 DRILL RIG

HAMMER TYPE Auto

REMARKS:

Drawn by: EJH	Checked by: JDM	App'vd. by: DBA
Date: 5/20/21	Date: 6/17/21	Date: 6/17/21

GEOTECHNOLOGY INC
FROM THE GROUND UP

Dewitt-Spain Airport Apron Rehabilitation
Memphis, Tennessee

LOG OF BORING: B-16

Project No. J038313.01

LOG OF BORING 2002.WL J038313.01.GPJ GTINC 0638301.GPJ 6/17/21

Surface Elevation: _____ Completion Date: 5/17/21

Datum NA

DEPTH IN FEET	DESCRIPTION OF MATERIAL	GRAPHIC LOG	DRY UNIT WEIGHT (pcf) SPT BLOW COUNTS CORE RECOVERY/RQD	SAMPLES
	ASPHALT: 2.5 inches			
	Base Material: Cement treated base - 15.5 inches			
	Medium dense to very loose, tan SAND - SP		7-10-14	SS2
			5-9-10	SS3
5			0-1-1	SS4
	Gray, CLAYEY SAND - SC 21.3% passing No. 200 sieve			ST5
10	Boring terminated at 10 feet.			

SHEAR STRENGTH, tsf

△ - UU/2 ○ - QU/2 □ - SV

0.5 1.0 1.5 2.0 2.5

STANDARD PENETRATION RESISTANCE

(ASTM D 1586)

▲ N-VALUE (BLOWS PER FOOT)

WATER CONTENT, %

PL 10 20 30 40 50 LL

NOTE: STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARIES BETWEEN SOIL TYPES AND THE TRANSITION MAY BE GRADUAL. GRAPHIC LOG FOR ILLUSTRATION PURPOSES ONLY.

GROUNDWATER DATA

ENCOUNTERED AT 4.5 FEET ▽

DRILLING DATA

___ AUGER 3 3/4 HOLLOW STEM

WASHBORING FROM ___ FEET

KJB DRILLER SWF LOGGER

CME 75 DRILL RIG

HAMMER TYPE Auto

REMARKS:

Drawn by: EJH	Checked by: JDM	App'vd. by: DBA
Date: 5/20/21	Date: 6/17/21	Date: 6/17/21

GEOTECHNOLOGY INC
FROM THE GROUND UP

Dewitt-Spain Airport Apron Rehabilitation
Memphis, Tennessee

LOG OF BORING: B-17

Project No. J038313.01

LOG OF BORING 2002.WL J038313.01.GPJ GTINC 0638301.GPJ 6/17/21

Surface Elevation: _____ Completion Date: 5/17/21

Datum NA

DEPTH IN FEET	DESCRIPTION OF MATERIAL	GRAPHIC LOG	DRY UNIT WEIGHT (pcf) SPT BLOW COUNTS CORE RECOVERY/RQD	SAMPLES
	ASPHALT: 2.25 inches Base Material: Cement treated base - 9.75 inches			
	Medium dense, tan to gray SAND - SP		6-9-12	SS2
	0.7% passing No. 200 sieve		5-7-6	SS3
5				
	Medium stiff, gray, FAT CLAY - CH		2-2-4	SS4
			2-2-3	SS5
10	Boring terminated at 10 feet.			

SHEAR STRENGTH, tsf

△ - UU/2 ○ - QU/2 □ - SV

0.5 1.0 1.5 2.0 2.5

STANDARD PENETRATION RESISTANCE

(ASTM D 1586)

▲ N-VALUE (BLOWS PER FOOT)

WATER CONTENT, %

PL 10 20 30 40 50 LL

NOTE: STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARIES BETWEEN SOIL TYPES AND THE TRANSITION MAY BE GRADUAL. GRAPHIC LOG FOR ILLUSTRATION PURPOSES ONLY.

GROUNDWATER DATA

ENCOUNTERED AT 8 FEET ▽

DRILLING DATA

___ AUGER 3 3/4 HOLLOW STEM

WASHBORING FROM ___ FEET

KJB DRILLER SWF LOGGER

CME 75 DRILL RIG

HAMMER TYPE Auto

REMARKS:

Drawn by: EJH	Checked by: JDM	App'vd. by: DBA
Date: 5/20/21	Date: 6/17/21	Date: 6/17/21

GEOTECHNOLOGY INC
FROM THE GROUND UP

Dewitt-Spain Airport Apron Rehabilitation
Memphis, Tennessee

LOG OF BORING: B-18

Project No. J038313.01

LOG OF BORING 2002.WL J038313.01.GPJ GTINC 0638301.GPJ 6/17/21

Surface Elevation: _____ Completion Date: 5/14/21

Datum NA

DEPTH IN FEET	DESCRIPTION OF MATERIAL	GRAPHIC LOG	DRY UNIT WEIGHT (pcf) SPT BLOW COUNTS CORE RECOVERY/RQD	SAMPLES
	ASPHALT: 5.5 inches			
	Base Material: Cement treated base - 9 inches			
	Very stiff to soft, brown and gray to brown, silty, LEAN CLAY - CL		3-4-12	SS2
	some gravel			
			3-7-10	SS3
5				
			2-3-3	SS4
			1-2-2	SS5
10	Boring terminated at 10 feet.			

SHEAR STRENGTH, tsf

△ - UU/2 ○ - QU/2 □ - SV

0.5 1.0 1.5 2.0 2.5

STANDARD PENETRATION RESISTANCE

(ASTM D 1586)

▲ N-VALUE (BLOWS PER FOOT)

WATER CONTENT, %

PL 10 20 30 40 50 LL

NOTE: STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARIES BETWEEN SOIL TYPES AND THE TRANSITION MAY BE GRADUAL. GRAPHIC LOG FOR ILLUSTRATION PURPOSES ONLY.

GROUNDWATER DATA

X FREE WATER NOT ENCOUNTERED DURING DRILLING

DRILLING DATA

___ AUGER 3 3/4 HOLLOW STEM

WASHBORING FROM ___ FEET

CRF DRILLER SWF LOGGER

Geoprobe 7822 DT DRILL RIG

HAMMER TYPE Auto

REMARKS:

Drawn by: EJH	Checked by: JDM	App'vd. by: DBA
Date: 5/21/21	Date: 6/17/21	Date: 6/17/21

GEOTECHNOLOGY INC
FROM THE GROUND UP

Dewitt-Spain Airport Apron Rehabilitation
Memphis, Tennessee

LOG OF BORING: B-19

Project No. J038313.01

LOG OF BORING 2002.WL J038313.01.GPJ GTINC 0638301.GPJ 6/17/21

Surface Elevation: _____ Completion Date: 5/14/21

Datum NA

DEPTH IN FEET	DESCRIPTION OF MATERIAL	GRAPHIC LOG	DRY UNIT WEIGHT (pcf) SPT BLOW COUNTS CORE RECOVERY/RQD	SAMPLES
	ASPHALT: 5.75 inches			
	Base Material: Cement treated base - 13.25 inches			
	Very stiff to medium stiff, gray to brown, silty, LEAN CLAY - (CL)		5-10-11	SS2
			2-4-5	SS3
5			98	ST4
			2-2-3	SS5
10	Boring terminated at 10 feet.			

SHEAR STRENGTH, tsf

Δ - UU/2 ○ - QU/2 □ - SV

0.5 1.0 1.5 2.0 2.5

STANDARD PENETRATION RESISTANCE

(ASTM D 1586)

▲ N-VALUE (BLOWS PER FOOT)

WATER CONTENT, %

PL 10 20 30 40 50 LL

NOTE: STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARIES BETWEEN SOIL TYPES AND THE TRANSITION MAY BE GRADUAL. GRAPHIC LOG FOR ILLUSTRATION PURPOSES ONLY.

GROUNDWATER DATA

X FREE WATER NOT ENCOUNTERED DURING DRILLING

DRILLING DATA

___ AUGER 3 3/4 HOLLOW STEM

WASHBORING FROM ___ FEET

CRF DRILLER SWF LOGGER

Geoprobe 7822 DT DRILL RIG

HAMMER TYPE Auto

REMARKS:

Drawn by: EJH	Checked by: JDM	App'vd. by: DBA
Date: 5/21/21	Date: 6/17/21	Date: 6/17/21

GEOTECHNOLOGY INC
FROM THE GROUND UP

Dewitt-Spain Airport Apron Rehabilitation
Memphis, Tennessee

LOG OF BORING: B-20

Project No. J038313.01

LOG OF BORING 2002.WL J038313.01.GPJ GTINC 0638301.GPJ 6/17/21

Surface Elevation: _____ Completion Date: 5/15/21

Datum NA

DEPTH IN FEET	DESCRIPTION OF MATERIAL	GRAPHIC LOG	DRY UNIT WEIGHT (pcf) SPT BLOW COUNTS CORE RECOVERY/RQD	SAMPLES
	ASPHALT: 5 inches			
	Base Material: Cement treated base - 9 inches			
	Very stiff to soft, brown, silty, LEAN CLAY - (CL)		4-8-9	SS2
			105	ST3
5			2-3-4	SS4
			1-2-2	SS5
10	Boring terminated at 10 feet.			

SHEAR STRENGTH, tsf
△ - UU/2 ○ - QU/2 □ - SV
0.5 1.0 1.5 2.0 2.5

STANDARD PENETRATION RESISTANCE
(ASTM D 1586)
▲ N-VALUE (BLOWS PER FOOT)

WATER CONTENT, %
PL 10 20 30 40 50 LL

NOTE: STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARIES BETWEEN SOIL TYPES AND THE TRANSITION MAY BE GRADUAL. GRAPHIC LOG FOR ILLUSTRATION PURPOSES ONLY.

GROUNDWATER DATA

X FREE WATER NOT ENCOUNTERED DURING DRILLING

DRILLING DATA

___ AUGER 3 3/4 HOLLOW STEM
WASHBORING FROM ___ FEET
KJB DRILLER SWF LOGGER
CME 75 DRILL RIG
HAMMER TYPE Auto

REMARKS: Composite bucket sample obtained for standard proctor testing.

Drawn by: EJH	Checked by: JDM	App'vd. by: DBA
Date: 5/21/21	Date: 6/17/21	Date: 6/17/21

GEOTECHNOLOGY INC
FROM THE GROUND UP

Dewitt-Spain Airport Apron Rehabilitation
Memphis, Tennessee

LOG OF BORING: B-21

Project No. J038313.01

LOG OF BORING 2002.WL J038313.01.GPJ GTINC 0638301.GPJ 6/17/21

Surface Elevation: _____ Completion Date: 5/18/21

Datum NA

DEPTH IN FEET	DESCRIPTION OF MATERIAL	GRAPHIC LOG	DRY UNIT WEIGHT (pcf) SPT BLOW COUNTS CORE RECOVERY/RQD	SAMPLES
	ASPHALT: 4 inches			
	Base Material: Cement treated base - 11 inches			
	Medium dense, tan SAND - SP		5-10-11	SS2
	0.8% passing No. 200 sieve		4-6-9	SS3
5			3-6-6	SS4
	Stiff, brown and gray, silty, LEAN CLAY - CL		2-4-7	SS5
10	Boring terminated at 10 feet.			

SHEAR STRENGTH, tsf

△ - UU/2 ○ - QU/2 □ - SV

0.5 1.0 1.5 2.0 2.5

STANDARD PENETRATION RESISTANCE

(ASTM D 1586)

▲ N-VALUE (BLOWS PER FOOT)

WATER CONTENT, %

PL 10 20 30 40 50 LL

NOTE: STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARIES BETWEEN SOIL TYPES AND THE TRANSITION MAY BE GRADUAL. GRAPHIC LOG FOR ILLUSTRATION PURPOSES ONLY.

GROUNDWATER DATA

X FREE WATER NOT ENCOUNTERED DURING DRILLING

DRILLING DATA

___ AUGER 3 3/4 HOLLOW STEM

WASHBORING FROM ___ FEET

KJB DRILLER SWF LOGGER

CME 75 DRILL RIG

HAMMER TYPE Auto

REMARKS:

Drawn by: EJH	Checked by: JDM	App'vd. by: DBA
Date: 5/21/21	Date: 6/17/21	Date: 6/17/21

GEOTECHNOLOGY INC
FROM THE GROUND UP

Dewitt-Spain Airport Apron Rehabilitation
Memphis, Tennessee

LOG OF BORING: B-22

Project No. J038313.01

LOG OF BORING 2002.WL J038313.01.GPJ GTINC 0638301.GPJ 6/17/21

Surface Elevation: _____ Completion Date: 5/15/21

Datum NA

DEPTH IN FEET	DESCRIPTION OF MATERIAL	GRAPHIC LOG	DRY UNIT WEIGHT (pcf) SPT BLOW COUNTS CORE RECOVERY/RQD	SAMPLES
	ASPHALT: 4.5 inches			
	Base Material: Cement treated base - 8.5 inches			
	Medium dense, tan SAND - SP		9-9-13	SS2
			5-8-10	SS3
5				
	Very loose, tan, GRAVELLY SAND - SP		2-2-2	SS4
			1-1-1	SS5
10	Boring terminated at 10 feet.			

SHEAR STRENGTH, tsf

△ - UU/2 ○ - QU/2 □ - SV

0.5 1.0 1.5 2.0 2.5

STANDARD PENETRATION RESISTANCE

(ASTM D 1586)

▲ N-VALUE (BLOWS PER FOOT)

WATER CONTENT, %

PL 10 20 30 40 50 LL

NOTE: STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARIES BETWEEN SOIL TYPES AND THE TRANSITION MAY BE GRADUAL. GRAPHIC LOG FOR ILLUSTRATION PURPOSES ONLY.

GROUNDWATER DATA

ENCOUNTERED AT 7 FEET ▽

DRILLING DATA

___ AUGER 3 3/4 HOLLOW STEM

WASHBORING FROM ___ FEET

KJB DRILLER SWF LOGGER

CME 75 DRILL RIG

HAMMER TYPE Auto

REMARKS:

Drawn by: EJH	Checked by: JDM	App'vd. by: DBA
Date: 5/21/21	Date: 6/17/21	Date: 6/17/21

GEOTECHNOLOGY INC
FROM THE GROUND UP

Dewitt-Spain Airport Apron Rehabilitation
Memphis, Tennessee

LOG OF BORING: B-23

Project No. J038313.01

LOG OF BORING 2002.WL J038313.01.GPJ GTINC 0638301.GPJ 6/17/21

DRAFT

Surface Elevation: _____ Completion Date: 5/14/21

Datum NA

DEPTH IN FEET	DESCRIPTION OF MATERIAL	GRAPHIC LOG	DRY UNIT WEIGHT (pcf) SPT BLOW COUNTS CORE RECOVERY/RQD	SAMPLES
	ASPHALT: 4.75 inches			
	Base Material: Cement treated base - 13.25 inches			
	Medium stiff, gray, LEAN CLAY - CL		7-3-4	SS2
5	Medium dense, tan and orange to tan, GRAVELLY SAND - SP		6-7-9	SS3
	Very loose, gray, CLAYEY SAND - SP 49.5% passing No. 200 sieve		2-1-1	SS4
	Soft, gray, FAT CLAY - CH		1-1-2	SS5
10	Boring terminated at 10 feet.			

SHEAR STRENGTH, tsf

△ - UU/2 ○ - QU/2 □ - SV

0.5 1.0 1.5 2.0 2.5

STANDARD PENETRATION RESISTANCE

(ASTM D 1586)

▲ N-VALUE (BLOWS PER FOOT)

WATER CONTENT, %

PL 10 20 30 40 50 LL

NOTE: STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARIES BETWEEN SOIL TYPES AND THE TRANSITION MAY BE GRADUAL. GRAPHIC LOG FOR ILLUSTRATION PURPOSES ONLY.

GROUNDWATER DATA

ENCOUNTERED AT 6 FEET ▽

DRILLING DATA

___ AUGER 3 3/4 HOLLOW STEM

WASHBORING FROM ___ FEET

CRF DRILLER SWF LOGGER

Geoprobe 7822 DT DRILL RIG

HAMMER TYPE Auto

REMARKS:

Drawn by: EJH	Checked by: JDM	App'vd. by: DBA
Date: 5/21/21	Date: 6/17/21	Date: 6/17/21

GEOTECHNOLOGY INC
FROM THE GROUND UP

Dewitt-Spain Airport Apron Rehabilitation
Memphis, Tennessee

LOG OF BORING: B-24

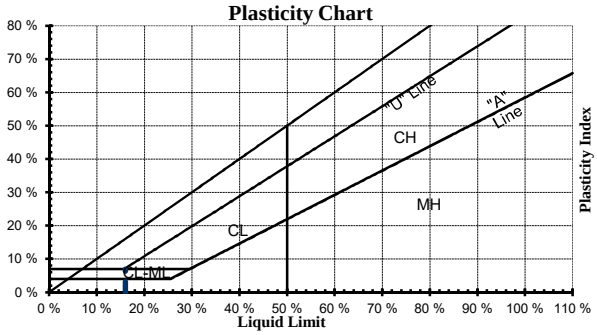
Project No. J038313.01

LOG OF BORING 2002.WL J038313.01.GPJ GTINC 0638301.GPJ 6/17/21

BORING LOG: TERMS AND SYMBOLS

LEGEND

CS	Continuous Sampler
GB	Grab Sample
NQ	NQ Rock Core
PST	Three-Inch Diameter Piston Tube Sample
SS	Split-Spoon Sample (Standard Penetration Test)
ST	Three-Inch Diameter Shelby Tube Sample
*	Sample Not Recovered
PL	Plastic Limit (ASTM D4318)
LL	Liquid Limit (ASTM D4318)
SV	Shear Strength from Field Vane (ASTM D2573)
UU	Shear Strength from Unconsolidated-Undrained Triaxial Compression Test (ASTM D2850)
QU	Shear Strength from Unconfined Compression Test (ASTM D2166)



SOIL GRAIN SIZE

US STANDARD SIEVE

12"	3"	3/4"	4	10	40	200

BOULDERS	COBBLES	GRAVEL		SAND			SILT	CLAY
		COARSE	FINE	COARSE	MEDIUM	FINE		

300	76.2	19.1	4.76	2.00	0.42	0.074	0.005

SOIL GRAIN SIZE IN MILLIMETERS

UNIFIED SOIL CLASSIFICATION SYSTEM

Major Divisions			Symbol	Description
Coarse-Grained Soils (More than 50% Larger than No. 200 Sieve Size)	Gravel and Gravelly Soil	Clean Gravels Little or no Fines	GW	Well-Graded Gravel, Gravel- Sand Mixture
			GP	Poorly-Graded Gravel, Gravel-Sand Mixture
		Gravels with Appreciable Fines	GM	Silty Gravel, Gravel-Sand-Silt Mixture
			GC	Clayey-Gravel, Gravel-Sand-Clay Mixture
	Sand and Sandy Soils	Clean Sands Little or no Fines	SW	Well-Graded Sand, Gravelly Sand
			SP	Poorly-Graded Sand, Gravelly Sand
		Sands with Appreciable Fines	SM	Silty Sand, Sand-Silt Mixture
			SC	Clayey-Sand, Sand-Clay Mixture
Fine-Grained Soils (More than 50% Smaller than No. 200 Sieve Size)	Silts and Clays	Liquid Limit Less Than 50	ML	Silt, Sandy Silt, Clayey Silt, Slight Plasticity
			CL	Lean Clay, Sandy Clay, Silty Clay, Low to Medium Plasticity
			OL	Organic Silts or Lean Clays, Low Plasticity
	Silts and Clays	Liquid Limit Greater Than 50	MH	Silt, High Plasticity
			CH	Fat Clay, High Plasticity
			OH	Organic Clay, Medium to High Plasticity
	Highly Organic Soils		PT	Peat, Humus, Swamp Soil

STRENGTH OF COHESIVE SOILS

Consistency	Undrained Shear Strength (tsf)	Unconfined Comp. Strength (tsf)
Very Soft	less than 0.125	less then 0.25
Soft	0.125 to 0.25	0.25 to 0.5
Medium Stiff	0.25 to 0.5	0.5 to 1.0
Stiff	0.5 to 1.0	1.0 to 2.0
Very Stiff	1.0 to 2.0	2.0 to 3.0
Hard	greater than 2.0	greater than 4.0

DENSITY OF GRANULAR SOILS

Descriptive Term	Approximate N_{60}-Value Range
Very Loose	0 to 4
Loose	5 to 10
Medium Dense	11 to 30
Dense	31 to 50
Very Dense	>50

N-Value (Blow Count) is the last two, 6-inch drive increments (i.e. 4/7/9, N = 7 + 9 = 16). Values are shown as a summation on the grid plot and shown in the Unit Dry Weight/SPT column.

RELATIVE COMPOSITION

Trace	0 to 10%
Little	10 to 20%
Some	20 to 35%
And	35 to 50%

OTHER TERMS

Layer - Inclusion greater than 3 inches thick.

Seam - Inclusion 1/8-inch to 3 inches thick

Parting - Inclusion less than 1/8-inch thick

Pocket - Inclusion of material that is smaller than sample diameter

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Relative composition and Unified Soil Classification System (USCS) designations are based on visual descriptions and are approximate only. If laboratory tests were performed to classify the soil, the USCS designation is shown in parenthesis.

APPENDIX D – LABORATORY TEST DATA

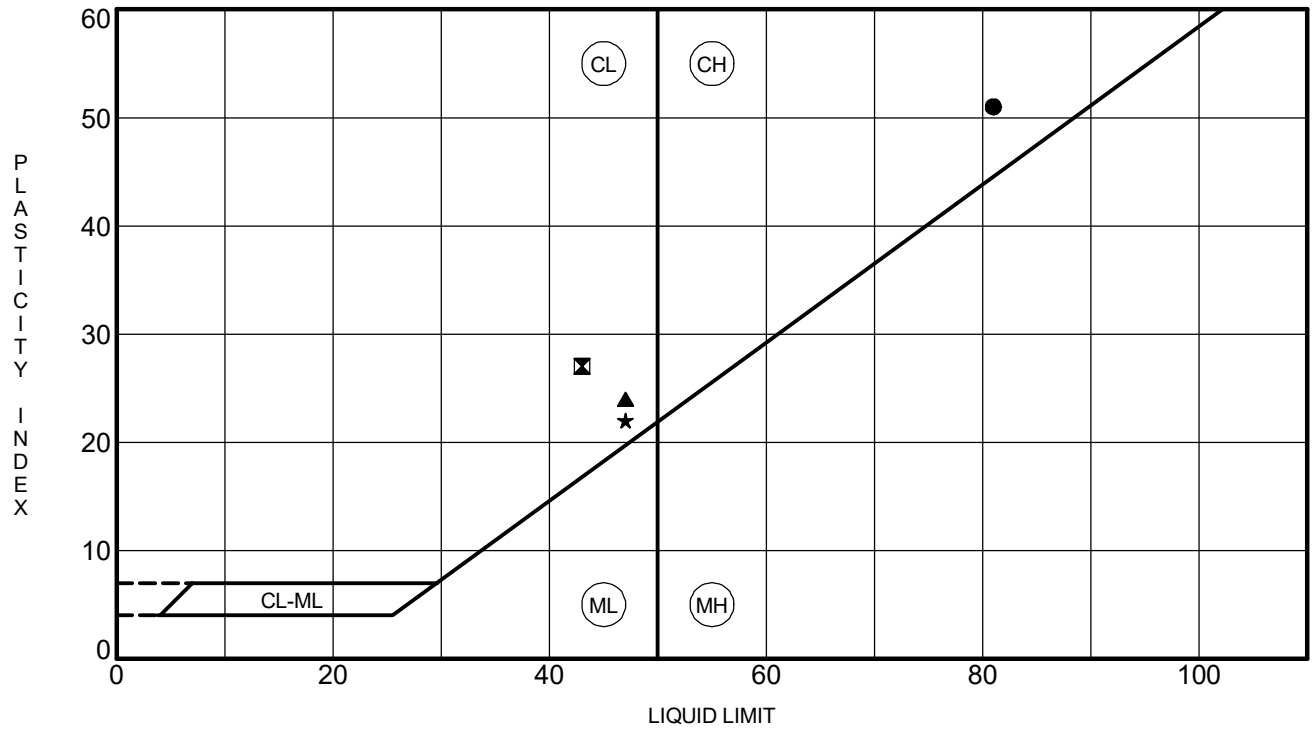
Atterberg Limits

Grain Size Distributions

Unconsolidated-Undrained Triaxial Compressions

Standard Proctor Compaction

Relative Density Plot



	Specimen Identification		LL	PL	PI	Fines	Classification
●	**B- 6**	**6.0**	**81**	**30**	**51**		**FAT CLAY(CH)**
⊠	**B-20**	**6.0**	**43**	**16**	**27**		**LEAN CLAY(CL)**
▲	**B-21**	**0.0**	**47**	**23**	**24**		**LEAN CLAY(CL)**
★	**B-21**	**3.0**	**47**	**25**	**22**		**LEAN CLAY(CL)**

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ATTERBERG LIMITS RESULTS

Dewitt-Spain Airport Apron Rehabilitation
Memphis, Tennessee
J038313.01

US_ATTERBERG_LIMITS_J038313.01.GPJ_US_LAB.GDT 6/16/21

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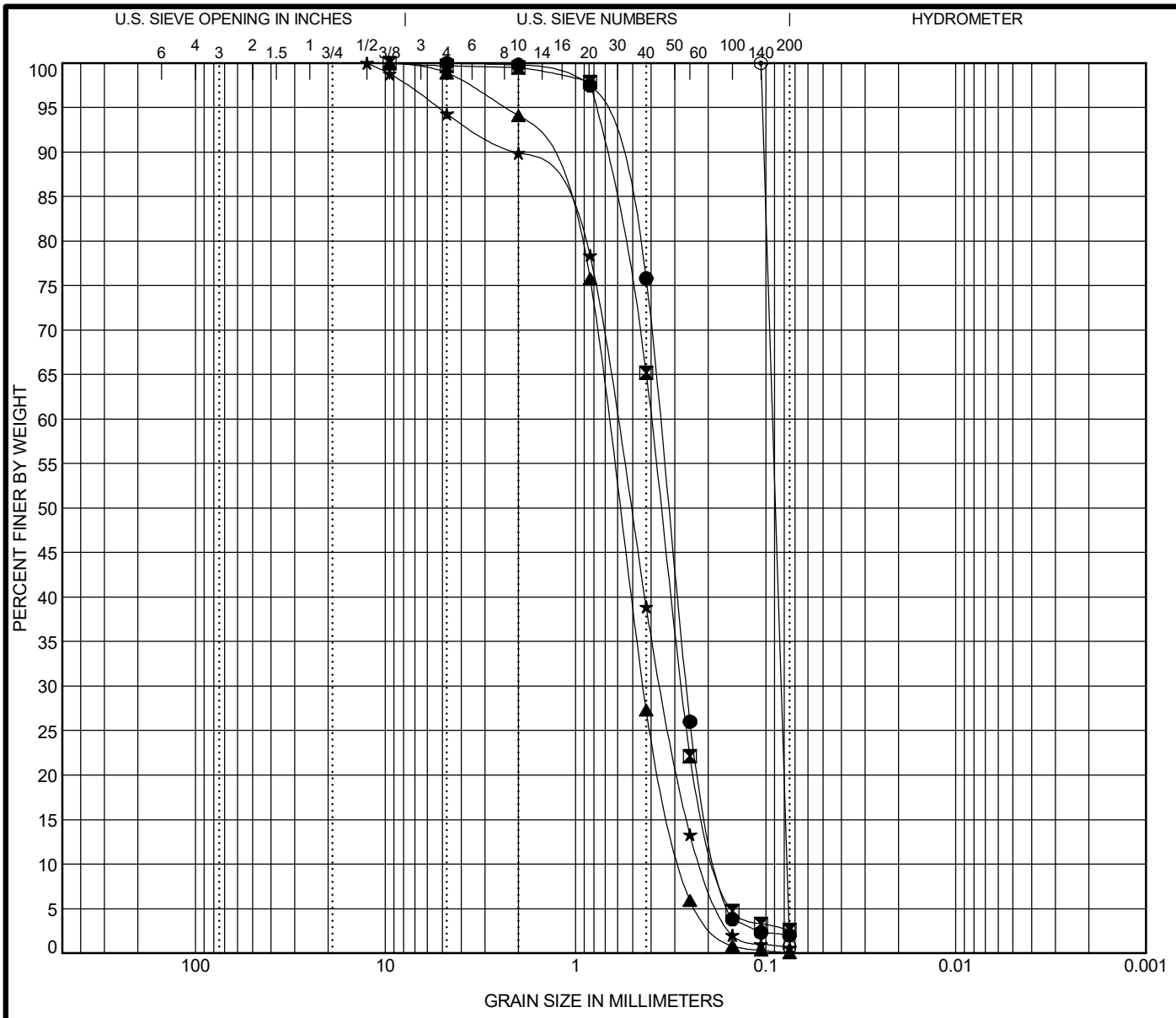

COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

Specimen Identification			Classification	LL	PL	PI	Cc	Cu
●	B- 2	3.5	POORLY GRADED SAND(SP)				1.10	2.08
⊠	B- 6	1.0	POORLY GRADED SAND(SP)				1.09	2.27
▲	B- 8	6.0	POORLY GRADED SAND(SP)				1.05	2.43
★	B-12	3.5	POORLY GRADED SAND(SP)				0.95	2.84
⊙	B-15	0.0	POORLY GRADED SAND(SP)				0.97	1.19

Specimen Identification			D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
●	B- 2	3.5	4.75	0.359	0.261	0.173	0.0	98.0	2.0	
⊠	B- 6	1.0	9.5	0.399	0.276	0.175	0.3	97.1	2.6	
▲	B- 8	6.0	9.5	0.673	0.441	0.277	1.1	98.9	0.0	
★	B-12	3.5	12.5	0.612	0.353	0.215	5.7	93.7	0.6	
⊙	B-15	0.0	0.106	0.092	0.083	0.077	0.0	99.3	0.7	

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GRAIN SIZE DISTRIBUTION

Dewitt-Spain Airport Apron Rehabilitation
Memphis, Tennessee
J038313.01

US GRAIN SIZE J038313.01.GPJ US LAB.GDT 6/16/21

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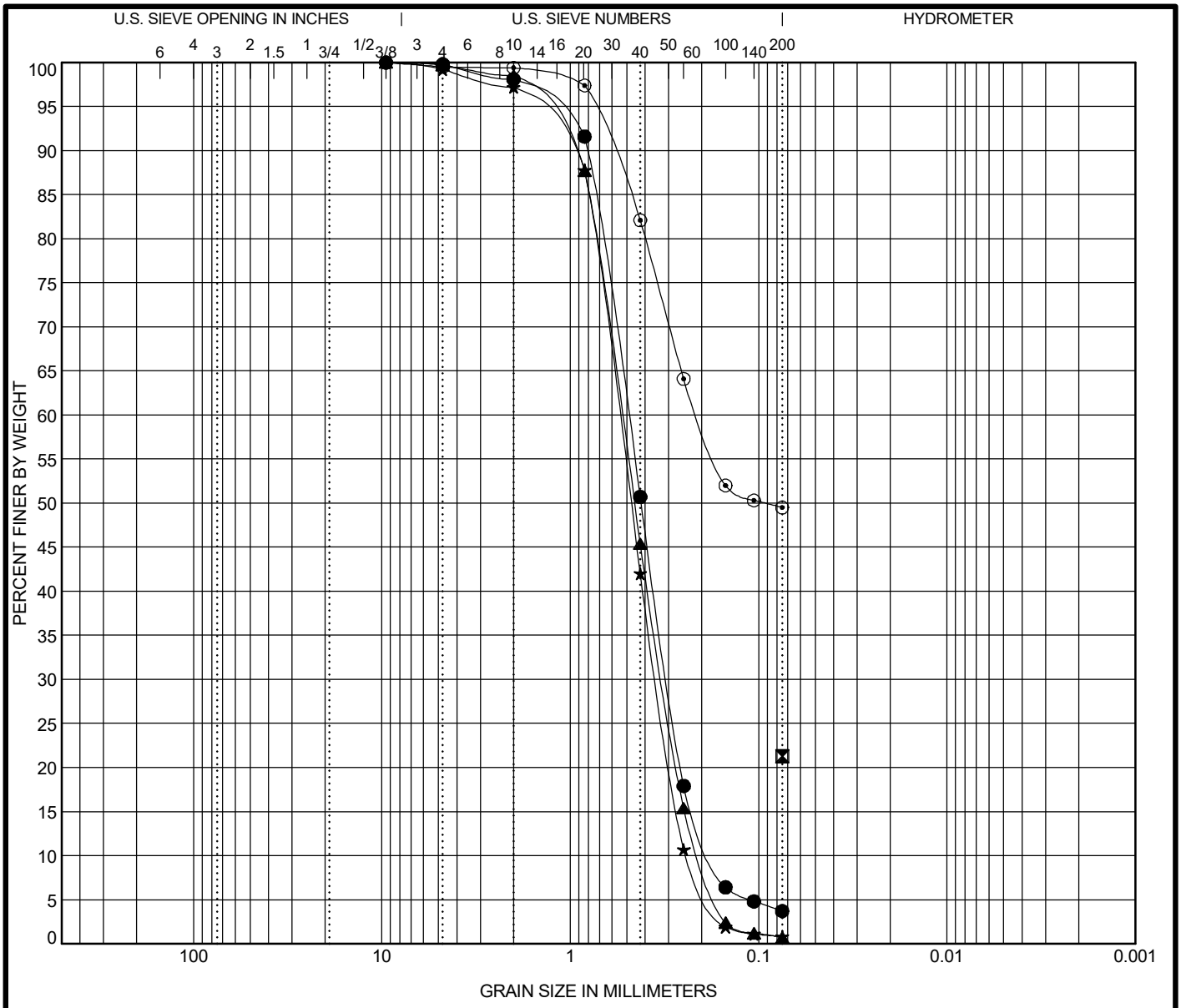

COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

Specimen Identification			Classification	LL	PL	PI	Cc	Cu
●	B-15	1.0	POORLY GRADED SAND(SP)				1.06	2.82
⊠	B-17	8.0	CLAYEY SAND(SC)					
▲	B-18	3.5	POORLY GRADED SAND(SP)				0.96	2.66
★	B-22	3.5	POORLY GRADED SAND(SP)				0.90	2.31
⊙	B-24	6.0	CLAYEY SAND(SC)					

Specimen Identification			D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
●	B-15	1.0	9.5	0.496	0.304	0.176	0.2	96.1	3.7	
⊠	B-17	8.0	0.075				0.0	0.0	21.3	
▲	B-18	3.5	9.5	0.538	0.324	0.202	0.3	99.0	0.7	
★	B-22	3.5	9.5	0.555	0.347	0.24	0.8	98.4	0.8	
⊙	B-24	6.0	9.5	0.21			0.5	50.0	49.5	

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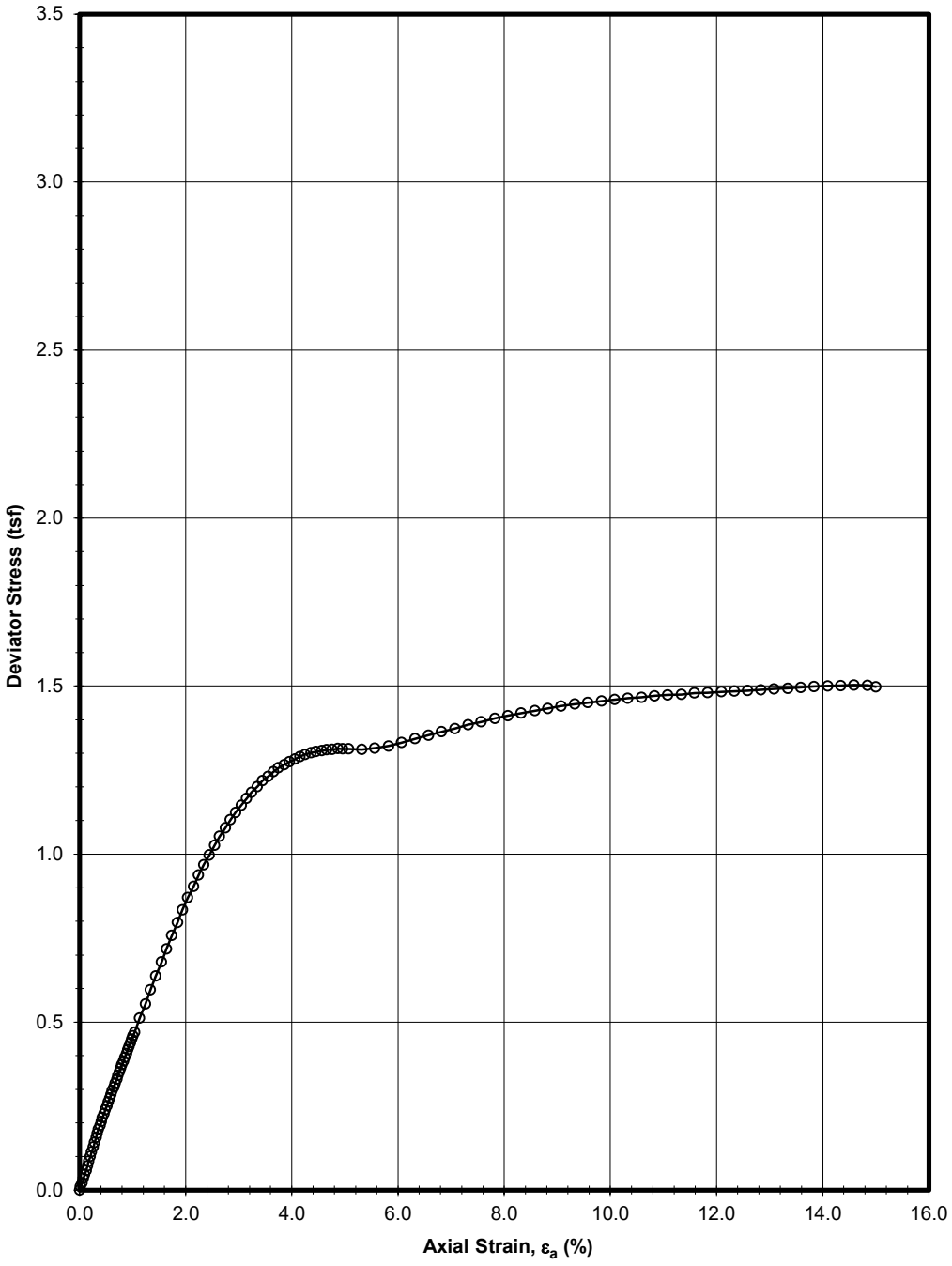
FROM THE GROUND UP

GRAIN SIZE DISTRIBUTION

Dewitt-Spain Airport Apron Rehabilitation
Memphis, Tennessee
J038313.01

US GRAIN SIZE J038313.01.GPJ US LAB.GDT 6/16/21



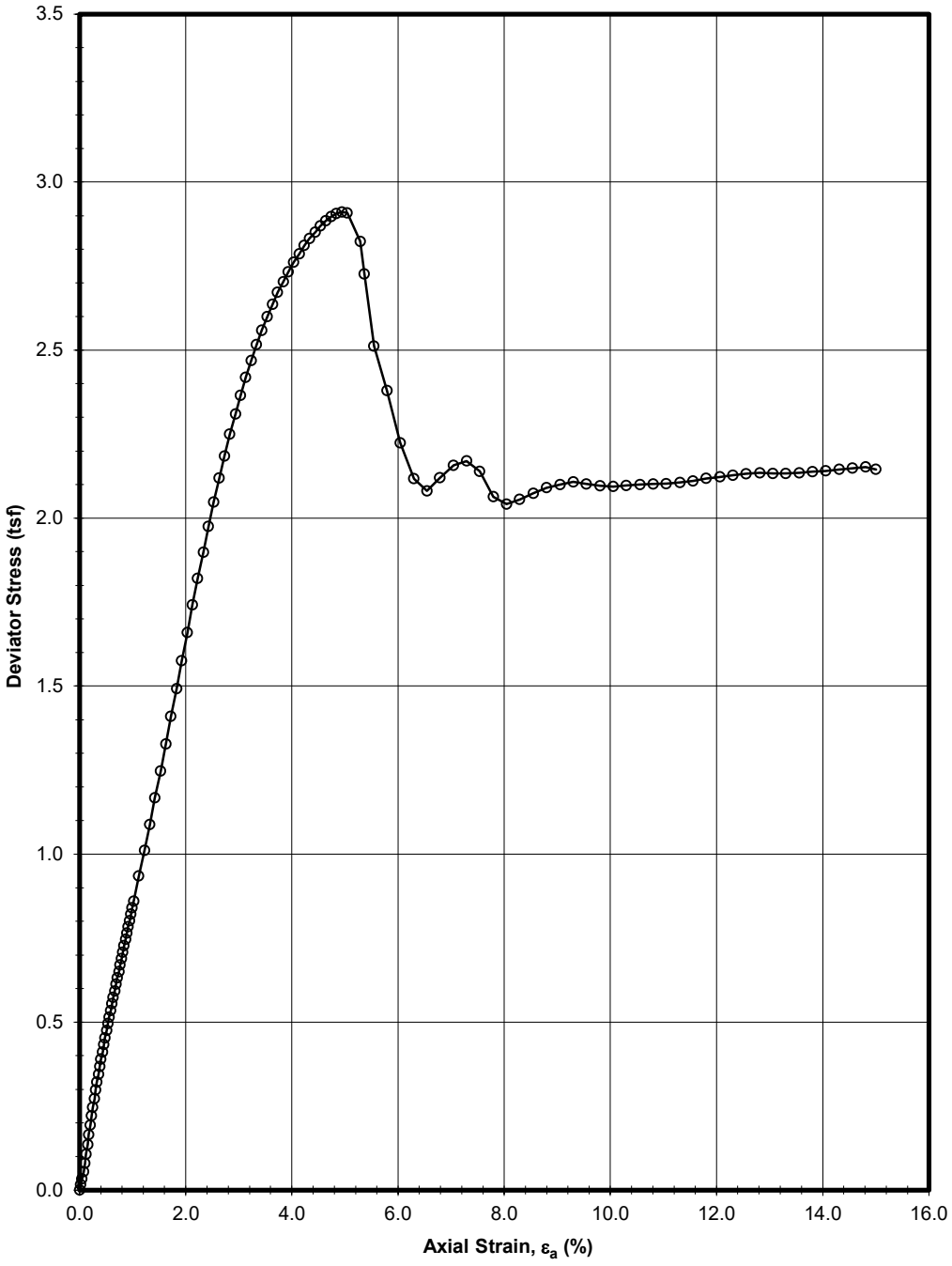
UNCONSOLIDATED-UNDRAINED TRIAXIAL COMPRESSION TEST

ASTM D 2850

Project No.: J038313.01

Boring: B-20

Sample: ST-3 - Depth: 6 ft.



UNCONSOLIDATED-UNDRAINED TRIAXIAL COMPRESSION TEST

ASTM D 2850

Project No.: J038313.01

Boring: B-21

Sample: ST-2 - Depth: 3 ft.

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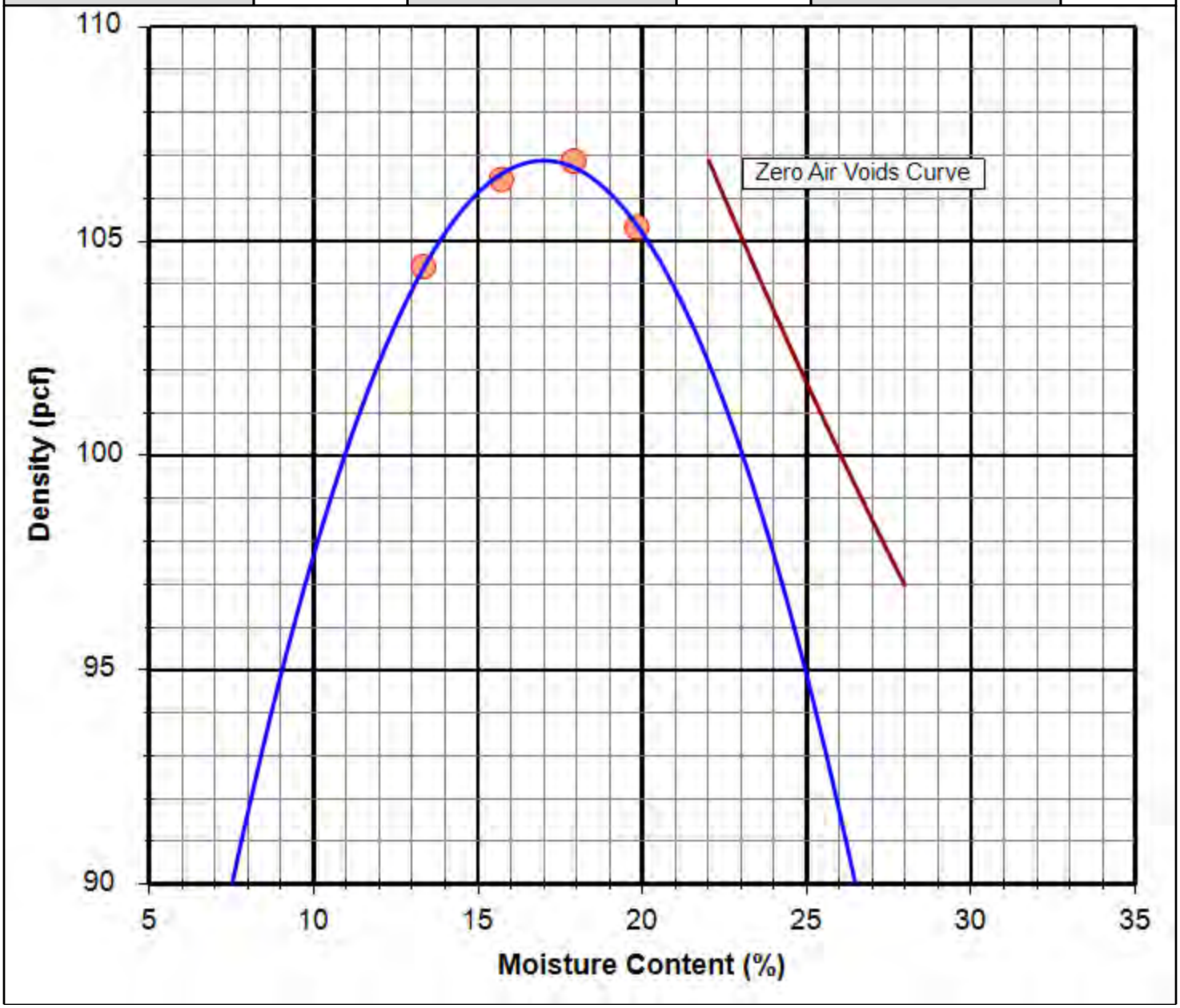
STANDARD PROCTOR MOISTURE DENSITY TEST, ASTM D698, METHOD A

Client:	Powers Hill Design, LLC	**Project No.:**	J038313.01
Project:	DeWitt-Spain Airport Apron Rehabilitation, Memphis, TN, Memphis, TN	**Date:**	5/28/2021
Sample Obtained From:	B-21	**Depth (ft.):**	1.0'-5.0'

Sample Description:	Reddish Brown Silty Clay	**LL**	**PL**	**PI**	**USCS**
		47	23	24	CL

Maximum Dry Density (pcf):	106.9	**Optimum Moisture Content:**	17.0%	**In Situ Moisture Content:**	20.9%



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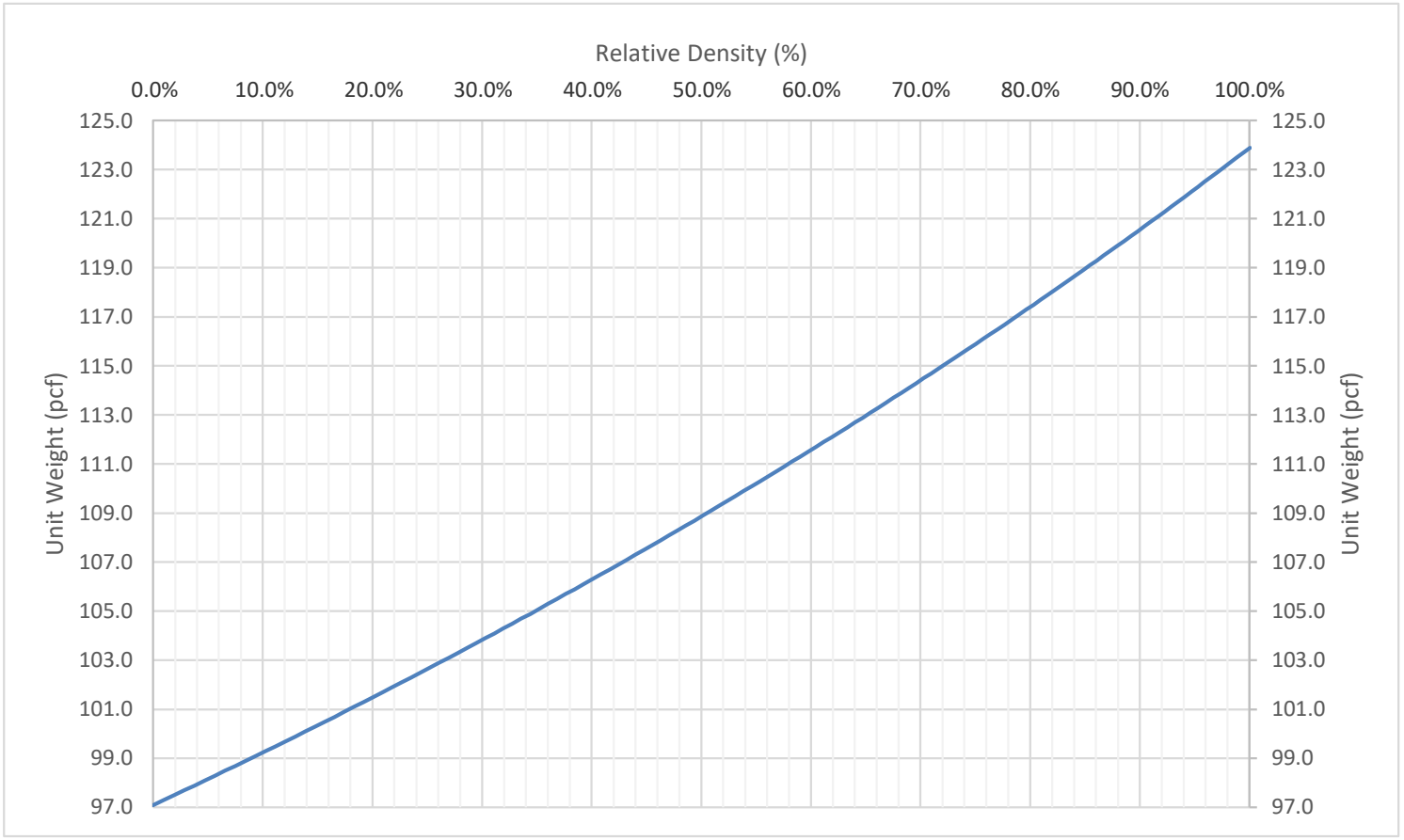
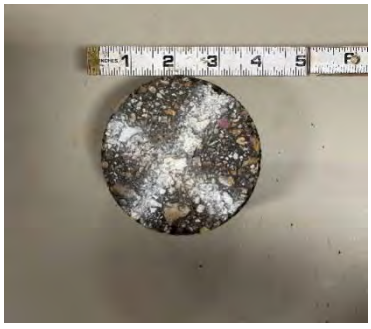


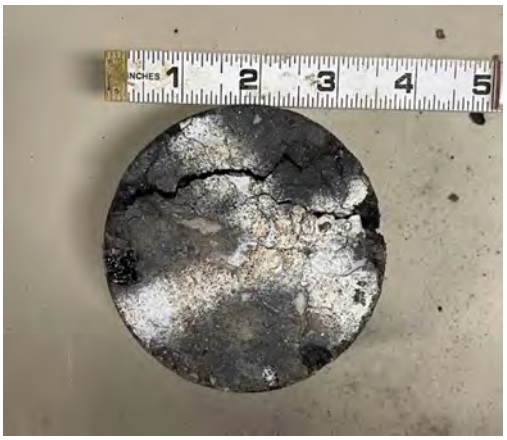
RELATIVE DENSITY PLOT
ASTM D 4253 AND ASTM D 4254
Project No. J038313.01
Boring B-15
Bulk Sample Depth: 1-5 feet

APPENDIX E – ASPHALT CORE PHOTOGRAPHS

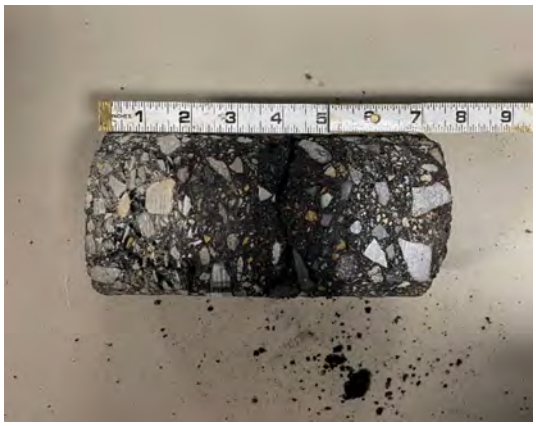
PAVEMENT SAMPLE DOCUMENTATION

BORING B-2	
Profile of Pavement Section	**Top of Pavement**
	
Length of Sample: 2.25 inches	Minimal cracks in pavement sample

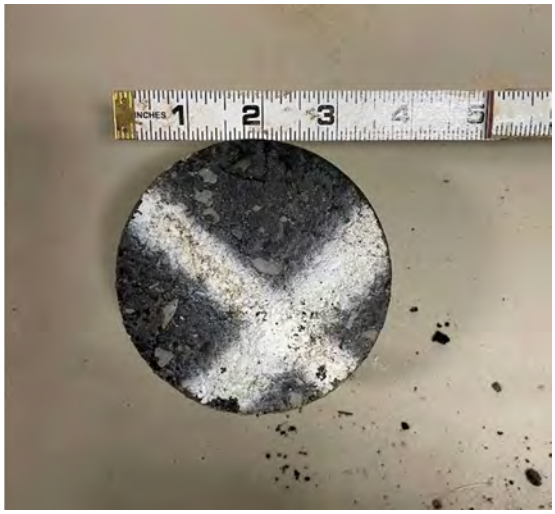
BORING B-5	
Profile of Pavement Section	**Top of Pavement**
	
Length of Sample: 2 inches	Minimal cracks in pavement sample

BORING B-8	
Profile of Pavement Section	**Top of Pavement**
	
Length of Sample: 7.25 inches	Surficial crack – Depth estimated at ~0.5 inch

BORING B-10	
Profile of Pavement Section	**Top of Pavement**
	
Length of Sample: 4 inches	Minimal cracks in pavement sample

BORING B-13	
Profile of Pavement Section	**Top of Pavement**
	
Length of Sample: 7.25 inches	Minimal cracks in pavement sample

BORING B-15	
Profile of Pavement Section	**Top of Pavement**
	
Length of Sample: 3.25 inches	Minimal cracks in pavement sample

BORING B-16	
Profile of Pavement Section	**Top of Pavement**
	
Length of Sample: 5 inches	Minimal cracks in pavement sample

BORING B-17	
Profile of Pavement Section	**Top of Pavement**
	
Length of Sample: 2.50 inches	Minimal cracks in pavement sample

BORING B-18	
Profile of Pavement Section	**Top of Pavement**
	
Length of Sample: 2.25 inches	Minimal cracks in pavement sample

BORING B-20	
Profile of Pavement Section	**Top of Pavement**
	
Length of Sample: 5.75 inches	Minimal cracks in pavement sample

BORING B-24	
Profile of Pavement Section	**Top of Pavement**
	
Length of Sample: 5.75 inches	Minimal cracks in pavement sample

Appendix C – Selected Photographs

Appendix C - Selected Photographs

Photo 1 – APME-001 Looking Northwest

Photo 2 – APME-001 Helicopter Parking Area Looking NW

Photo 3 APME-001 Looking W

Photo 4 – APME-001 Looking SW Towards Fueling Area

Photo 5 APME-001 Wide Crack

Photo 6 APME-001 Typical Coal Tar Raveling (SE Side)

Photo 7 - APME-001 Looking N to APME-002

Photo 8 Interface of APME-001 and APME-002 Looking S

Appendix D – Apron Parking and Circulation Layouts

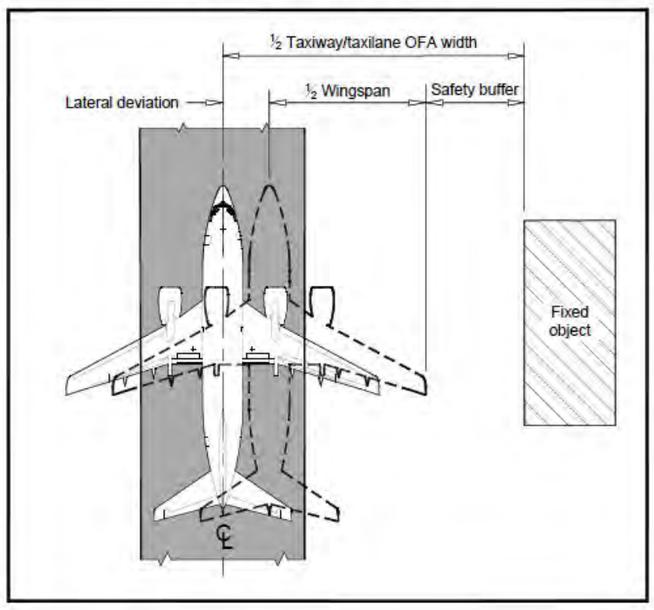
Dewitt Spain Airport - Memphis, TN: Apron Rehabilitation Alternative Layouts; March 2023

Alternative	Large Aircraft Spaces	Medium Aircraft Spaces	Small Aircraft Spaces	Total Spaces	Total Spaces Percent Change	Total Pavement Area (SY)	Apron Efficiency (Apron Area (Ac) / No. Spaces)	Remarks
Existing Conditions	0	0	51	51	---	37,570	6.6	Parking layout does not meet full ADG I standards. Loop circulation meets ADG I (TLOFA 79'), but not ADG II (TLOFA 110').
Option 1	See Note #3	28	0	28	-45.1%	37,570	3.6	Parking layout provides full ADG I (TLOFA 79'). Main loop circulation provides ADG II (TLOFA 110').
Option 2	See Note #4	8	35	43	-15.7%	37,570	5.5	Parking layout provides modified/reduced ADG I based on Cessna 172 (TLOFA 66'). Main loop circulation provides ADG II (TLOFA 110').

Notes:

1) Apron Efficiency is just a simplified method to compare how much apron space is dedicated to parking versus circulation. Higher number means more efficient.
2) Critical Aircraft:
   Medium: Malibu Piper Length 29 ft & Wingspan 43 feet. Minimum TLOFA = 2 x (5' lateral deviation + 43'/2 (1/2 wingspan) + 10' wingtip clearance) = 73'
   Small: Cessna 172 Length 28 ft & Wingspan 36 feet. Minimum TLOFA = 2 x (5' lateral deviation + 36'/2 (1/2 wingspan) + 10' wingtip clearance) = 66'
3) Option 1 allows for (2) large aircraft parking spaces with a dimension of 59' Length x 79.5' Width. These parking dimensions allow for a large aircraft with a wingspan of 69.5' and a length of 59'.
4) Option 2 allows for (4) large aircraft parking spaces with a dimension of 46' Length x 68' Width. These parking dimensions allow for a large aircraft with a wingspan of 58' and a length of 46'.

Figure J-11. TOFA/TLOFA Width



GRAPHIC SCALE (IN FEET)
40' 0 20' 40' 80'

0+00 1+00 2+00 3+00 4+00 5+00 6+00 7+00 8+00 9+00 10+00 10+50

EXISTING TLOFA IS MARKED AT 39.5' (ADG I) BUT CLIPS (2) PARKING POSITIONS. IF APPROVED, A 37.5' TLOFA WOULD BE ADEQUATE FOR 45' WINGSPAN AIRCRAFT TAXIING TO EXISTING HANGARS AND ADD (1) PARKING POSITION BACK.

77.8' (EXISTING)

LOSE (1) PARKING POSITION DUE TO ADG I TO ADG II CLEARANCE.

29.0' 53.0' 55.0' 37.5'

37.5' 75.0' 55.0' 29.0'

3.0' 30.0' 59.0' 79.0'

30.0' 59.0' 55.0'

59.0' 79.5' 79.5' 59.0'

55.0' 19.5'

THE 19.5' DIMENSION CAN BE REDUCED TO 6.0' AND THE REMAINDER USED AS A BUFFER IN FRONT OF THE TERMINAL/HANGAR. THIS ACTION WOULD REDUCE THE AVAILABLE WINGSPAN FOR THE (2) LARGE PARKING POSITIONS.

79.0' 55.0' 110.0'

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REVISIONS

MARK	DATE	DESCRIPTION

MSCAA PROJ. NO.
20-1440-00

PROJECT:
DEWITT SPAIN AIRPORT APRON REHABILITATION

SHEET TITLE:
PARKING LAYOUT: OPTION 1

DWG. FILE NAME

DATE
SCALE
SHEET NO.

GRAPHIC SCALE (IN FEET)
40' 0 20' 40' 80'

0+00 1+00 2+00 3+00 4+00 5+00 6+00 7+00 8+00 9+00 10+00 10+50

EXISTING TLOFA IS MARKED AT 39.5' (ADG I) BUT CLIPS (2) PARKING POSITIONS. IF APPROVED, A 37.5' TLOFA WOULD BE ADEQUATE FOR 45' WINGSPAN AIRCRAFT TAXIING TO EXISTING HANGARS AND ADD (1) PARKING POSITION BACK.

77.8' (EXISTING)

LOSE (1) PARKING POSITION DUE TO ADG I TO ADG II CLEARANCE.

29.0' 53.0' 55.0'

37.5'

37.5'

75.0' 55.0' 29.0'

3.0' 46.0' 29.0'

66.0'

55.0'

46.0' 68.0' 68.0' 46.0'

10.0'

55.0'

THE 10.0' DIMENSION CAN BE REDUCED TO 6.0' AND THE REMAINDER USED AS A BUFFER IN FRONT OF THE TERMINAL/HANGAR. THIS ACTION WOULD REDUCE THE AVAILABLE WINGSPAN FOR THE (4) LARGE PARKING POSITIONS.

66.0'

10.0'

46.0' 68.0' 68.0' 46.0'

55.0'

110.0'

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MARK	DATE	DESCRIPTION

MSCAA PROJ. NO.
20-1440-00

PROJECT:
DEWITT SPAIN AIRPORT APRON REHABILITATION

SHEET TITLE:
PARKING LAYOUT: OPTION 2

DWG. FILE NAME

DATE

SHEET NO.

SCALE

Appendix E – FAARField Pavement Designs

Federal Aviation Administration FAARFIELD 2.1 Structure Report

FAARFIELD 2.1.1 (Build 12/21/2023)

Job Name: Dewitt Spain - Apron Rehab

Structure: Mill and Overlay (Existing 5" HMA on 10" CTB)

Analysis Type: HMA Overlay on Flexible

Last Run: Thickness Design 2024-09-10 15:05:58

Design Life = 20 Years

Total thickness to the top of the subgrade = 15.0in.

Pavement Structure Information by Layer

No.	Type	Thickness (in.)	Modulus (psi)	CBR	Poisson's Ratio	Strength R (psi)
1	P-401/P-403 HMA Overlay	2.0	200,000	0	0.35	0
2	P-401/P-403 HMA Surface	3.0	200,000	0	0.35	0
3	P-154 Uncrushed Aggregate	10.0	18,198	0	0.35	0
4	Subgrade	0	12,000	8	0.35	0

Airplane Information

No.	Name	Gross Wt. (lbs)	Annual Departures	% Annual Growth
1	Cessna 172 Skyhawk	2,558	100	0
2	Cessna 182 Skylane	3,110	500	0
3	Beechcraft Bonanza F33A	3,412	1,200	0
4	Cessna 206 Stationair	3,612	150	0
5	PA-32R-301 Saratoga	3,616	600	0
6	Beechcraft Baron 55	5,424	300	0
7	Beechcraft King Air B200	12,590	300	0
8	S-25	25,000	1,500	0
9	D-35	35,000	750	0
10	Cessna Citation V	16,500	750	0

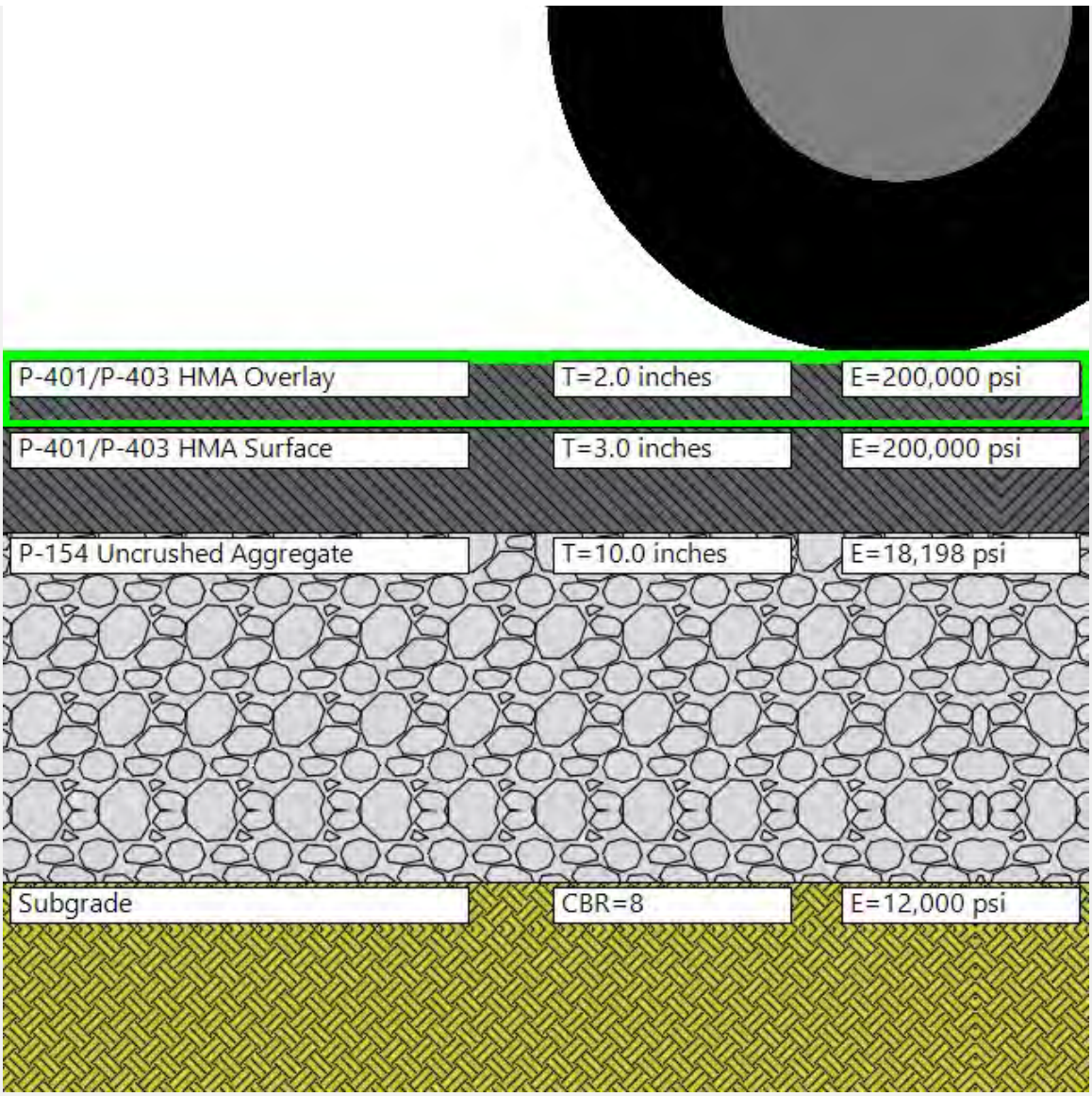
Additional Airplane Information

Subgrade CDF

No.	Name	CDF Contribution	CDF Max for Airplane	P/C Ratio
1	Cessna 172 Skyhawk	0.00	0.00	4.02
2	Cessna 182 Skylane	0.00	0.00	3.92
3	Beechcraft Bonanza F33A	0.00	0.00	3.77
4	Cessna 206 Stationair	0.00	0.00	3.86
5	PA-32R-301 Saratoga	0.00	0.00	3.73
6	Beechcraft Baron 55	0.00	0.00	3.7
7	Beechcraft King Air B200	0.00	0.00	2.54
8	S-25	0.00	0.00	3.21
9	D-35	0.00	0.00	2.14
10	Cessna Citation V	0.00	0.00	3.59

NOTE:

User is responsible for checking frost protection requirements.


P-401/P-403 HMA Overlay
T=2.0 inches
E=200,000 psi
P-401/P-403 HMA Surface
T=3.0 inches
E=200,000 psi
P-154 Uncrushed Aggregate
T=10.0 inches
E=18,198 psi
Subgrade
CBR=8
E=12,000 psi

Federal Aviation Administration FAARFIELD 2.1 Structure Report

FAARFIELD 2.1.1 (Build 12/21/2023)

Job Name: Dewitt Spain - Apron Rehab

Structure: Mill and Overlay (Existing 7" HMA on 5" CTB)

Analysis Type: HMA Overlay on Flexible

Last Run: Thickness Design 2024-09-10 15:04:47

Design Life = 20 Years

Total thickness to the top of the subgrade = 12.0in.

Pavement Structure Information by Layer

No.	Type	Thickness (in.)	Modulus (psi)	CBR	Poisson's Ratio	Strength R (psi)
1	P-401/P-403 HMA Overlay	2.0	200,000	0	0.35	0
2	P-401/P-403 HMA Surface	5.0	200,000	0	0.35	0
3	P-154 Uncrushed Aggregate	5.0	16,332	0	0.35	0
4	Subgrade	0	12,000	8	0.35	0

Airplane Information

No.	Name	Gross Wt. (lbs)	Annual Departures	% Annual Growth
1	Cessna 172 Skyhawk	2,558	100	0
2	Cessna 182 Skylane	3,110	500	0
3	Beechcraft Bonanza F33A	3,412	1,200	0
4	Cessna 206 Stationair	3,612	150	0
5	PA-32R-301 Saratoga	3,616	600	0
6	Beechcraft Baron 55	5,424	300	0
7	Beechcraft King Air B200	12,590	300	0
8	S-25	25,000	1,500	0
9	D-35	35,000	750	0
10	Cessna Citation V	16,500	750	0

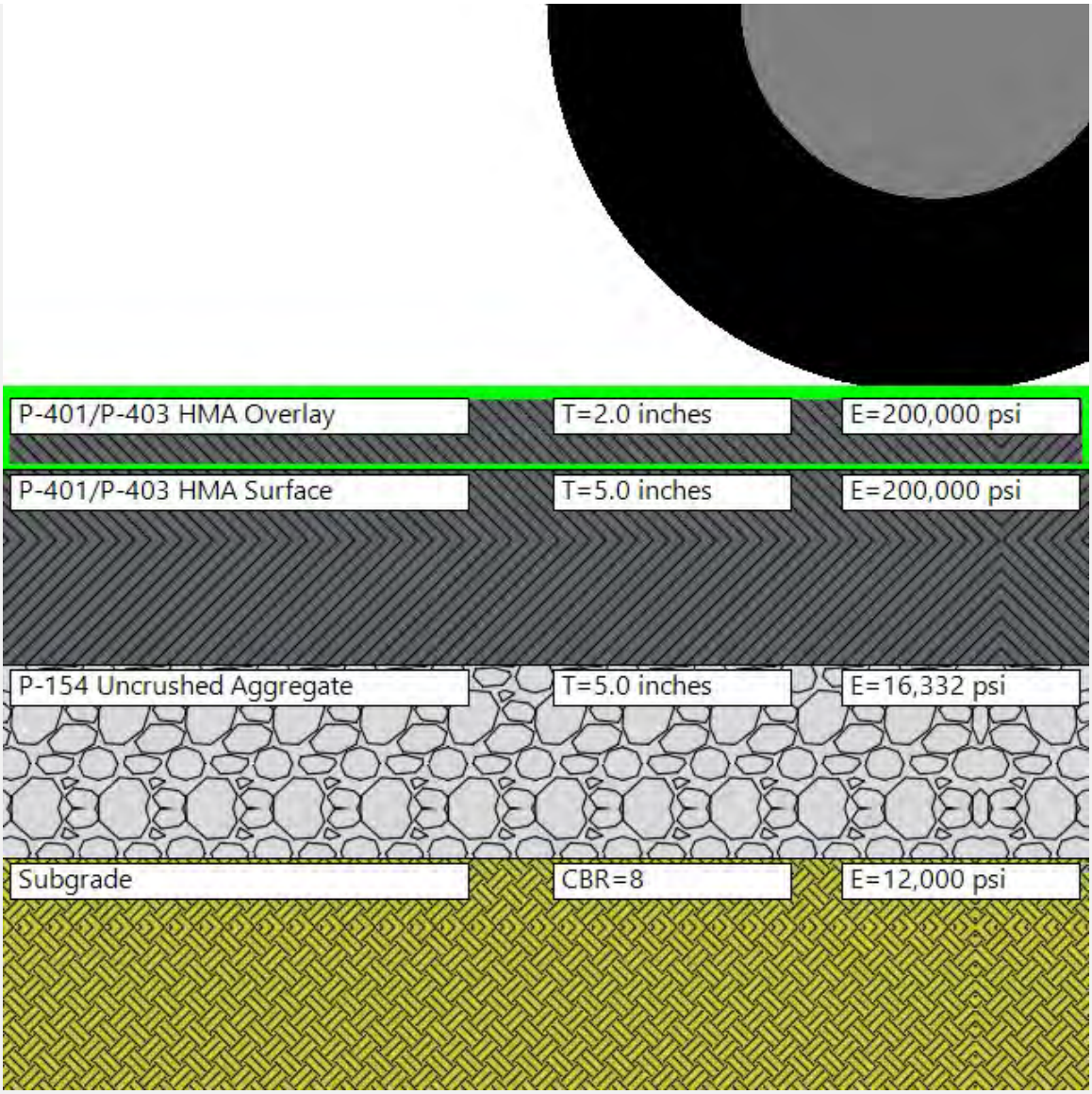
Additional Airplane Information

Subgrade CDF

No.	Name	CDF Contribution	CDF Max for Airplane	P/C Ratio
1	Cessna 172 Skyhawk	0.00	0.00	4.73
2	Cessna 182 Skylane	0.00	0.00	4.6
3	Beechcraft Bonanza F33A	0.00	0.00	4.39
4	Cessna 206 Stationair	0.00	0.00	4.52
5	PA-32R-301 Saratoga	0.00	0.00	4.33
6	Beechcraft Baron 55	0.00	0.00	4.3
7	Beechcraft King Air B200	0.00	0.00	2.79
8	S-25	0.00	0.00	3.63
9	D-35	0.00	0.00	2.29
10	Cessna Citation V	0.00	0.00	4.14

NOTE:

User is responsible for checking frost protection requirements.


P-401/P-403 HMA Overlay
T=2.0 inches
E=200,000 psi
P-401/P-403 HMA Surface
T=5.0 inches
E=200,000 psi
P-154 Uncrushed Aggregate
T=5.0 inches
E=16,332 psi
Subgrade
CBR=8
E=12,000 psi

Federal Aviation Administration FAARFIELD 2.1 Structure Report

FAARFIELD 2.1.1 (Build 12/21/2023)

Job Name: Dewitt Spain - Apron Rehab

Structure: Full Depth Reclamation

Analysis Type: New Flexible

Last Run: Thickness Design 2024-09-10 15:15:01

Design Life = 20 Years

Total thickness to the top of the subgrade = 11.8in.

Pavement Structure Information by Layer

No.	Type	Thickness (in.)	Modulus (psi)	CBR	Poisson's Ratio	Strength R (psi)
1	P-401/P-403 HMA Surface	4.0	200,000	0	0.35	0
2	User Defined	7.8	25,000	0	0.35	0
3	Subgrade	0	12,000	8	0.35	0

Airplane Information

No.	Name	Gross Wt. (lbs)	Annual Departures	% Annual Growth
1	Cessna 172 Skyhawk	2,558	100	0
2	Cessna 182 Skylane	3,110	500	0
3	Beechcraft Bonanza F33A	3,412	1,200	0
4	Cessna 206 Stationair	3,612	150	0
5	PA-32R-301 Saratoga	3,616	600	0
6	Beechcraft Baron 55	5,424	300	0
7	Beechcraft King Air B200	12,590	300	0
8	S-25	25,000	1,500	0
9	D-35	35,000	750	0
10	Cessna Citation V	16,500	750	0

Additional Airplane Information

Subgrade CDF

No.	Name	CDF Contribution	CDF Max for Airplane	P/C Ratio
1	Cessna 172 Skyhawk	0.00	0.00	4.78
2	Cessna 182 Skylane	0.00	0.00	4.64
3	Beechcraft Bonanza F33A	0.00	0.00	4.43
4	Cessna 206 Stationair	0.00	0.00	4.56
5	PA-32R-301 Saratoga	0.00	0.00	4.37
6	Beechcraft Baron 55	0.00	0.00	4.34
7	Beechcraft King Air B200	0.00	0.00	2.8
8	S-25	0.80	0.80	3.66
9	D-35	0.20	0.20	2.31
10	Cessna Citation V	0.00	0.00	4.18

NOTE:

User is responsible for checking frost protection requirements.


P-401/P-403 HMA Surface
T=4.0 inches
E=200,000 psi
User Defined
T=7.8 inches
E=25,000 psi
Subgrade
CBR=8
E=12,000 psi

Federal Aviation Administration FAARFIELD 2.1 Structure Report

FAARFIELD 2.1.1 (Build 12/21/2023)

Job Name: Dewitt Spain - Apron Rehab

Structure: Full Depth Reconstruction

Analysis Type: HMA on Aggregate

Last Run: Thickness Design 2024-09-10 14:39:03

Design Life = 20 Years

Total thickness to the top of the subgrade = 11.1in.

Pavement Structure Information by Layer

No.	Type	Thickness (in.)	Modulus (psi)	CBR	Poisson's Ratio	Strength R (psi)
1	P-401/P-403 HMA Surface	4.0	200,000	0	0.35	0
2	P-208 Crushed Aggregate	7.1	36,155	0	0.35	0
3	Subgrade	0	12,000	8	0.35	0

Airplane Information

No.	Name	Gross Wt. (lbs)	Annual Departures	% Annual Growth
1	Cessna 172 Skyhawk	2,558	100	0
2	Cessna 182 Skylane	3,110	500	0
3	Beechcraft Bonanza F33A	3,412	1,200	0
4	Cessna 206 Stationair	3,612	150	0
5	PA-32R-301 Saratoga	3,616	600	0
6	Beechcraft Baron 55	5,424	300	0
7	Beechcraft King Air B200	12,590	300	0
8	S-25	25,000	1,500	0
9	D-35	35,000	750	0
10	Cessna Citation V	16,500	750	0

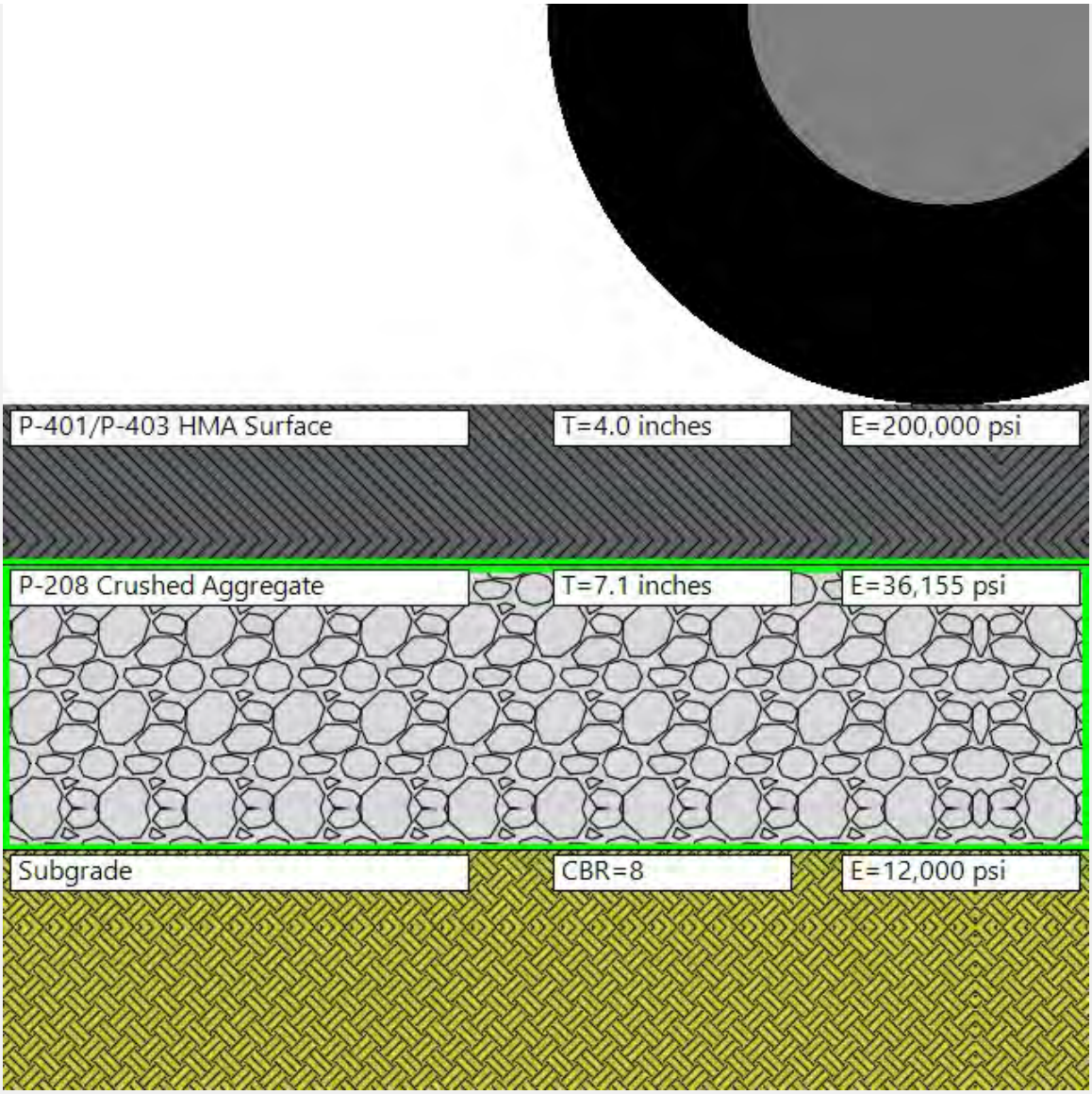
Additional Airplane Information

Subgrade CDF

No.	Name	CDF Contribution	CDF Max for Airplane	P/C Ratio
1	Cessna 172 Skyhawk	0.00	0.00	4.99
2	Cessna 182 Skylane	0.00	0.00	4.84
3	Beechcraft Bonanza F33A	0.00	0.00	4.61
4	Cessna 206 Stationair	0.00	0.00	4.76
5	PA-32R-301 Saratoga	0.00	0.00	4.55
6	Beechcraft Baron 55	0.00	0.00	4.51
7	Beechcraft King Air B200	0.00	0.00	2.87
8	S-25	0.85	0.85	3.78
9	D-35	0.15	0.15	2.35
10	Cessna Citation V	0.00	0.00	4.34

NOTE:

User is responsible for checking frost protection requirements.


P-401/P-403 HMA Surface
T=4.0 inches
E=200,000 psi
P-208 Crushed Aggregate
T=7.1 inches
E=36,155 psi
Subgrade
CBR=8
E=12,000 psi

Appendix F – Construction Safety and Phasing

1. GENERAL: THE CONTRACTOR IS CAUTIONED THAT THE CONSTRUCTION WILL IMPACT SAFE OPERATING CONDITIONS AT THE AIRPORT. ALL CONSTRUCTION ACTIVITY MUST BE PROVEN SAFE REGARDING AIRCRAFT WHILE MOORED, WHEN TAXIING, WHEN TAKING OFF, OR WHEN LANDING. MOVING AIRCRAFT WILL ALWAYS HAVE RIGHT-OF-WAY OVER CONSTRUCTION EQUIPMENT OR VEHICLES. THE SAFETY OF AIRCRAFT, PASSENGERS, AND USERS, AS WELL AS ALL AIRPORT PERSONNEL, CONTRACTORS, SUBCONTRACTORS, AND THEIR PERSONNEL IS VITAL FOR THE SATISFACTORY EXECUTION OF THIS CONTRACT.

   DEPARTMENT OF TRANSPORTATION, FEDERAL AVIATION ADMINISTRATION ADVISORY CIRCULAR NO. 150/5370-2G, DATED DECEMBER 13, 2017, ITS REFERENCES, AND CURRENT CHANGES PRESCRIBES THE PROCEDURES, RULES AND AUTHORITIES SHALL BE FOLLOWED BY THE CONTRACTOR DURING CONSTRUCTION OF THIS PROJECT. NOTHING IN THIS SECTION SUPERSEDES OR ALTERS THE CONTENTS OF THE ABOVE ADVISORY CIRCULAR, ITS REFERENCES AND CHANGES AND TO ALL OTHER ADVISORY MATERIAL PERTAINING TO OPERATIONAL SAFETY ON AIRPORTS, ESPECIALLY DURING PERIODS OF CONSTRUCTION ACTIVITY.

   THE CONTRACTOR WILL BE RESPONSIBLE FOR COORDINATING AND CONTROLLING ALL CONSTRUCTION ACTIVITIES IN SUCH A MANNER AS TO:

   A. MAINTAIN SAFETY OF AIRCRAFT OPERATIONS; RESTRICT AIRCRAFT OPERATIONS DURING THE DURATION OF PROJECT ACTIVITIES.
   B. MAINTAIN SAFETY OF CONSTRUCTION ACTIVITIES.
   C. MINIMIZE AIRCRAFT OPERATIONS AND CONSTRUCTION ACTIVITY CONFLICTS, WHILE WORK IS PERFORMED WITHIN THE LIMITS OF THE RUNWAY OR TAXIWAY SAFETY AREAS.
   D. MINIMIZE DELAYS TO CONTRACTOR ACTIVITIES.
   E. KEEP THE AIRPORT OPERATIONAL FOR ALL USER AIRCRAFT, WITH MINIMUM TIME FOR RUNWAY CLOSURE A NECESSITY.

2. PROJECT DESCRIPTION:

   THE WORK UNDER THIS PROJECT CONSISTS OF REHABILITATING THE TERMINAL APRON AT THE DEWITT SPAIN AIRPORT. THIS INCLUDES ALL PAVEMENT REHABILITATION, RECONFIGURING EXISTING DRAINAGE, AND THE INSTALLATION OF APRON TIE-DOWNS AND PAVEMENT MARKINGS.

   CONSTRUCTION SEQUENCE: THIS PROJECT WILL BE LET TO CONSTRUCTION AND PERFORMED IN ONE CONTRACT, AND WILL REQUIRE SPECIAL COORDINATION BETWEEN THE AIRPORT AUTHORITY OFFICES, THE CONTRACTOR, AND THE FAA. THE CONTRACTOR AND ITS SUBCONTRACTORS WILL BE REQUIRED TO COORDINATE THEIR EFFORTS TO MINIMIZE CONFLICTS WITH EACH OTHER WHILE WORKING IN THE CONSTRUCTION AREAS, AND FOR MINIMIZING IMPACTS TO AVIATION RELATED ACTIVITIES OR CONSTRUCTION. WHILE WORKING WITHIN THE AIRPORT OPERATION AREAS (AOA'S) WHILE THE AIRPORT IS OPEN, PARTICULAR CARE WILL BE REQUIRED TO MAINTAIN AN ORDERLY AND PROFESSIONAL LINE OF COMMUNICATION WITH THE AIRPORT AUTHORITY AND SECURITY PERSONNEL, THE ENGINEER, AND THE OTHER USERS OF THE AIRPORT. BEFORE THE CONTRACTOR CAN WORK, A PROPOSED SCHEDULE OF OPERATIONS FOR THE WORK WILL BE SUBMITTED TO THE AIRPORT'S MANAGER AND CONCURRENTLY WITH THE ENGINEER, FOR REVIEW AND COMMENT. IF AGREEABLE TO THOSE PARTIES, THE SCHEDULE WILL BE COORDINATED WITH FAA PERSONNEL. ONLY AFTER THIS SCHEDULE HAS BEEN APPROVED WILL THE CONTRACTOR(S) BE ALLOWED TO COMMENCE OPERATIONS. ALL OF THESE ISSUES WILL BE BE DISCUSSED DURING THE PRE-CONSTRUCTION CONFERENCE IN MORE DETAIL.

3. THE CONSTRUCTION CALENDAR FOR COMPLETION OF THE PROPOSED WORK IS AT BEST, TENTATIVE, BUT WILL BE BASED ON THE FOLLOWING:

   A. THE AWARD OF THE CONTRACT IS ANTICIPATED TO TAKE PLACE IN SPRING OR SUMMER OF 2025.
   B. A "NOTICE TO PROCEED" WILL BE ISSUED AFTER AWARD OF THE CONTRACT AND AFTER A PRE-CONSTRUCTION CONFERENCE.
   C. WORK IS EXPECTED TO TAKE PLACE EACH DAY THAT WEATHER PERMITS... INCLUDING SATURDAYS AND SUNDAYS IF NEEDED. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO SCHEDULE ITS WORK IN SUCH A WAY THAT ANTICIPATED WET WEATHER CONDITIONS DO NOT HINDER THE SUCCESSFUL COMPLETION OF THE PROJECT.
   D. IT IS ANTICIPATED TO ACCOMPLISH SUBSTANTIAL COMPLETION BETWEEN SUMMER OR FALL OF 2025 DEPENDING ON NTP DATE.
   E. WORK SHALL OCCUR EVERY CALENDAR DAY INCLUDING SATURDAY AND SUNDAY UNTIL WORK IS COMPLETE. ONCE THE SCHEDULE IS REVIEWED AND APPROVED BY THE AIRPORT MANAGER AND THE ENGINEER, IT WILL BE USED AS THE BASIS OF SCHEDULING OPERATIONS IN THIS AREA OF THE AIRPORT DURING THE CONSTRUCTION PERIOD.

4. CONSTRUCTION SAFETY REQUIREMENTS:

   A. OBSTRUCTIONS TO NAVIGATION- THE CONTRACTOR SHALL NOTIFY THE AIRPORT MANAGER 2 BUSINESS DAYS IN ADVANCE OF TAXIWAY CLOSURE AND 7 BUSINESS DAYS IN ADVANCE OF RUNWAY CLOSURE PRIOR TO COMMENCING OPERATIONS WITHIN THE AOA'S AND THEIR RESPECTIVE SAFETY AREAS SO THAT IF THE NEED SHOULD EXIST, THE AIRPORT DIRECTOR MIGHT ISSUE A NOTAM (NOTICE TO AIRMEN) PRIOR TO COMMENCING WORK IN THIS AREA OR ANY OTHER AREA WHERE WORK OFF THE PAVEMENT EDGE WITHIN THE IDENTIFIED SAFETY AREAS WILL BE REQUIRED. THE NOTAM SHALL WARN AIRCRAFT USERS OF...
      (1) CLOSING OF THE ANY AOA, ACTIVITIES NEAR THE RUNWAY, TAXIWAYS OR APRONS WHICH MIGHT AFFECT AIRCRAFT OPERATIONS,
      (2) THE DURATION OF THOSE ACTIVITIES, AND
      (3) OTHER PERTINENT INFORMATION RELATING TO THE OVERALL SCOPE OF THE PROJECT AS IT RELATES TO THAT PARTICULAR NOTAM.
   B. VARIOUS WORK ZONES AND PAVEMENT AREAS WILL HAVE TO BE CLOSED DURING THE COURSE OF THIS PROJECT. THOSE CLOSURES SHALL BE ACCOMPLISHED WITH APPROVED MATERIALS AND/OR TECHNIQUES COMMONLY USED BY THE FAA. THE MATERIALS AND TECHNIQUES WILL HAVE TO MEET FAA STANDARDS, AND SHALL NOT BE A HAZARD TO AIRCRAFT TAXIING IN THE IMMEDIATE AREA OF THE CLOSURE. ALL MATERIALS SHALL BE OF THE COLOR REQUIRED BY THE FAA AS CALLED FOR IN FAA ADVISORY CIRCULAR 150/5370-2G.
      (1) LOW PROFILE BARRICADES... WITH WARNING LIGHTS AND FLAGS... SHALL BE USED TO DETER VEHICULAR MOVEMENT ONTO PAVED AREAS THAT ARE CLOSED. THE BARRICADES SHALL BE REFLECTORIZED AND CAPABLE OF BEING SECURED IN PLACE FOR THE DURATION OF THEIR NEED. ALL TYPE LOW PROFILE BARRICADES SHALL BE PLACED INTERLOCKING END TO END, EXCEPT WHERE A SPACE IS REQUIRED TO PERMIT CONSTRUCTION TRAFFIC OR EMERGENCY VEHICLE ACCESS. IN THIS CASE, A SINGLE 15' GAP MAY BE PERMITTED.
      (2) LIGHTED TRAFFIC CONES MAY BE USED FOR SHORT TERM (1 WORKING DAY OR LESS, DAYLIGHT HOURS ONLY) AT THE DISCRETION OF THE OWNER. SEE NOTES ON SAFETY AND PHASING DETAILS.
   C. CONSTRUCTION EQUIPMENT SHALL BE 20' OR LESS UNLESS APPROVED BY ENGINEER.

   D. NAVIGATIONAL AIDS: ANY UNPLANNED, UNAPPROVED OR ACCIDENTAL SHUTDOWN OF ANY AIRPORT NAVIGATIONAL AID REQUIRES IMMEDIATE NOTIFICATION OF SAME TO THE AIRPORT DIRECTOR AND THE ENGINEER BY THE CONTRACTOR.

   E. TRENCHES OR OPEN EXCAVATION: OPEN EXCAVATION IS ANTICIPATED TO BE A REQUIREMENT OF THIS PROJECT, IF IT TAKES PLACE NEXT TO ACTIVE AIRCRAFT OPERATIONS AREAS, THE CONTRACTOR SHALL NOTIFY THE AIRPORT MANAGER 48 HOURS IN ADVANCE OF COMMENCING ANY OPERATIONS IN THOSE AREAS WHICH WILL CREATE A DROP-OFF IN EXCESS OF 3 INCHES ALONG THE ACTIVE EXISTING PAVEMENT'S EDGE. THE AIRPORT MANAGER WILL ISSUE A NOTAM WARNING PILOTS OF THE IMPENDING CONSTRUCTION CONDITIONS AT THIS LOCATION, AND WILL COORDINATE EFFORTS WITH THE CONTRACTOR TO CLOSE THAT PORTION OF THE EXISTING AIRCRAFT OPERATIONS AREA UNTIL THE WORK IS COMPLETE IN THAT AREA. ALL EXCAVATION OR STOCKPILING OF MATERIALS SHALL BE FLAGGED AND LIGHTED DURING HOURS OF DARKNESS BY THE CONTRACTOR. ADVISORY CIRCULAR NO. 150/5370-2G SPELLS OUT CONDITIONS AND METHODS OF MARKING.

   F. DEBRIS, DIRT, ETC. ON RUNWAYS, TAXIWAYS AND/OR APRONS. ACTIVE AIRCRAFT OPERATIONS AREAS (AOA'S) (I.E., RUNWAY, ALL TAXIWAYS AND ALL APRONS) SHALL BE KEPT FREE OF ALL DEBRIS, DIRT, ETC., AT ALL TIMES WHEN THAT PORTION OF THE AIRPORT IS OPEN TO AIR TRAFFIC. ANY ACCIDENTAL SPILLAGE OF EXCAVATION OR OTHER MATERIALS SHALL BE CLEANED UP BY THE CONTRACTOR WITH A MOTOR DRIVEN SWEEPER BEFORE THAT AREA OF THE AIRPORT IS RE-OPENED TO AIR TRAFFIC. REGULAR INSPECTIONS SHALL BE PERFORMED BY THE CONTRACTOR. INSPECTIONS SHALL BE MADE BEFORE THE NORMAL TIME FOR COMMENCEMENT OF DAILY AIRCRAFT OPERATIONS AND MORE FREQUENTLY, IF CONSTRUCTION ACTIVITIES ARE OF A NATURE THAT DEBRIS MAY ACCUMULATE ON THE TAXIWAYS OR APRONS.

   G. STORAGE EQUIPMENT, MATERIALS, OR EXCAVATION. THE CONTRACTOR SHALL NOT STORE MATERIALS OR PARK EQUIPMENT IN AIRCRAFT OPERATIONAL AREAS WHEN THE EQUIPMENT OR MATERIAL IS NOT IN USE OR ABOUT TO BE INSTALLED. MATERIAL OR EQUIPMENT IN USE IN OPERATIONS AREAS MUST BE STORED OR PARKED IN A MANNER THAT THEY MAY BE QUICKLY REMOVED TO ACCOMMODATE AIRCRAFT OPERATIONS. IN NO CASE SHALL SPOILS FROM EXCAVATIONS, MATERIAL STOCKPILES, OR UNATTENDED EQUIPMENT BE LOCATED IN AN ACTIVE RUNWAY OR TAXIWAY OBJECT FREE AREA.

   H. BLASTING: BLASTING IS NOT ANTICIPATED TO BE A NECESSARY PART OF THIS CONTRACT'S CONSTRUCTION ACTIVITIES.

   I. THE CONTRACTOR SHALL CONDUCT AN INSPECTION AT THE END OF EACH DAY'S CONSTRUCTION ACTIVITIES. THE CONTRACTOR SHALL CONDUCT AN ADDITIONAL INSPECTION EACH MORNING, PRIOR TO COMMENCEMENT OF WORK, WHEN CONSTRUCTION ACTIVITIES ARE WITHIN 75' OF AN ACTIVE AIRCRAFT OPERATIONS AREA. ITEMS TO BE INCLUDED ON THE INSPECTION CHECKLIST SHALL INCLUDE, BUT SHALL NOT BE LIMITED TO:
      (1) ARE THE RUNWAYS, TAXIWAYS, AND APRONS WITHIN THE CONSTRUCTION LIMITS AND IMMEDIATELY ADJACENT CLEAR OF DEBRIS AND ACCUMULATIONS OF DUST AND MUD?
      (2) ARE MATERIALS, EQUIPMENT, AND VEHICLES PARKED OR STORED NOT LESS THAN 400' FROM THE CENTERLINE OF ACTIVE RUNWAYS OR TAXIWAYS?
      (3) ARE ALL OPEN TRENCHES OR EXCAVATIONS LESS THAN THREE (3) INCHES DEEP AND HAVE ROUGH GRADES BEEN LEVELED WITHIN THE RUNWAY SAFETY AREA? (WILL APPLY TO RUNWAY EDGES)
      (4) ARE TEMPORARY BARRICADES IN PLACE AND HAVE THEY BEEN PROPERLY STABILIZED? ARE BARRICADE/BARRIER WARNING LIGHTS OPERATIONAL? ARE FLAGS AFFIXED TO THE BARRICADES?
      (5) IS ALL AIRPORT LIGHTING EQUIPMENT IN THE VICINITY OF THE DAY'S CONSTRUCTION ACTIVITIES OPERATIONAL?
      (6) HAS THE OWNER, THROUGH THE ENGINEER, BEEN INFORMED OF THE WORK PLANNED FOR THE NEXT DAY?

      A NEGATIVE RESPONSE TO ANY OF THE ITEMS IN THE CHECKLIST WILL REQUIRE THAT THE CONTRACTOR MAKE THE NECESSARY ADJUSTMENTS TO CAUSE THE RESPONSE TO BE POSITIVE BEFORE IT LEAVES THE SITE FOR THE DAY (EVENING INSPECTION) OR BEFORE WORK IS STARTED (MORNING INSPECTION).

   J. COMMUNICATION REQUIREMENTS: A POSITIVE COMMUNICATION SYSTEM BETWEEN THE FOLLOWING WILL BE REQUIRED:

      THE OWNER, ENGINEER, AND CONTRACTOR SHOULD MEET ON A PERIODIC BASIS TO DISCUSS AND PLAN FUTURE CONSTRUCTION ACTIVITY, THE POTENTIAL IMPACT OF CONSTRUCTION ON AIRCRAFT OPERATIONS, PROCEDURES TO MAINTAIN AIRCRAFT OPERATIONS AND SAFETY, AND TO FACILITATE CONSTRUCTION ACTIVITY. PLANNING SHOULD INVOLVE:

      TDOT / FAA PERSONNEL ⟷ AIRPORT MANAGER
      ENGINEER ⟷ CONTRACTOR/ SUBCONTRACTOR

   K. COMMUNICATIONS PROCEDURES

      MODIFICATIONS OF NORMAL AIRCRAFT OPERATION PROCEDURES SUCH AS:
      - CONSTRUCTION ALONG TAXIWAY AND APRON SHOULDERS
      - NAVIGATIONAL AID OUTAGES
      - REQUIRED DISRUPTION OF CONTRACTOR ACTIVITIES
      - VEHICLES CROSSING RUNWAY
      - CLEANUP OF DIRT OR DEBRIS ON THE RUNWAY
      - NOTICE TO AIRMEN (NOTAMS)
      - LOCAL NOTICES TO ALL AIRCRAFT OPERATORS

5. MISCELLANEOUS CONSIDERATIONS:

   A. THE CONTRACTOR AND SUBCONTRACTOR PERSONNEL SHALL REMAIN WITHIN THE LIMITS OPEN TO CONSTRUCTION ACTIVITIES AT ALL TIMES, UNLESS EMERGENCY CONDITIONS WARRANT OTHERWISE. THESE AREAS WILL BE AS DEFINED BY THE OWNER OR THE ENGINEER. THE CONTRACTOR AND THE SUBCONTRACTOR SHOULD STRESS THE IMPORTANCE OF REMAINING WITHIN THE DEFINED WORK AREA TO ITS PERSONNEL. THE CONTRACTOR MAY WISH TO MARK THE DEFINED AREAS OF CONSTRUCTION USING FAA APPROVED BARRICADES.

   B. THE CONTRACTOR SHALL BE SOLELY AND COMPLETELY RESPONSIBLE FOR INITIATING, SUPERVISING, AND COMPLIANCE WITH ALL SAFETY REQUIREMENTS OF THE CONTRACT.

   C. THE CONTRACTOR SHALL ASSURE THE SAFETY OF AIRCRAFT OPERATIONS AND MOVEMENTS ON ACTIVE APRON AREAS, TAXIWAYS, AND/OR RUNWAYS NEAR THE WORK. CONSTRUCTION AREAS THAT LIE NEAR ADJOINING APRONS, TAXIWAYS, AND/OR RUNWAYS SHALL BE IDENTIFIED WITH LOW-PROFILE BARRICADES EQUIPPED WITH FLASHING LIGHTS AND FLAGS TO WARN PILOTS OF CONSTRUCTION IN PROGRESS. THE AREAS ADJACENT TO THE CONSTRUCTION MUST REMAIN FREE AND CLEAR OF DEBRIS. BARRICADES AND/OR BARRIERS SHALL BE WEIGHTED SUFFICIENTLY TO PROTECT AGAINST PROP WASH, JET BLAST, OR WIND.

   D. UNDER NO CIRCUMSTANCES WILL THE CONTRACTOR BE ALLOWED TO USE, CROSS, TRAVERSE, OR PERFORM ANY CONSTRUCTION TASKS ON THE RUNWAYS, TAXIWAYS, OR ACTIVELY USED AIRCRAFT PARKING APRONS, UNLESS PERMISSION HAS BEEN GRANTED BY THE ATCT AND ACTIVITIES HAVE BEEN COORDINATED WITH THE AIRPORT, ENGINEER, FAA AND THE USER(S) OF THE ACTIVE AREA.

   E. THE CONTRACTOR SHALL PROTECT ALL EXISTING LIGHTING, SIGNAGE, ETC., AS NECESSARY TO PREVENT ACCIDENTAL DESTRUCTION OF OR UNNECESSARY SHUTDOWN OF SUCH EQUIPMENT DURING THE PROJECT.

   F. VISUAL NAVIGATIONAL AIDS, SUCH AS RUNWAY AND TAXIWAY EDGE LIGHTING AND AIRFIELD GUIDANCE SIGNS THAT ARE NOT SERVING THEIR INTENDED PURPOSE DURING A PHASE OF CONSTRUCTION MUST BE TEMPORARILY DISABLED, COVERED, OR MODIFIED AS NECESSARY. THE CONTRACTOR'S SAFETY PLAN COMPLIANCE DOCUMENT SHALL DETAILS THE METHODS PLANNED TO BE USED TO MEET THE FOLLOWING REQUIREMENTS:
      (1) RUNWAY OR TAXIWAY EDGE LIGHTS THAT ARE NOT IN USE DURING CONSTRUCTION SHALL BE COVERED OR DE-ENERGIZED DURING PHASE(S) WHEN THEY ARE NOT IN USE. IF A FULL CIRCUIT IS NOT IN USE, THE CIRCUIT MAY BE DE-ENERGIZED TO SATISFY THIS REQUIREMENT. IF A PARTIAL CIRCUIT IS NOT IN USE, THE THOSE LIGHT FIXTURES NOT IN USE SHALL BE COVERED WITH A MATERIAL THAT WILL FULLY OBSCURE THE LIGHT WITHOUT CAUSING DAMAGE TO THE FIXTURE.
      (2) AIRFIELD GUIDANCE SIGNS THAT INDICATE DIRECTION TO A RUNWAY OR TAXIWAY THAT IS CLOSED DURING A PARTICULAR PHASE MUST BE COVERED WITH A MATERIAL THAT OBSCURES THE FACE OF THE SIGN AND PREVENTS LIGHT FROM THE SIGN BEING VISIBLE TO PILOTS.

   G. APPLICABLE STANDARDS: ADVISORY CIRCULAR NO. 150/5370-2G WILL BE USED AS A GUIDELINE TO ASSIST IN MAINTAINING OPERATIONAL SAFETY DURING CONSTRUCTION ACTIVITIES. THIS DOCUMENT ALSO REFERS TO OTHER APPLICABLE ADVISORY CIRCULARS. FEDERAL AIR REGULATIONS - PART 77, NOT INCLUDED HEREIN, WILL ALSO BE USED TO DEFINE "OBJECTS AFFECTING NAVIGABLE AIRSPACE."

   H. PAYMENT: MEASUREMENT AND PAYMENT FOR BARRICADES, SIGNS, LIGHTING SYSTEMS, FLAGS, GATE ATTENDANTS/FLAGMEN, BROOMEN, TEMPORARY MARKINGS OR ANY OTHER ITEM CALLED FOR BY THIS SECTION OF THE SPECIFICATIONS OR ITS REFERENCES WILL NOT BE PAID FOR SEPARATELY, AS THESE ITEMS ARE CONSIDERED A SUBSIDIARY OBLIGATION OF THE CONTRACT, UNLESS PROVISIONS ARE MADE SPECIFICALLY FOR THOSE ITEMS OF WORK ON THE BID SCHEDULE.

   I. VEHICLES OPERATING WITHIN THE OPERATIONS AREA OF THE AIRPORT (AWAY FROM THE ACTUAL CONSTRUCTION AREA AND WITH REQUIRED APPROVALS) SHALL BE MARKED WITH FLASHING WARNING LIGHTS ATOP VEHICLES AND SIGNS IDENTIFYING THE NAME OF THE CONTRACTOR AS PER FAA REQUIREMENTS. A.C. 150/5210-5D.

   J. THE CONTRACTOR SHALL ASSURE THE SAFETY OF AIRCRAFT OPERATIONS AND MOVEMENTS ON ACTIVE APRON AREAS, TAXIWAYS, AND/OR RUNWAYS NEAR THE WORK. CONSTRUCTION AREAS THAT LIE NEAR ADJOINING APRONS, TAXIWAYS, AND/OR RUNWAYS SHALL BE IDENTIFIED WITH LOW-PROFILE BARRICADES OR BARRIERS EQUIPPED WITH FLASHING LIGHTS TO WARN PILOTS OF CONSTRUCTION IN PROGRESS. THE AREAS ADJACENT TO THE CONSTRUCTION MUST REMAIN FREE AND CLEAR OF DEBRIS. BARRICADES AND/OR BARRIERS SHALL BE WEIGHTED SUFFICIENTLY TO PROTECT AGAINST PROP WASH, JET BLAST, OR WIND.

   K. THE CONTRACTOR SHALL REFER TO THE SAFETY AND PHASING PLAN FOR ADDITIONAL REQUIREMENTS.

TAKE OFF WITH US Memphis INTERNATIONAL AIRPORT

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Program Management Consultant
Parsons Transportation Group Inc.
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REVISIONS

MARK	DATE	DESCRIPTION

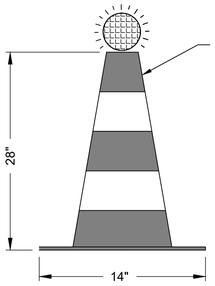
MSCAA PROJ. NO.
20-1440-00

PROJECT:
DEWITT SPAIN AIRPORT APRON REHABILITATION

SHEET TITLE:
SAFETY & PHASING NOTES

DWG. FILE NAME

DATE: NOV. 2024
SCALE: N/A
SHEET NO.: G0.3



NOTES:

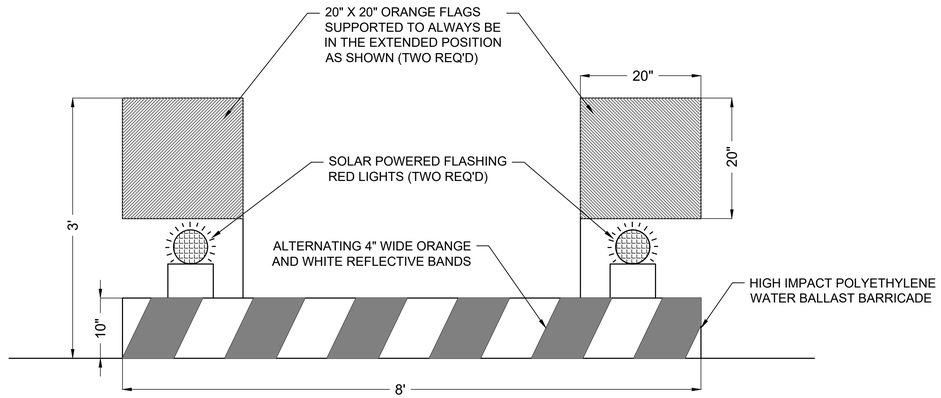
1) CONES SHALL BE LOCATED AT LOCATIONS AS INDICATED ON THE PLAN SHEETS OR AS DIRECTED BY ENGINEER AND SPACED NO FARTHER THAN 6' IN ACCORDANCE WITH AC150/5370-2.

2) ALL CONES SHALL BE LIGHTED WITH SOLAR POWERED LIGHTS.

3) NO SEPERATE PAYEMENT SHALL BE MADE FOR LIGHTED TRAFFIC CONES. THIS ITEM IS INCIDENTAL TO TS-129-5.1.

4) TRAFFIC CONES MAY BE UTILIZED DURING SUNRISE TO SUNSET WITH APPROVAL OF ENGINEER.

LIGHTED TRAFFIC CONE
NOT TO SCALE



LOW PROFILE BARRICADE
NOT TO SCALE

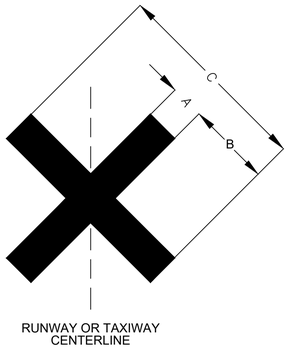
NOTES:

1) BARRICADES SHALL BE PLACED AT LOCATIONS AS INDICATED ON THE PLAN SHEETS OR AS DIRECTED BY ENGINEER.

2) ALL BARRICADES SHALL BE WATER FILLED (BALLASTED) WITH POWER SOLAR LIGHTS (SEE TS-129).

3) NO SEPARATE PAYMENT SHALL BE MADE FOR TYPE 1 BARRICADES. THIS ITEM IS INCIDENTAL TO TS-129-5.1.

4) LIGHTS SHALL BE SPACED AT NO MORE THAN 10 FEET.



RUNWAY OR TAXIWAY CLOSURE MARKER
NOT TO SCALE

		DIMENSIONS		
PATTERN	CLOSURE TYPE	A	B	C
A	CLOSED RUNWAY	10'	25'	60'
B	CLOSED TAXIWAY	5'	12.5'	30'

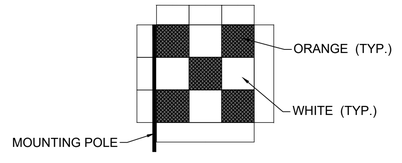
NOTES:

1) CONTRACTOR RESPONSIBLE FOR INSTALLING TEMPORARY OR PERMANENT TAXIWAY CLOSURE MARKERS WHEN NEEDED ON REQUIRED PHASES.

   * TEMPORARY MARKINGS SHALL BE SAFELY SECURED AND CONSIST OF MATERIALS AS TO NOT DAMAGE EXISTING ASPHALT PAVEMENT, SEE AC 150/5340-30.
   * PERMANENT PAVEMENT MARKINGS SHALL BE SURFACE PAINTED.

2) TAXIWAY CLOSURE MARKER SHALL BE INSTALLED 50' FROM RUNWAY EDGE ON TAXIWAY CENTERLINE.

3) OBSCURE EXISTING TAXIWAY LEADOFF CENTERLINE ON TAXIWAYS AS REQUIRED BY AC 150/5370-2G FOR INSTALLATION. (NOT MEASURED FOR SEPARATE PAYMENT)



REQ'D. EQUIPMENT / MACHINERY FLAG DETAIL
NOT TO SCALE

NOTES:

1. ALL CONSTRUCTION EQUIPMENT SHALL BE EQUIPPED WITH MACHINERY FLAGS.

2. NO SEPARATE PAYMENT SHALL BE MADE FOR FLAGGING OF CONSTRUCTION EQUIPMENT. THIS ITEM IS INCIDENTAL TO TS-129-5.1.

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REVISIONS

MARK	DATE	DESCRIPTION

MSCAA PROJ. NO. 20-1440-00

PROJECT:
DEWITT SPAIN AIRPORT APRON REHABILITATION

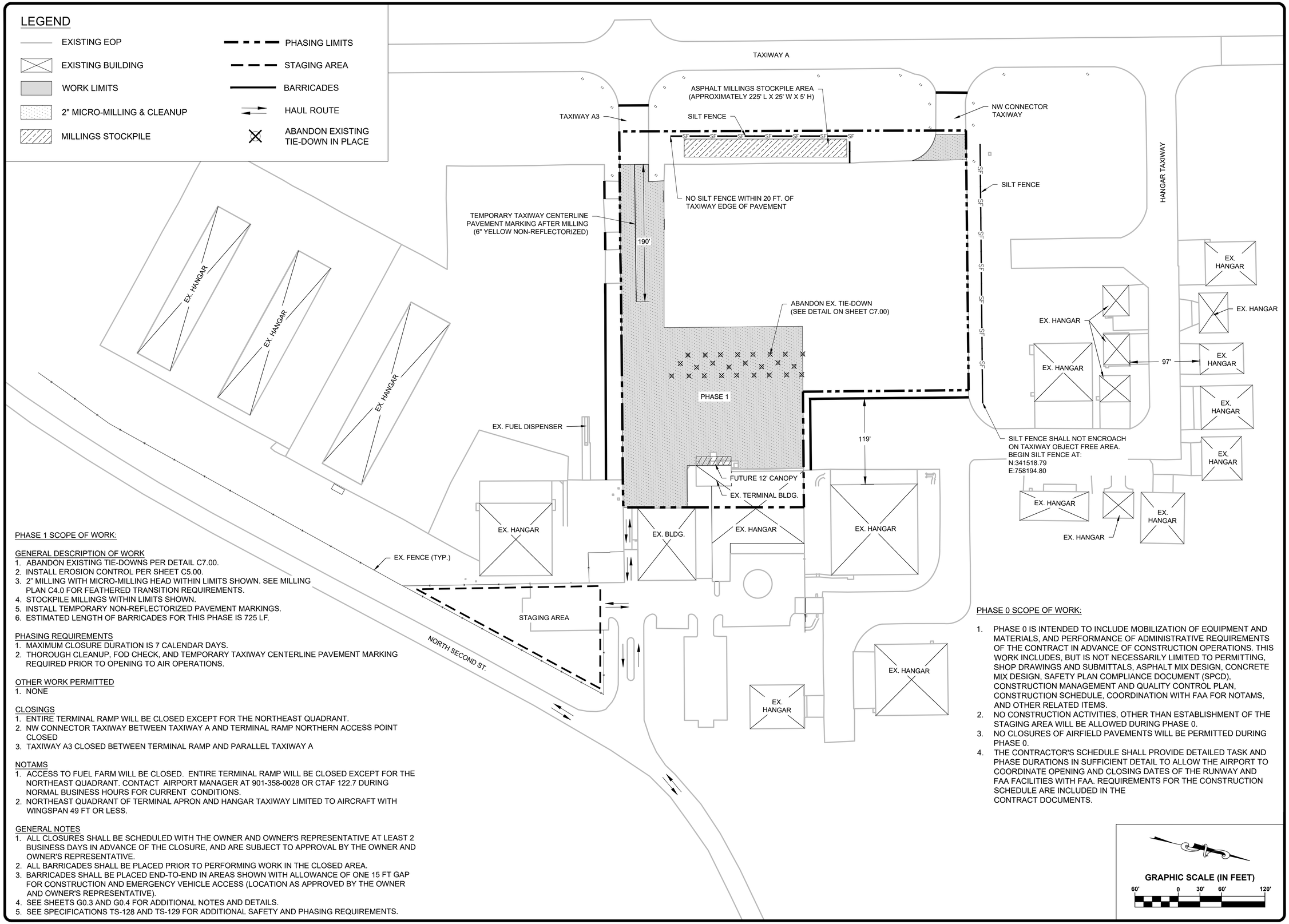
SHEET TITLE:
SAFETY & PHASING DETAILS

DWG. FILE NAME

DATE NOV. 2024
SCALE N/A
SHEET NO. G0.4

LEGEND

- EXISTING EOP
- EXISTING BUILDING
- WORK LIMITS
- 2" MICRO-MILLING & CLEANUP
- MILLINGS STOCKPILE
- PHASING LIMITS
- STAGING AREA
- BARRICADES
- HAUL ROUTE
- ABANDON EXISTING TIE-DOWN IN PLACE



PHASE 1 SCOPE OF WORK:

GENERAL DESCRIPTION OF WORK
1. ABANDON EXISTING TIE-DOWNS PER DETAIL C7.00.
2. INSTALL EROSION CONTROL PER SHEET C5.00.
3. 2" MILLING WITH MICRO-MILLING HEAD WITHIN LIMITS SHOWN. SEE MILLING PLAN C4.0 FOR FEATHERED TRANSITION REQUIREMENTS.
4. STOCKPILE MILLINGS WITHIN LIMITS SHOWN.
5. INSTALL TEMPORARY NON-REFLECTORIZED PAVEMENT MARKINGS.
6. ESTIMATED LENGTH OF BARRICADES FOR THIS PHASE IS 725 LF.

PHASING REQUIREMENTS
1. MAXIMUM CLOSURE DURATION IS 7 CALENDAR DAYS.
2. THOROUGH CLEANUP, FOD CHECK, AND TEMPORARY TAXIWAY CENTERLINE PAVEMENT MARKING REQUIRED PRIOR TO OPENING TO AIR OPERATIONS.

OTHER WORK PERMITTED
1. NONE

CLOSINGS
1. ENTIRE TERMINAL RAMP WILL BE CLOSED EXCEPT FOR THE NORTHEAST QUADRANT.
2. NW CONNECTOR TAXIWAY BETWEEN TAXIWAY A AND TERMINAL RAMP NORTHERN ACCESS POINT CLOSED
3. TAXIWAY A3 CLOSED BETWEEN TERMINAL RAMP AND PARALLEL TAXIWAY A

NOTAMS
1. ACCESS TO FUEL FARM WILL BE CLOSED. ENTIRE TERMINAL RAMP WILL BE CLOSED EXCEPT FOR THE NORTHEAST QUADRANT. CONTACT AIRPORT MANAGER AT 901-358-0028 OR CTAF 122.7 DURING NORMAL BUSINESS HOURS FOR CURRENT CONDITIONS.
2. NORTHEAST QUADRANT OF TERMINAL APRON AND HANGAR TAXIWAY LIMITED TO AIRCRAFT WITH WINGSPAN 49 FT OR LESS.

GENERAL NOTES
1. ALL CLOSURES SHALL BE SCHEDULED WITH THE OWNER AND OWNER'S REPRESENTATIVE AT LEAST 2 BUSINESS DAYS IN ADVANCE OF THE CLOSURE, AND ARE SUBJECT TO APPROVAL BY THE OWNER AND OWNER'S REPRESENTATIVE.
2. ALL BARRICADES SHALL BE PLACED PRIOR TO PERFORMING WORK IN THE CLOSED AREA.
3. BARRICADES SHALL BE PLACED END-TO-END IN AREAS SHOWN WITH ALLOWANCE OF ONE 15 FT GAP FOR CONSTRUCTION AND EMERGENCY VEHICLE ACCESS (LOCATION AS APPROVED BY THE OWNER AND OWNER'S REPRESENTATIVE).
4. SEE SHEETS G0.3 AND G0.4 FOR ADDITIONAL NOTES AND DETAILS.
5. SEE SPECIFICATIONS TS-128 AND TS-129 FOR ADDITIONAL SAFETY AND PHASING REQUIREMENTS.

PHASE 0 SCOPE OF WORK:

1. PHASE 0 IS INTENDED TO INCLUDE MOBILIZATION OF EQUIPMENT AND MATERIALS, AND PERFORMANCE OF ADMINISTRATIVE REQUIREMENTS OF THE CONTRACT IN ADVANCE OF CONSTRUCTION OPERATIONS. THIS WORK INCLUDES, BUT IS NOT NECESSARILY LIMITED TO PERMITTING, SHOP DRAWINGS AND SUBMITTALS, ASPHALT MIX DESIGN, CONCRETE MIX DESIGN, SAFETY PLAN COMPLIANCE DOCUMENT (SPCD), CONSTRUCTION MANAGEMENT AND QUALITY CONTROL PLAN, CONSTRUCTION SCHEDULE, COORDINATION WITH FAA FOR NOTAMS, AND OTHER RELATED ITEMS.
2. NO CONSTRUCTION ACTIVITIES, OTHER THAN ESTABLISHMENT OF THE STAGING AREA WILL BE ALLOWED DURING PHASE 0.
3. NO CLOSURES OF AIRFIELD PAVEMENTS WILL BE PERMITTED DURING PHASE 0.
4. THE CONTRACTOR'S SCHEDULE SHALL PROVIDE DETAILED TASK AND PHASE DURATIONS IN SUFFICIENT DETAIL TO ALLOW THE AIRPORT TO COORDINATE OPENING AND CLOSING DATES OF THE RUNWAY AND FAA FACILITIES WITH FAA. REQUIREMENTS FOR THE CONSTRUCTION SCHEDULE ARE INCLUDED IN THE CONTRACT DOCUMENTS.

GRAPHIC SCALE (IN FEET)
60' 0 30' 60' 120'

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REVISIONS

MARK	DATE	DESCRIPTION

MSCAA PROJ. NO. 20-1440-00

PROJECT:
DEWITT SPAIN AIRPORT APRON REHABILITATION

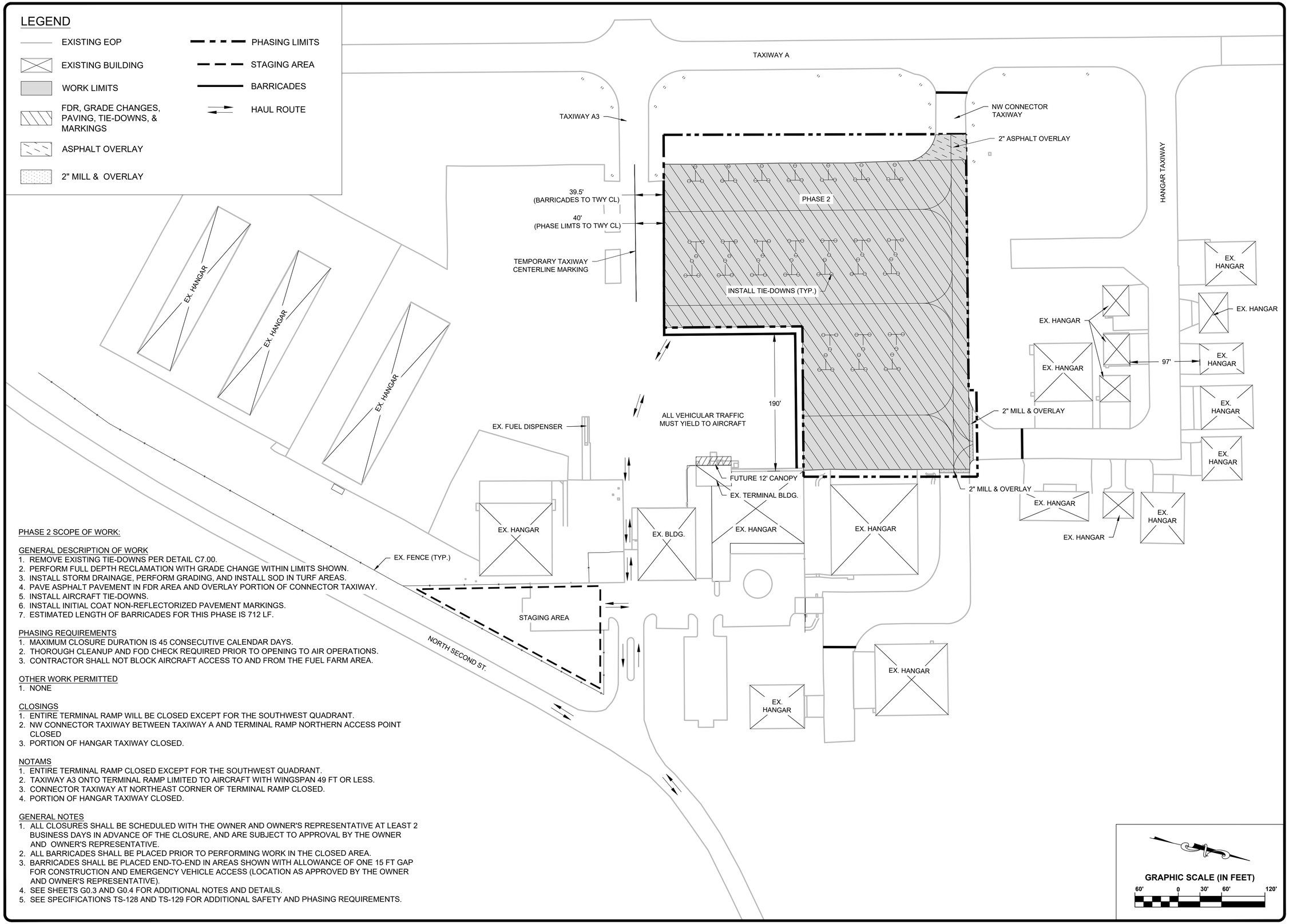
SHEET TITLE:
PHASING PLAN - PHASES 0 & 1

DWG. FILE NAME

DATE: NOV. 2024
SCALE: 1" = 60'
SHEET NO.: C1.00

LEGEND

- EXISTING EOP
- EXISTING BUILDING
- WORK LIMITS
- FDR, GRADE CHANGES, PAVING, TIE-DOWNS, & MARKINGS
- ASPHALT OVERLAY
- 2" MILL & OVERLAY
- PHASING LIMITS
- STAGING AREA
- BARRICADES
- HAUL ROUTE



PHASE 2 SCOPE OF WORK:

GENERAL DESCRIPTION OF WORK
1. REMOVE EXISTING TIE-DOWNS PER DETAIL C7.00.
2. PERFORM FULL DEPTH RECLAMATION WITH GRADE CHANGE WITHIN LIMITS SHOWN.
3. INSTALL STORM DRAINAGE, PERFORM GRADING, AND INSTALL SOD IN TURF AREAS.
4. PAVE ASPHALT PAVEMENT IN FDR AREA AND OVERLAY PORTION OF CONNECTOR TAXIWAY.
5. INSTALL AIRCRAFT TIE-DOWNS.
6. INSTALL INITIAL COAT NON-REFLECTORIZED PAVEMENT MARKINGS.
7. ESTIMATED LENGTH OF BARRICADES FOR THIS PHASE IS 712 LF.

PHASING REQUIREMENTS
1. MAXIMUM CLOSURE DURATION IS 45 CONSECUTIVE CALENDAR DAYS.
2. THOROUGH CLEANUP AND FOD CHECK REQUIRED PRIOR TO OPENING TO AIR OPERATIONS.
3. CONTRACTOR SHALL NOT BLOCK AIRCRAFT ACCESS TO AND FROM THE FUEL FARM AREA.

OTHER WORK PERMITTED
1. NONE

CLOSINGS
1. ENTIRE TERMINAL RAMP WILL BE CLOSED EXCEPT FOR THE SOUTHWEST QUADRANT.
2. NW CONNECTOR TAXIWAY BETWEEN TAXIWAY A AND TERMINAL RAMP NORTHERN ACCESS POINT CLOSED
3. PORTION OF HANGAR TAXIWAY CLOSED.

NOTAMS
1. ENTIRE TERMINAL RAMP CLOSED EXCEPT FOR THE SOUTHWEST QUADRANT.
2. TAXIWAY A3 ONTO TERMINAL RAMP LIMITED TO AIRCRAFT WITH WINGSPAN 49 FT OR LESS.
3. CONNECTOR TAXIWAY AT NORTHEAST CORNER OF TERMINAL RAMP CLOSED.
4. PORTION OF HANGAR TAXIWAY CLOSED.

GENERAL NOTES
1. ALL CLOSURES SHALL BE SCHEDULED WITH THE OWNER AND OWNER'S REPRESENTATIVE AT LEAST 2 BUSINESS DAYS IN ADVANCE OF THE CLOSURE, AND ARE SUBJECT TO APPROVAL BY THE OWNER AND OWNER'S REPRESENTATIVE.
2. ALL BARRICADES SHALL BE PLACED PRIOR TO PERFORMING WORK IN THE CLOSED AREA.
3. BARRICADES SHALL BE PLACED END-TO-END IN AREAS SHOWN WITH ALLOWANCE OF ONE 15 FT GAP FOR CONSTRUCTION AND EMERGENCY VEHICLE ACCESS (LOCATION AS APPROVED BY THE OWNER AND OWNER'S REPRESENTATIVE).
4. SEE SHEETS G0.3 AND G0.4 FOR ADDITIONAL NOTES AND DETAILS.
5. SEE SPECIFICATIONS TS-128 AND TS-129 FOR ADDITIONAL SAFETY AND PHASING REQUIREMENTS.

GRAPHIC SCALE (IN FEET)
60' 0 30' 60' 120'

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REVISIONS

MARK	DATE	DESCRIPTION

MSCAA PROJ. NO. 20-1440-00

PROJECT:
DEWITT SPAIN AIRPORT APRON REHABILITATION

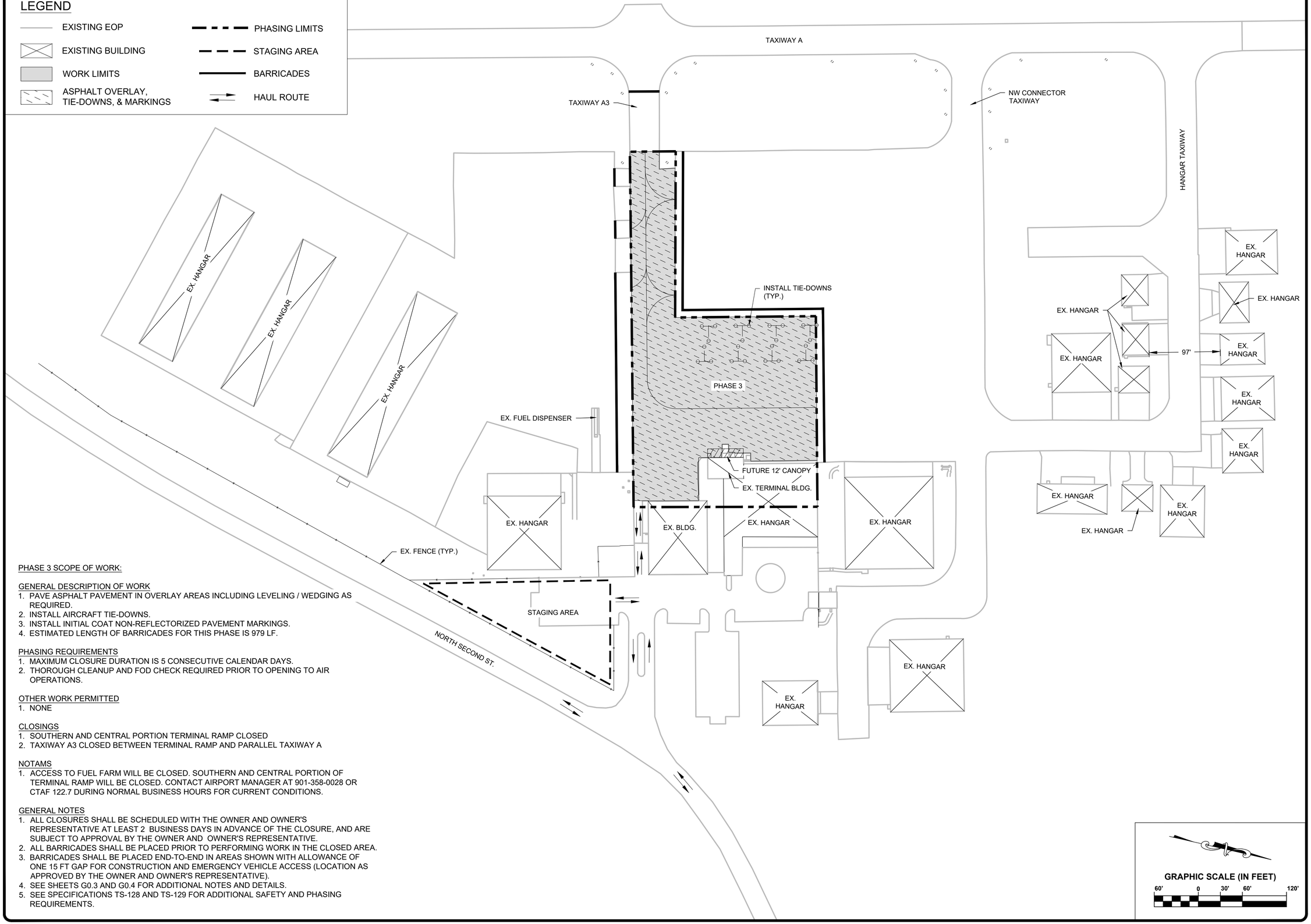
SHEET TITLE:
PHASING PLAN - PHASE 2

DWG. FILE NAME

DATE: NOV. 2024
SCALE: 1" = 60'
SHEET NO. C1.01

LEGEND

- EXISTING EOP
- EXISTING BUILDING
- WORK LIMITS
- ASPHALT OVERLAY, TIE-DOWNS, & MARKINGS
- PHASING LIMITS
- STAGING AREA
- BARRICADES
- HAUL ROUTE



PHASE 3 SCOPE OF WORK:

GENERAL DESCRIPTION OF WORK
1. PAVE ASPHALT PAVEMENT IN OVERLAY AREAS INCLUDING LEVELING / WEDGING AS REQUIRED.
2. INSTALL AIRCRAFT TIE-DOWNS.
3. INSTALL INITIAL COAT NON-REFLECTORIZED PAVEMENT MARKINGS.
4. ESTIMATED LENGTH OF BARRICADES FOR THIS PHASE IS 979 LF.

PHASING REQUIREMENTS
1. MAXIMUM CLOSURE DURATION IS 5 CONSECUTIVE CALENDAR DAYS.
2. THOROUGH CLEANUP AND FOD CHECK REQUIRED PRIOR TO OPENING TO AIR OPERATIONS.

OTHER WORK PERMITTED
1. NONE

CLOSINGS
1. SOUTHERN AND CENTRAL PORTION TERMINAL RAMP CLOSED
2. TAXIWAY A3 CLOSED BETWEEN TERMINAL RAMP AND PARALLEL TAXIWAY A

NOTAMS
1. ACCESS TO FUEL FARM WILL BE CLOSED. SOUTHERN AND CENTRAL PORTION OF TERMINAL RAMP WILL BE CLOSED. CONTACT AIRPORT MANAGER AT 901-358-0028 OR CTAF 122.7 DURING NORMAL BUSINESS HOURS FOR CURRENT CONDITIONS.

GENERAL NOTES
1. ALL CLOSURES SHALL BE SCHEDULED WITH THE OWNER AND OWNER'S REPRESENTATIVE AT LEAST 2 BUSINESS DAYS IN ADVANCE OF THE CLOSURE, AND ARE SUBJECT TO APPROVAL BY THE OWNER AND OWNER'S REPRESENTATIVE.
2. ALL BARRICADES SHALL BE PLACED PRIOR TO PERFORMING WORK IN THE CLOSED AREA.
3. BARRICADES SHALL BE PLACED END-TO-END IN AREAS SHOWN WITH ALLOWANCE OF ONE 15 FT GAP FOR CONSTRUCTION AND EMERGENCY VEHICLE ACCESS (LOCATION AS APPROVED BY THE OWNER AND OWNER'S REPRESENTATIVE).
4. SEE SHEETS G0.3 AND G0.4 FOR ADDITIONAL NOTES AND DETAILS.
5. SEE SPECIFICATIONS TS-128 AND TS-129 FOR ADDITIONAL SAFETY AND PHASING REQUIREMENTS.

GRAPHIC SCALE (IN FEET)

60' 0 30' 60' 120'

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MARK	DATE	DESCRIPTION

MSCAA PROJ. NO. 20-1440-00

PROJECT:
DEWITT SPAIN AIRPORT APRON REHABILITATION

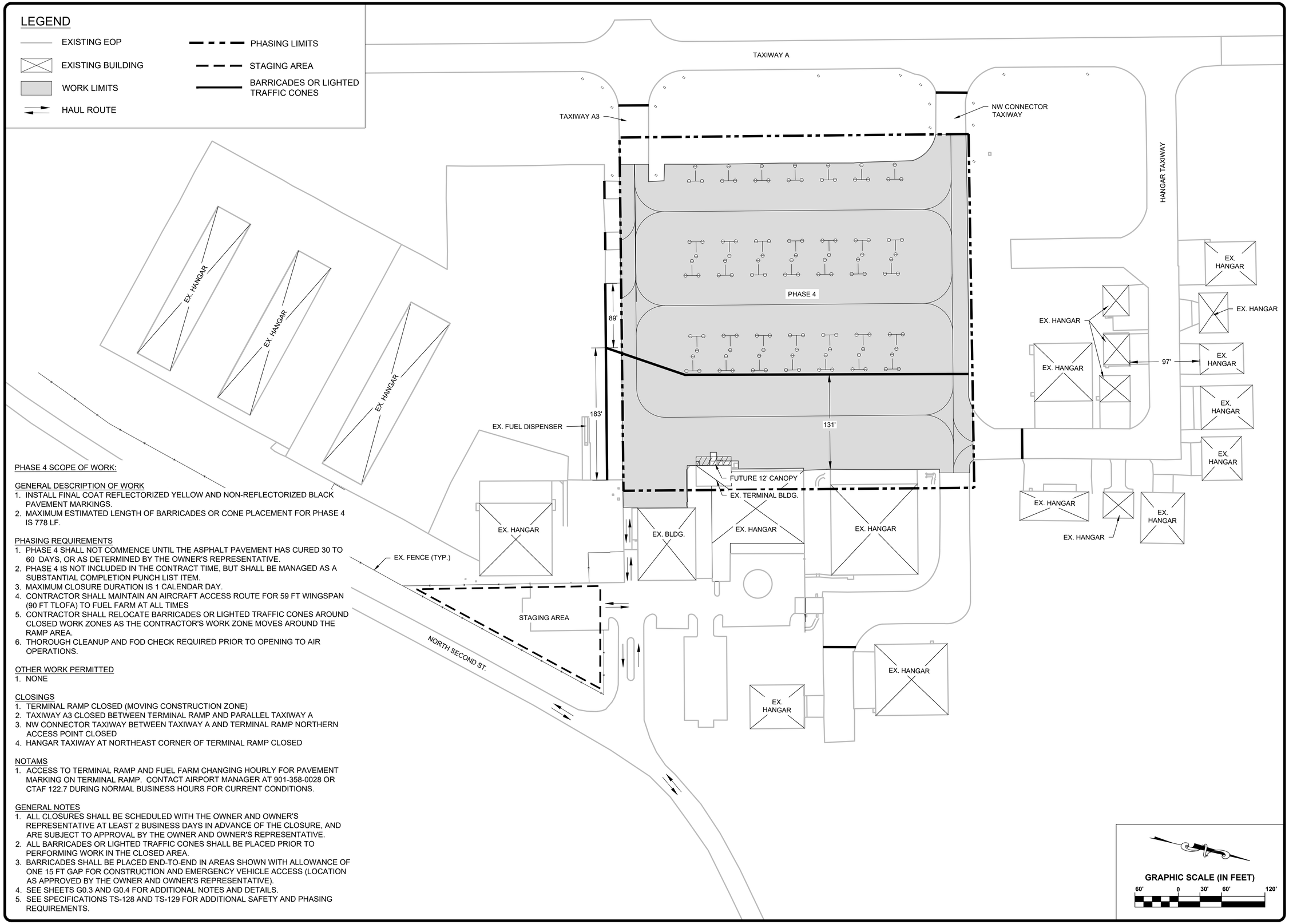
SHEET TITLE:
PHASING PLAN - PHASE 3

DWG. FILE NAME

DATE NOV. 2024
SCALE 1" = 60'
SHEET NO. C1.02

LEGEND

- EXISTING EOP
- EXISTING BUILDING
- WORK LIMITS
- HAUL ROUTE
- PHASING LIMITS
- STAGING AREA
- BARRICADES OR LIGHTED TRAFFIC CONES



PHASE 4 SCOPE OF WORK:

GENERAL DESCRIPTION OF WORK
1. INSTALL FINAL COAT REFLECTORIZED YELLOW AND NON-REFLECTORIZED BLACK PAVEMENT MARKINGS.
2. MAXIMUM ESTIMATED LENGTH OF BARRICADES OR CONE PLACEMENT FOR PHASE 4 IS 778 LF.

PHASING REQUIREMENTS
1. PHASE 4 SHALL NOT COMMENCE UNTIL THE ASPHALT PAVEMENT HAS CURED 30 TO 60 DAYS, OR AS DETERMINED BY THE OWNER'S REPRESENTATIVE.
2. PHASE 4 IS NOT INCLUDED IN THE CONTRACT TIME, BUT SHALL BE MANAGED AS A SUBSTANTIAL COMPLETION PUNCH LIST ITEM.
3. MAXIMUM CLOSURE DURATION IS 1 CALENDAR DAY.
4. CONTRACTOR SHALL MAINTAIN AN AIRCRAFT ACCESS ROUTE FOR 59 FT WINGSPAN (90 FT TLOFA) TO FUEL FARM AT ALL TIMES
5. CONTRACTOR SHALL RELOCATE BARRICADES OR LIGHTED TRAFFIC CONES AROUND CLOSED WORK ZONES AS THE CONTRACTOR'S WORK ZONE MOVES AROUND THE RAMP AREA.
6. THOROUGH CLEANUP AND FOD CHECK REQUIRED PRIOR TO OPENING TO AIR OPERATIONS.

OTHER WORK PERMITTED
1. NONE

CLOSINGS
1. TERMINAL RAMP CLOSED (MOVING CONSTRUCTION ZONE)
2. TAXIWAY A3 CLOSED BETWEEN TERMINAL RAMP AND PARALLEL TAXIWAY A
3. NW CONNECTOR TAXIWAY BETWEEN TAXIWAY A AND TERMINAL RAMP NORTHERN ACCESS POINT CLOSED
4. HANGAR TAXIWAY AT NORTHEAST CORNER OF TERMINAL RAMP CLOSED

NOTAMS
1. ACCESS TO TERMINAL RAMP AND FUEL FARM CHANGING HOURLY FOR PAVEMENT MARKING ON TERMINAL RAMP. CONTACT AIRPORT MANAGER AT 901-358-0028 OR CTAF 122.7 DURING NORMAL BUSINESS HOURS FOR CURRENT CONDITIONS.

GENERAL NOTES
1. ALL CLOSURES SHALL BE SCHEDULED WITH THE OWNER AND OWNER'S REPRESENTATIVE AT LEAST 2 BUSINESS DAYS IN ADVANCE OF THE CLOSURE, AND ARE SUBJECT TO APPROVAL BY THE OWNER AND OWNER'S REPRESENTATIVE.
2. ALL BARRICADES OR LIGHTED TRAFFIC CONES SHALL BE PLACED PRIOR TO PERFORMING WORK IN THE CLOSED AREA.
3. BARRICADES SHALL BE PLACED END-TO-END IN AREAS SHOWN WITH ALLOWANCE OF ONE 15 FT GAP FOR CONSTRUCTION AND EMERGENCY VEHICLE ACCESS (LOCATION AS APPROVED BY THE OWNER AND OWNER'S REPRESENTATIVE).
4. SEE SHEETS G0.3 AND G0.4 FOR ADDITIONAL NOTES AND DETAILS.
5. SEE SPECIFICATIONS TS-128 AND TS-129 FOR ADDITIONAL SAFETY AND PHASING REQUIREMENTS.

GRAPHIC SCALE (IN FEET)
60' 0 30' 60' 120'

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REVISIONS

MARK	DATE	DESCRIPTION

MSCAA PROJ. NO. 20-1440-00

PROJECT:
DEWITT SPAIN AIRPORT APRON REHABILITATION

SHEET TITLE:
PHASING PLAN - PHASE 4

DWG. FILE NAME

DATE: NOV. 2024
SCALE: 1" = 60'
SHEET NO. C1.03

LEGEND

- EXISTING EOP
- EXISTING BUILDING
- WORK LIMITS
- FULL DEPTH RECLAMATION
- MILL & OVERLAY
- HAUL ROUTE
- STAGING AREA

GRAPHIC SCALE (IN FEET)
50' 0 25' 50' 100'

TAXIWAY A

EX. TAXIWAY LIGHT (TYP.)

TRANSITIONAL MILL & OVERLAY

TRANSITIONAL MILL & OVERLAY

0+00 1+00 2+00 3+00 4+00 5+00 6+00 6+50

STA 0+00
N: 340880.71
E: 757974.37

STA 10+50
N: 341518.66
E: 757849.79

FULL DEPTH RECLAMATION WITH GRADE CHANGE

MILL & OVERLAY

EX. HANGAR

EX. HANGAR

EX. HANGAR

EX. FUEL DISPENSER

EX. HANGARS

EX. HANGAR

FUTURE 12' CANOPY

EX. TERMINAL BLDG.

TRANSITIONAL MILL & OVERLAY

EX. HANGAR

EX. HANGAR

EX. HANGARS

EX. HANGAR

EX. BLDG.

EX. HANGAR

EX. FENCE (TYP.)

STAGING AREA

NORTH SECOND ST.

EX. HANGAR

EX. HANGAR

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REVISIONS

MARK	DATE	DESCRIPTION

MSCAA PROJ. NO. **20-1440-00**

PROJECT:
DEWITT SPAIN AIRPORT APRON REHABILITATION

SHEET TITLE:
OVERALL SITE PLAN

DWG. FILE NAME

DATE: NOV. 2024
SCALE: 1" = 50'
SHEET NO.: C3.00

LEGEND

- EXISTING EOP
- EXISTING BUILDING
- TYPICAL SECTION 1: P-101 2" MILL & P-401 2" OVERLAY
- TYPICAL SECTION 2: P-101 2" MILL & P-401 2" OVERLAY WITH LEVELING (0" - 3.1" THICKNESS)
- TYPICAL SECTION 3: P-207 FDR (REMOVE EXCESS MATERIAL AS REQUIRED TO MEET GRADES), P-401 2 - 2" LIFTS ASPHALT
- TYPICAL SECTION 4: P-207 FDR, P-208 BASE COURSE FOR GRADE CHANGE (UP TO 1.28' FILL), P-401 2 - 2" LIFTS ASPHALT

GRAPHIC SCALE (IN FEET)
30' 0 15' 30' 60'

EX. TAXIWAY LIGHT (TYP.)

TRANSITIONAL MILL & OVERLAY

STA:5+42.80
OFF:2.24'R

STA:1+45.96
OFF:27.33'R

0+00 1+00 2+00 3+00 4+00 5+00 6+00 6+50

STA 0+00
N: 340880.71
E: 757974.37

STA 10+50
N: 341518.66
E: 757849.79

EX. ELECTRICAL MANHOLE

TRANSITIONAL MILL & OVERLAY

NOTES:

1. OWNER'S REPRESENTATIVES MAY ADJUST TYPICAL SECTION LIMITS AS NEEDED TO BETTER FIT FIELD CONDITIONS.
2. STOCKPILED ASPHALT MILLINGS SHALL BE UNIFORMLY INCORPORATED INTO THE P-207 FDR BASE COURSE.
3. ANY EXCESS P-207 FDR BASE COURSE MATERIAL CUT TO FACILITATE THE 4" ASPHALT PAVING SHALL BE PLACED AND COMPACTED IN AREAS WHERE P-208 BASE COURSE MUST BE IMPORTED (I.E., NO MATERIAL TO BE HAULED OFFSITE).

FULL DEPTH RECLAMATION WITH GRADE CHANGE

EX. ELECTRICAL MANHOLE

EX. AREA INLETS

MILL & OVERLAY

EX. SEWER MH

EX. FUEL DISPENSER

EX. ELECTRICAL MANHOLE

EX. TERMINAL BLDG.

EX. ELECTRIC

FUTURE 12' CANOPY

EX. HANGAR

TRANSITIONAL MILL & OVERLAY

EX. HANGAR

EX. HANGAR

EX. HANGAR

EX. BLDG.

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JOB NO. 057-17-001

DRAWN BY: TCC
CHECKED BY: AM
APPROVED BY: TCH

AARON O. MCNEAL REGISTERED ENGINEER AGRICULTURAL COMMERCE & INDUSTRY No. 120063 STATE OF TENNESSEE

CONSULTANT
NEEL-SCHAFFER
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JOB NO. 14169.002

REVISIONS

MARK	DATE	DESCRIPTION

MSCAA PROJ. NO. 20-1440-00

PROJECT:
DEWITT SPAIN AIRPORT APRON REHABILITATION

SHEET TITLE:
PAVING PLAN

DWG. FILE NAME

DATE: NOV. 2024
SCALE: 1" = 30'
SHEET NO. C4.01

LEGEND

- EXISTING EOP
- EXISTING BUILDING
- WORK LIMITS
- EXISTING CONTOUR
- PROPOSED CONTOUR
- SF SF SILT FENCE
- LIMITS OF DISTURBANCE
- MAJOR GRADE CHANGE LIMITS

GRAPHIC SCALE (IN FEET)
40' 0 20' 40' 80'

NOTES:

1. SILT FENCE TO BE IN PLACE PRIOR TO SOIL DISTURBANCE.
2. ALL DISTURBED AREAS ARE TO RECEIVE GRASS SODDING.
3. GRASS SODDING IS TO BE INSTALLED AND SILT FENCE REMOVED PRIOR TO OPENING TRAFFIC.

TAXIWAY A

EX. AREA INLET
TOP=219.39
FL=215.54

2'X4' GRATE INLET
TOP=221.40
30" RCP INV (E)=217.11
30" RCP INV (W)=217.07

CONTRACTOR TO GRADE AND FILL AREA AS NECESSARY TO MEET FINAL GRADE. GRADING SHALL MEET REQUIREMENTS FOR TYPICAL SECTION ON C4.02.

CONVERT EXISTING INLET TO AT GRADE JUNCTION BOX
TOP ELEV=222.55

EX. TAXIWAY LIGHT (TYP.)

PHASE 1 SILT FENCE AROUND STOCKPILED MILLINGS. SILT FENCE TO BE REMOVED AFTER STOCKPILE IS REMOVED.

EX. 30" RCP

LIMITS OF DISTURBANCE

NO SILT FENCE WITHIN 20 FT. OF TAXIWAY EDGE OF PAVEMENT

EX. 30" RCP

EX. AREA INLET
TOP=220.87
FL=217.69

EX. 18" RCP
FL=221.97

EX. 18" RCP

0+00 1+00 2+00 3+00 4+00 5+00 6+00 6+50

STA 0+00
N: 340880.71
E: 757974.37

INLET PROTECTION

STA 10+50
N: 341518.66
E: 757849.79

EX. ELECTRICAL MANHOLE
TOP=224.58

SILT FENCE

EX. 15" RCP

EX. ELECTRICAL MANHOLE
TOP=227.03

EX. AREA INLET
TOP=224.28
FL=219.51

EX. 15" RCP

EX. AREA INLET
TOP=223.57
FL=219.44

EX. HANGAR
FFE=225.00

PROVIDE A 1.5" PAVEMENT EDGE DROP TO TOP OF SOD ALONG APRON EDGE. SEE TYPICAL EDGE OF PAVEMENT DETAIL ON SHEET C4.02.

EX. HANGARS

EX. HANGAR
FFE=227.70

MAJOR GRADE CHANGE LIMITS (TYP.)

EX. SMH
TOP=227.07
FL=224.24

EX. FUEL TANKS

SILT FENCE SHALL NOT ENCROACH ON TAXIWAY OBJECT FREE AREA. BEGIN SILT FENCE AT:
N:341518.79
E:758194.80

EX. AREA INLET
TOP=223.42
FL=220.23

EX. SEWER LINE (TYP.)

EX. ELECTRICAL MANHOLE
TOP=226.81

(2) EX. 21" RCP

EX. SMH
TOP=226.10
FL=223.10

EX. ELECTRIC

EX. WATER METER

EX. TERMINAL BLDG.
FFE=228.60

EX. ELECTRIC BOX

(2) EX. 15" PVC

(2) EX. 12" RCP

EX. HANGAR
FFE=226.90

EX. BLDG.
FFE=228.00

EX. HANGAR
FFE=227.60

EX. HANGAR
FFE=226.80

EX. HANGAR
FFE=227.90

EX. HANGARS

EX. SMH
TOP=227.08
FL=222.37

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057-17-001

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CHECKED BY: AM
APPROVED BY: TCH

AARON O. MCNEAL
REGISTERED ENGINEER
No. 120063
STATE OF TENNESSEE
12/24/2024

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JOB NO.
14169.002

REVISIONS

MARK	DATE	DESCRIPTION

MSCAA PROJ. NO.
20-1440-00

PROJECT:
DEWITT SPAIN AIRPORT APRON REHABILITATION

SHEET TITLE:
GRADING, DRAINAGE, & EROSION CONTROL PLAN

DWG. FILE NAME

DATE: NOV. 2024
SCALE: 1" = 40'
SHEET NO.: C5.00

LEGEND

- EXISTING EOP
- EXISTING BUILDING
- WORK LIMITS

NOTES:

1. SEE SHEET C7.00 FOR MARKING AND TIE-DOWN DETAILS.
2. 6" WIDE NON-REFLECTORIZED BLACK OUTLINE REQUIRED ON BOTH SIDES OF ALL YELLOW PAVEMENT MARKINGS.

GRAPHIC SCALE (IN FEET)
30' 0 15' 30' 60'

TIE-DOWN LOCATIONS		
POINT	NORTHING	EASTING
1	341063.19	757967.41
2	341068.20	757946.06
3	341080.86	757963.96
4	341108.34	757958.60
5	341113.34	757937.24
6	341126.01	757955.15
7	341153.49	757949.79
8	341158.49	757928.43
9	341171.16	757946.34
10	341198.64	757940.97
11	341203.64	757919.62
12	341216.30	757937.53
13	341243.79	757932.16
14	341248.79	757910.81
15	341261.45	757928.71
16	341288.93	757923.35
17	341293.94	757902.00
18	341306.60	757919.90
19	341334.08	757914.54
20	341339.08	757893.18
21	341351.75	757911.09
22	341079.29	758049.86
23	341091.95	758067.76
24	341096.95	758046.41
25	341124.43	758041.04
26	341137.10	758058.95
27	341142.10	758037.59
28	341169.58	758032.23
29	341182.25	758050.14
30	341187.25	758028.78
31	341214.73	758023.42
32	341227.39	758041.32
33	341232.40	758019.97
34	341259.88	758014.61
35	341272.54	758032.51
36	341277.54	758011.16
37	341305.03	758005.79
38	341317.69	758023.70
39	341322.69	758002.35
40	341350.17	757996.98
41	341362.84	758014.89
42	341367.84	757993.53
43	341082.35	758096.78
44	341087.35	758075.42
45	341100.02	758093.33
46	341127.50	758087.97
47	341132.50	758066.61
48	341145.16	758084.52
49	341172.64	758079.15
50	341177.65	758057.80

TIE-DOWN LOCATIONS		
POINT	NORTHING	EASTING
51	341190.31	758075.71
52	341217.79	758070.34
53	341222.79	758048.99
54	341235.46	758066.89
55	341262.94	758061.53
56	341267.94	758040.18
57	341280.61	758058.08
58	341308.09	758052.72
59	341313.09	758031.36
60	341325.76	758049.27
61	341353.24	758043.91
62	341358.24	758022.55
63	341370.90	758040.46
64	341104.31	758178.08
65	341116.98	758195.98
66	341121.98	758174.63
67	341149.41	758169.02
68	341162.08	758186.93
69	341167.08	758165.57
70	341194.61	758160.45
71	341207.27	758178.36
72	341212.27	758157.00
73	341239.76	758151.64
74	341252.42	758169.55
75	341257.42	758148.19
76	341284.90	758142.83
77	341297.57	758160.73
78	341302.57	758139.38
79	341330.05	758134.02
80	341342.72	758151.92
81	341347.72	758130.57
82	341375.20	758125.20
83	341387.86	758143.11
84	341392.87	758121.76
85	341107.64	758226.33
86	341112.64	758204.98
87	341125.30	758222.89
88	341152.78	758217.52
89	341157.79	758196.17
90	341170.45	758214.07
91	341197.93	758208.71
92	341202.93	758187.36
93	341215.60	758205.26
94	341243.08	758199.90
95	341248.08	758178.54
96	341260.75	758196.45
97	341288.23	758191.09
98	341293.23	758169.73
99	341305.89	758187.64
100	341333.38	758182.27

TIE-DOWN LOCATIONS		
POINT	NORTHING	EASTING
101	341338.38	758160.92
102	341351.04	758178.82
103	341378.52	758173.46
104	341383.53	758152.11
105	341396.19	758170.01

STA 0+00
N: 340880.71
E: 757974.37

STA 10+50
N: 341518.66
E: 757849.79

EX. TAXIWAY CENTERLINE

STA:1+05.31
OFF:4.31'R

STA:1+05.32
OFF:30.20'R

L=62.26'
R=40.00'

STA:1+44.79
OFF:70.14'R

6" YELLOW CENTERLINE STRIPE (TYP.)

STA:0+84.50
OFF:109.48'R

L=62.17'
R=40.00'

L=37.30'
R=30.00'

STA:1+05.42
OFF:110.11'R

STA:1+05.37
OFF:160.19'R

L=38.12'
R=30.00'

L=62.60'
R=40.00'

STA:0+85.00
OFF:189.40'R

STA:1+45.18
OFF:200.14'R

STA:1+05.43
OFF:240.12'R

L=62.56'
R=40.00'

TIE-DOWN (TYP.)

STA:1+05.43
OFF:314.63'R

L=62.93'
R=40.00'

STA:1+45.37
OFF:354.78'R

FUTURE 12' CANOPY

EX. TERMINAL BLDG.

EX. HANGAR

EX. BLDG.

EX. HANGAR

EX. HANGAR

EX. HANGAR

EX. TAXIWAY CENTERLINE

STA:5+43.46
OFF:33.22'L

STA:5+43.41
OFF:30.13'R

L=62.29'
R=40.00'

STA:5+03.99
OFF:70.17'R

L=58.65'
R=40.00'

STA:5+43.41
OFF:106.40'R

STA:5+43.41
OFF:160.13'R

L=62.50'
R=40.00'

STA:5+03.79
OFF:200.17'R

L=59.00'
R=40.00'

STA:5+43.41
OFF:236.56'R

STA:5+43.41
OFF:314.61'R

L=62.67'
R=40.00'

STA:5+43.29
OFF:359.60'R

STA:5+03.78
OFF:354.81'R

L=44.81'
R=40.00'

L=62.81'
R=40.00'

STA:5+70.22
OFF:392.48'R

STA:5+43.17
OFF:395.40'R

STA:5+70.25
OFF:396.25'R

L=43.92'
R=40.00'

STA:5+43.07
OFF:427.94'R

STA:5+43.05
OFF:435.24'R

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APPROVED BY: TCH

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AGRICULTURE
COMMERCE & WATER
No. 120063
STATE OF TENNESSEE

CONSULTANT
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JOB NO. 14169.002

REVISIONS

MARK	DATE	DESCRIPTION

MSCAA PROJ. NO. **20-1440-00**

PROJECT:
DEWITT SPAIN AIRPORT APRON REHABILITATION

SHEET TITLE:
PAVEMENT MARKING & TIE-DOWN PLAN

DWG. FILE NAME

DATE: NOV. 2024
SCALE: 1" = 30'
SHEET NO.: **C6.00**

Appendix G – Opinion of Probable Cost

Alternative 2 (Apron North of TWY A3) *Partial Reconstruction / Partial 2" Mill and Overlay* *November 2024*				Engineer's Estimate	
ITEM NO.	**DESCRIPTION**	**UNIT**	**QUANTITY**	**UNIT PRICE**	**TOTAL PRICE**
General Items					
C-105-1	Mobilization	LS	1	$227,100.00	$227,100.00
C-100-1	Contractor Quality Control Program (CQCP)	LS	1	$68,200.00	$68,200.00
C-102-5.1	Installation and Removal of Silt Fence	LF	360	$6.50	$2,340.00
C-102-5.2	Inlet Protection	EA	2	$500.00	$1,000.00
C-102-5.3	Temporary Construction Entrance	EA	2	$10,000.00	$20,000.00
P-101-5.4a	Tie-Down Abandonment	EA	25	$350.00	$8,750.00
P-101-5.4b	Tie-Down Removal	EA	138	$500.00	$69,000.00
P-101-5.5	Tie-Down Replacement	EA	117	$1,500.00	$175,500.00
P-101-5.6	Pipe Removal	LS	1	$1,000.00	$1,000.00
P-152-4.1	Grading Turf Area (Import Borrow As-Needed)	SY	3,860	$2.00	$7,720.00
P-620-5.1	Initial Coat: Yellow Paint, Non-Reflectorized, Application Rate = 230 sf/gal	SF	3,400	$2.00	$6,800.00
P-620-5.2	Final Coat: Yellow Paint, Reflectorized, Application Rate = 115 sf/gal	SF	3,400	$1.00	$3,400.00
P-620-5.3	Final Coat: Black Paint, Non-Reflectorized, Application Rate = 115 sf/gal	SF	6,800	$1.00	$6,800.00
D-751-5.1	Inlet	EA	1	$8,000.00	$8,000.00
D-751-5.2	Convert Inlet to At-Grade Junction Box	EA	1	$5,000.00	$5,000.00
D-751-5.3	Concrete Collar	EA	2	$1,500.00	$3,000.00
T-904-5.1	Sodding	SY	3,860	$8.00	$30,880.00
T-905-5.1	Topsoil	CY	430	$25.00	$10,750.00
TS-129-5.1	Implementation of Construction Safety Plan and Maintenance of Traffic	LS	1	$68,200.00	$68,200.00
				Subtotal:	**$723,440.00**
2" Mill & Overlay Area Items					
P-101-5.1	Asphalt Milling (2" Depth)	SY	7,639	$10.00	$76,390.00
P-101-5.2	Joint and Crack Repair after Milling	LF	2,000	$2.00	$4,000.00
P-401-8.1	Asphalt Surface Course Overlay (2" & Variable Thickness)	TON	1,040	$227.00	$236,080.00
P-401-8.2	Asphalt Leveling Course	TON	50	$227.00	$11,350.00
P-603-5.1	Emulsified Asphalt Tack Coat	GAL	1,020	$11.00	$11,220.00
P-101-5.3	Full Depth Pavement Removal (Point Repair When Approved By Owner's Representative)	SY	160	$18.00	$2,880.00
P-152-4.2	Undercut and Related Backfill (When Approved By Owner's Representative)	CY	160	$40.00	$6,400.00
P-152-4.3	Geotextile Fabric for Undercut Areas (When Approved By Owner's Representative)	SY	160	$5.00	$800.00
P-208-5.1	Crushed Aggregate Base Course (7" Thickness) (Point Repair When Approved By Owner's Representative)	SY	160	$20.00	$3,200.00
P-401-8.3	Asphalt for Point Repairs (4" Thickness) (Point Repair When Approved By Owner's Representative)	TON	40	$227.00	$9,080.00
				Subtotal:	**$361,400.00**
Full Depth Reclamation Area Items					
P-152-4.2	Undercut and Related Backfill (When Approved By Owner's Representative)	CY	790	$40.00	$31,600.00
P-152-4.3	Geotextile Fabric for Undercut Areas (When Approved By Owner's Representative)	SY	790	$5.00	$3,950.00
P-207-5.1	In-place Full Depth Recycled (FDR) Asphalt Aggregate Base Course (Mechanically Stabilized)	SY	15,800	$30.00	$474,000.00
P-208-5.2	Crushed Aggregate Base Course (Variable Thickness for Grade Correction)	CY	850	$105.00	$89,250.00

ITEM NO.	DESCRIPTION	UNIT	QUANTITY	UNIT PRICE	TOTAL PRICE
P-401-8.4	Asphalt Surface Course (4" Thickness, 2 - 2” Lifts)	TON	3,920	$227.00	$889,840.00
P-602-5.1	Emulsified Asphalt Prime Coat (When Approved By Owner's Representative)	GAL	3,920	$11.00	$43,120.00
P-603-5.1	Emulsified Asphalt Tack Coat	GAL	1,570	$11.00	$17,270.00
				Subtotal:	**$1,549,030.00**
			Total	**$2,634,000**	

	Engineer's Estimate
CONSTRUCTION TOTAL	$2,634,000
BIDDING, CA, & RPR BY AIRPORT PM (20%)	$527,000
CONTINGENCY (10%)	$264,000
ESTIMATED PROJECT COST	$3,430,000

APPENDIX C

GEOTECHNICAL EXPLORATION
DEWITT SPAIN AIRPORT APRON REHABILITATION
MEMPHIS, TENNESSEE

Prepared for:

POWERS HILL DESIGN, LLC
MEMPHIS, TENNESSEE

Prepared by:

GEOTECHNOLOGY, INC.
MEMPHIS, TENNESSEE

Date:

JULY 26, 2021

Geotechnology Project No.:

J038313.01

SAFETY
QUALITY
INTEGRITY
PARTNERSHIP
OPPORTUNITY
RESPONSIVENESS

GEOTECHNOLOGY INC
FROM THE GROUND UP

July 26, 2021

Ms. Nisha Powers, P.E.
Powers Hill Design, LLC
80 Monroe Avenue, Suite 420
Memphis, Tennessee 38103

Re: Geotechnical Exploration
DeWitt Spain Airport Apron Rehabilitation
Memphis, Tennessee
Geotechnology Project No. J038313.01

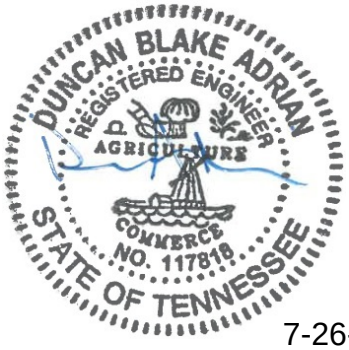
Dear Ms. Powers:

Presented in this report are the results of the geotechnical exploration performed by Geotechnology, Inc. for the proposed rehabilitation of the existing DeWitt Spain Airport Apron in Memphis, Tennessee. The report includes our understanding of the project, observed site conditions, conclusions and/or recommendations, and support data as listed in the Table of Contents.

We appreciate the opportunity to provide geotechnical services for this project. If you have any questions regarding this report, or if we can be of any additional service to you, please do not hesitate to contact us.

Respectfully submitted,

GEOTECHNOLOGY, INC.



Duncan Adrian, P.E.
Project Manager

7-26-21

JDM/DBA/ASE/DMS:dba

Copies submitted: Client (email)

TABLE OF CONTENTS

LIST OF TABLES

GEOTECHNICAL EXPLORATION
DEWITT SPAIN AIRPORT APRON REHABILITATION
MEMPHIS, TENNESSEE
July 26, 2021 | Geotechnology Project No. J038313.01

1.0 INTRODUCTION

Geotechnology, Inc. has prepared this geotechnical exploration report for Powers Hill Design, LLC (PHD) for the proposed rehabilitation to the existing DeWitt Spain Airport Apron located in Memphis, Tennessee. Our services documented in this report were provided in general accordance with the scope of services as discussed in our Proposal P038313.01, dated May 25, 2021. Our services were authorized by the signed acceptance of PHD's Professional Services Agreement on May 3, 2021.

The purposes of the geotechnical exploration were to develop a general subsurface profile at the site and prepare recommendations for the geotechnical aspects of the design and construction of the project as defined in our proposal. Our scope of services included site reconnaissance, geotechnical borings, laboratory testing, engineering analyses, and preparation of this report.

A copy of "Important Information about This Geotechnical-Engineering Report," published by the Geotechnical Business Council of the Geoprofessional Business Association, is included in Appendix A for your review. The publication discusses report limitations and ways to manage risk associated with subsurface conditions.

2.0 SITE DESCRIPTION

The General DeWitt Spain Airport is located at 2787 North Second Street in Memphis, Tennessee as shown on Figure 1 (Site Location and Topography) in Appendix B. The airport consists of runways, taxiways, aircraft hangars, administrative buildings, and an asphalt apron surrounding the administrative buildings and hangars. The site is bordered to the west by the Maynard C. Stiles Waste Water Treatment Plant and the Mississippi River, to the south and east by Whitney Avenue, and to the north by commercial development. The site is prone to flooding during Mississippi River high water events and was inundated during the 2011 Mississippi River flood.

3.0 PROJECT INFORMATION

The project consists of the rehabilitation of the asphalt apron at the airport. The existing apron shows signs of distress, including cracking and depressions; some of these distressed areas have been repaired by sealing or patching. A Pavement Condition Index (PCI) map prepared by Applied Pavement Technology in December 2018 and January 2019 was provided to Geotechnology, and the map was overlaid on the boring location plan as shown in Figure 3 in Appendix B. The name of each pavement section is displayed on Figure 3. The PCI number is shown in parenthesis at

the end of the section name. For example, TH02ME-002 (71) is the northmost pavement section and has a PCI of 71. Based on the provided PCI map, the majority of the apron has a PCI between 71 and 91 which indicates preventative maintenance, such as sealing cracks and patching, is typically recommended. However, the south portion of the apron, TH01ME-001 (50), has a PCI of 50 which indicates reconstruction may be required.

It is our understanding different options will be considered for pavement rehabilitation including mill and overlay, full depth reclamation (FDR), and removal and replacement. The project will be designed in accordance with the Federal Aviation Administration (FAA) Advisory Circular (AC) No. 150/5320-6G. Preliminary pavement designs using the FAA pavement design software, FAARFIELD[1], are required for the proposed pavement rehabilitation.

4.0 GEOTECHNICAL EXPLORATIONS

4.1 Geotechnical Exploration

The geotechnical exploration consisted of 24 borings, designated as Borings B-1 through -24, located in the existing asphalt-paved apron at the airport. The borings were located in the field by a Geotechnology representative. The boring locations shown on Figure 2 and Figure 3 in Appendix B are approximate; if elevations or more precise locations are required, the client should retain a registered surveyor to establish boring locations and elevations.

The borings were drilled May 14 through 19, 2021 using a truck-mounted rotary drill rig (CME 75) and a GeoProbe 7822DT advancing hollow-stem augers as indicated in the boring logs presented in Appendix C. Sampling of the soils was accomplished ahead of the augers at the depths indicated on the boring logs, using 2-inch-outside-diameter (O.D.) split-spoons and 3-inch-O.D., thin-walled Shelby tube samplers in general accordance with the procedures outlined by ASTM D1586 and ASTM D1587, respectively. Standard Penetration Tests (SPTs) were performed using an automatic hammer to obtain the standard penetration resistance, or N-value[2], of the sampled material. Dynamic Cone Penetration (DCP) was performed on the subgrade material directly beneath asphalt or base material (if present) in all borings. Bulk samples were also obtained from two borings.

A Geotechnology representative recorded the subsurface profile noting the soil types and stratifications, groundwater, SPT results, and other pertinent data. Observations for groundwater were made in the borings during drilling.

[1] *FAA Rigid and Flexible Iterative Elastic Layer Design* (FAARFIELD) *program,* version 2.0.0.e

[2] The standard penetration resistance, or N-value, is defined as the number of blows required to drive the split-spoon sampler 12 inches with a 140-pound hammer falling 30 inches. Since the split-spoon sampler is driven 18 inches or until refusal, the blows for the first 6 inches are for seating the sampler, and the number of blows for the final 12 inches is the N-value. Additionally, “refusal” of the split-spoon sampler occurs when the sampler is driven less than 6 inches with 50 blows of the hammer.

Representative portions of the split-spoon samples were placed in glass jars to preserve sample moisture. The Shelby tubes were capped and taped at their ends to preserve sample moisture and unit weight, and the tubes were transported and stored in an upright position. The glass jars, bulk samples, and Shelby tubes were marked and labeled in the field for identification, then returned to our laboratory in Memphis.

5.0 LABORATORY REVIEW AND TESTING

Laboratory testing was performed on soil samples to assess engineering and index properties. The soil testing consisted of moisture contents (ASTM D2216), Atterberg limits (ASTM D4318), grain size (sieve) distribution (ASTM D422), unconsolidated-undrained triaxial compression (UU; ASTM D2850), standard Proctor compaction (ASTM D698), California Bearing Ratio (CBR; ASTM D1883), and relative density (ASMT D4253 and ASTM D4254). Most of the laboratory test results are presented on the boring logs in Appendix C. The Atterberg limit, grain size, UU, Proctor, and relative density test results are also provided in Appendix D.

The boring logs were prepared by a geotechnical engineer from the field logs, visual classifications of the soil samples in the laboratory, and laboratory test results. Terms and symbols used on the boring logs are presented in the Boring Log: Terms and Symbols in Appendix C. Stratification lines on the boring logs indicate approximate changes in strata. The transition between strata could be abrupt or gradual.

6.0 EXISTING PAVEMENT STRUCTURE AND BASE

The existing pavement sections at the boring locations consisted of asphalt of varying thickness. Base material consisting of cement treated base was encountered below the asphalt in all borings except Borings B-3, -5, -7, and -8 in which coarse-grained material was encountered below the asphalt. Cores of the asphalt were recovered from Borings B-2, -5, -8, -10, -13, -15 through -18, -20, and -24; photographs of the recovered cores are included in Appendix E. A crack was observed in the asphalt core sample at Boring B-8 and appeared to extend about ½ inch into the core sample. Presented in Table 1 are measured thicknesses of the asphalt pavement and base material encountered in the borings. Additionally, we included the correlated CBR value from the dynamic cone penetration testing (DCP) performed on the subgrade material underlying the asphalt and base material. More information about the subgrade and DCP testing is presented in Section 7.0.

Table 1. Asphalt and Base Material Thicknesses.

Apron Section [a]	Location	Boring	Thickness (inches)		Subgrade
			Asphalt	Base Material	Correlated CBR Value from DCP
TH01ME-001(50)	South Side of Apron	B-1	3	9	>10
		B-2[b]	2 ¼	9 ¾	6
		B-3	2	0 [c]	>10
		B-4	2	10	>10
		B-5[b]	2	0[c]	>10
		B-6	2	10	>10
APME-001(76)	Central Portion of Apron	B-7	2 ½	0[c]	>10
		B-8[b]	7 ¼	0[c]	>10
		B-9	5	13	>10
		B-11	3	12	>10
		B-12	4 ½	12	>10
		B-14	7	5	>10
		B-15[b]	3 ¼	12 ¼	>10
		B-16[b]	5	10	>10
		B-17[b]	2 ½	15½	>10
		B-18[b]	2 ¼	9¾	>10
AMPE-002(91)	Newer Apron Section – East Side	B-10[b]	4	15	>10
CTME-006(81)	Connecting Taxiway	B-13[b]	7 ¼	4 ¾	>10
TH02ME-001(74)	East Drive Area	B-19	5 ½	9	6
		B-20[b]	5 ¾	13 ¼	>10
TH02ME-002(71)	North Drive Area	B-21	5	9	>10
		B-22	4	11	>10
		B-23	4 ½	8 ½	>10
		B-24[b]	4 ¾	13 ¼	>10

[a] As designated on Figure 3 in Appendix B – Pavement Condition Index (PCI) shown in parenthesis
[b] Asphalt core recovered at boring location.
[c] No base material encountered; coarse-grained soils encountered below asphalt.

7.0 SUBGRADE MATERIAL

Below the asphalt and base materials, the soil stratigraphy at the boring locations generally consisted of coarse-grained soils underlain by fine-grained soil to the maximum depth of exploration (10 feet). However, fine-grained soils were encountered under the pavement and base material in Borings B-2, B-19, B-20, B-21 and B-24. More specific descriptions of the soil layers are provided below and in the boring logs in Appendix C.

Interbedded fine- and coarse-grained soils classified as low plasticity “lean” clay (CL), high plasticity “fat” clay (CH), poorly graded sand (SP), and clayey sand (SC) were encountered below the asphalt pavement and base materials in the borings. Moisture contents of the tested fine-grained soils ranged from 15 to 42 percent. Atterberg limits performed on select fine-grained samples yielded liquid limits (LL) of 43 to 81 percent and plasticity indices (PI) of 22 to 51 percent. SPT N-values measured in the fine-grained soils ranged from 2 to 21 blows per foot, indicative of soft to very stiff consistencies. SPT N-values measured in the coarse-grained soils ranged from 1 to 32 bpf, indicative of very loose to dense consistencies

CBR Results. Composite bulk fine-grained soil samples of auger cuttings were collected from Boring B-21. Atterberg limits and standard Proctor compaction tests were performed on the composite sample collected from Boring B-21. California Bearing Ratio (CBR) tests were conducted on soaked samples remolded in standard CBR molds using compaction of 25 and 56 blows per layer. The test results are summarized in the following table.

Table 2. Summary of Compaction and CBR Test Results.

Boring No.	Depth (ft.)	USCS	Liquid Limit (%)	Plasticity Index (%)	Proctor Results		CBR Results				Percent Compaction (%)
					Maximum Dry Unit Weight (pcf)	Optimum Moisture Content (%)	Blows Per Layer	Dry Unit Weight (pcf)	Moisture Content (%)	CBR	
B-21	1 – 5	CL	47	24	106.9	17.0	25	99.4	21.4	5.1	93.0
							56	107.6	18.1	13.6	100.7

Composite bulk coarse-grained soil samples of auger cuttings were collected from Boring B-15. Maximum and minimum index unit weights were obtained for the bulk sample collected from Boring B-15. The maximum unit weight using a vibratory table was 123.9 pcf; the minimum unit weight was 97.1. A plot of the relative density versus unit weight results is included in Appendix C.

Dynamic Cone Penetration Testing Results. Dynamic cone penetration testing (DCP) was performed on the subgrade material in every boring. The results of the blow counts and measured penetration were used to correlate a CBR value per ASTM D6951, Standard Test Method for Use of the Dynamic Cone Penetrometer in Shallow Pavement Applications. The correlated CBR values ranged from approximately 6 to greater than 10.

7.1 Groundwater

Groundwater was encountered in Borings B-1 through -3, -5 through -10, -12, -15 to -18, -23, and -24 at depths of approximately 4½ to 9 feet and was not encountered in the other borings during the exploration. Groundwater levels will vary over time due to the effects of seasonal variations in precipitation, influence of the Mississippi River, or other factors not evident at the time of

exploration. This site was inundated during the 2011 Mississippi River flood, and may flood during future high-water events.

8.0 CONCLUSIONS AND RECOMMENDATIONS

Geotechnology has prepared the following conclusions and recommendations based on our understanding of the proposed project, the field and laboratory data presented in this report, engineering analyses, and our experience and judgment.

8.1 Site Preparation and Earthwork

The following paragraphs outline site grading recommendations for the site.

Site Grading. Cut and fill areas of the site shall be prepared in accordance with the FAA AC No. 150/5320-6G for aircrafts weighing less than 60,000 pounds. The subgrade shall be proof-rolled with a loaded dump truck to detect zones of unsuitable soils. Soft areas that develop should be removed and replaced with compacted soil.

Subgrade Compaction. Presented in the following tables are the compaction requirements for cohesionless and cohesive soils output from the FAARFIELD software (see Appendix F) along with Geotechnology recommended subgrade compaction values. Cohesionless soils are generally defined as soils that do not exhibit a well-defined moisture density relationship; cohesive soils are generally defined as soils that do exhibit a well-defined moisture density relationship. We recommend the Geotechnology recommended values be considered for rehabilitation of the pavement structure.

Table 3. Subgrade Compaction Requirements - Cohesionless Soils.

Parameter	FAARFIELD Output				Geotechnology Recommended
Minimum Percent of Maximum Dry Unit Weight[a] (%)	100	95	90	85	See Note Below[b]
Depth of Compaction From Top of Subgrade (inches)	0	0–14	14–28	28-45	

[a] Relative density evaluated from the maximum and minimum index densities measured by ASTM D4253 and D4254, respectively.
[b] The subgrade shall be compacted to 75 percent of the maximum dry density to a depth of approximately 24 inches below the subgrade as determined by ASTM D4253 and ASTM D4254. Refer to Appendix C for a plot of relative density versus unit weight.

Table 4. Subgrade Compaction Requirements - Cohesive Soils.

Parameter	FAARFIELD Output			Geotechnology Recommended		
Minimum Percent of Maximum Dry Unit Weight[a] (%)	90	85	80	100	95	90
Depth of Compaction From Top of Subgrade (inches)	0–9	9-18	18-27	0–9	9-18	18-27

[a] In reference to the standard Proctor maximum dry unit weight as measured by ASTM D698.

Should subgrade soils not naturally have the required densities, the soils should be compacted from the surface, or removed and replaced to achieve the densities presented in the tables, or covered with select or subbase material so that the uncompacted subgrade is at a depth where the in-place densities are satisfactory.

Preparation of Fill Areas. In areas where filling may be required to achieve design grade, the areas should be stripped of topsoil, soft soils, and other deleterious materials. The resulting subgrade should be compacted to the recommendations presented in the Subgrade Compaction Requirements tables.

Fill Materials and Placement. Fill material should consist of natural soils classifying as silt, lean clay, silty sand, or clayey sand (ML, CL, SM, or SC), have a maximum LL of 45 and a PI of no more than 20. Such materials should be free from organic matter, debris, or other deleterious materials, and have a maximum particle size of 2 inches.

Fill and backfill should be placed in level lifts, up to 8 inches in loose thickness. For cohesive soils, each lift should be moisture-conditioned to within 2 percent of the optimum moisture content as measured by ASTM D698, and compacted to at least the minimum percent compactions presented in Table 4. Moisture-conditioning can include: aeration and drying of wetter soils, wetting drier soils, and/or mixing drier and wetter soils into a uniform bled. For cohesionless soils, the soils should be compacted to at least the minimum relative densities presented in Table 3. Thinner lifts should be used for lighter compaction equipment.

Maintaining the moisture content of subgrade soils within 2 percent of the optimum moisture content is important during and after construction of the pavement structure. Silty and clayey subgrade soils should not be allowed to become wet or dry during or after construction, and measures should be taken to hinder water from ponding on these soils and to reduce drying of these soils.

Asphalt, concrete, or fill should not be placed over frozen or saturated soils, and frozen or saturated soils should not be used as compacted fill or backfill. Upon completion of earthwork, disturbed areas should be stabilized.

8.2 Pavement Evaluation and Rehabilitation Options

The pavement recommendations provided in this section are based on a design life of 20 years, the anticipated traffic mix, the method described in the FAA AC No. 150/5320-6G for aircraft weighing less than 60,000 pounds and utilizing FAARFIELD. Pavement designs were based on a subgrade CBR value of 8 based on DCP to CBR conversions collected from the upper soils in the borings, the laboratory testing results, and our experience with the soils at the site. The traffic data used in the design is presented in the following table.

Table 5. Design Aircraft Traffic Mix

FAARFIELD Aircraft Name	Gross Weight, Lb.	Annual Departures	Growth Rate
Skyhawk-172	2,558	100	0%
Skylane-1-82	3,110	500	
Bonanza-F-33A	3,412	1,200	
Stationair-206	3,612	150	
Sarat.PA-32R-301	3,616	600	
Baron-E-55	5,424	300	
SuperKingAir-B200	12,590	300	
Citation-V	16,500	750	
Citation-CJ1	10,500	500	

One pavement overlay design and two new flexible pavement designs are presented in Table 6. The FAARFIELD output for each option is presented in Appendix F. The overlay design is based on the assumption that the top 2-inches of the existing pavement structure will be milled prior to overlaying new asphalt surface layers. Some sections of the pavement will require complete removal and reconstruction due to the relatively thin pavement sections encountered in the borings, primarily the southmost pavement area designated as TH01ME-001(50) and the south section of area of AMPE-002(76) near Boring B-7.

The overlay design was performed by modeling the existing asphalt layer as a user-defined base material with an estimated modulus of 100,000 pounds per square inch (psi). Additional testing, such as Falling Weight Deflectometer, may be used to verify this assumption. Based on the guidance in the FAA AC No. 150/5320-6G, the user-defined layer for the existing asphalt is considered non-standard and will require FAA approval to be utilized in the pavement design. Additionally, the full-depth reclamation asphalt pavement design (Option 3) is considered a non-standard pavement section and will also require FAA approval. Based on FAA AC No. 150/5320-6G, engineering judgement is required for the selection of an appropriate modulus value for the FDR layer. Based on the provided typical recommended values, which range from 25,000 to 500,000 psi, we modeled the FDR using a user-defined material with an estimated modulus of 50,000 psi, which is equivalent to a CBR value of about 33 or greater. The pavement overlay and new pavement designs should be reviewed and approved by the pavement engineer.

Preparation of the subgrade for new pavement sections should be in accordance with FAA guidelines and as described in this report. The subgrade shall be proof-rolled with a loaded dump truck to detect zones of unsuitable soils. Soft areas should be removed and replaced with compacted soil. Once the subgrade is prepared, it should be promptly paved to protect it from the weather.

Table 6. Pavement Rehabilitation Options

Layer Type	Option 1 - Overlay Mill 2 Inches of Asphalt Surface / Overlay [a]	Option 2 - Removal and Reconstruction	Option 3 - Full Depth Reclamation (FDR [b])
Asphalt Surface[c] (P-401/P-403)	At least 3.5 inch overlay	4 inches	4 inches
Aggregate Base (P-208)	-	7 inches	-
FDR – Recycled Asphalt Aggregate Base Course (P-207)	-	-	At least 7 inches

[a]In areas where approximately 2 inches of asphalt were noted, the entire asphalt section should be removed and reconstructed using the Option 2. Design is based on 2 inches of asphalt remaining and 6 inches of base material. This will not appropriate for Area TH01ME-0001(50) and the section of AMPE-002(76) near Boring B-7. Other options should be considered in these areas.

[b]Assuming all pavement sections including asphalt and underlying base are completely pulverized, mixed, spread, and compacted. The addition of aggregate and/or chemical stabilization with cement, asphalt, or fly ash should be discussed with the contractor performing the work. We have assumed the FDR section will achieve a modulus value of at least 50,000 psi. FDR material should meet specifications in AC 150/5370-10, item P-207. Per AC 150/5370-10, Item P-207, prior to full production, construction of a control strip is required to demonstrate the equipment and process to be used to pulverize, mix, spread and compact the FDR material.

[c] In areas subject to spillage of fuel, hydraulic fluid, or other solvents, it is best practice to use a solvent-resistant surface such as P-501, P-404, or P-629.

Discussion and Construction Considerations. Based on the PCI values provided to Geotechnology, the apron and taxiway areas are generally in a condition that requires preventative maintenance. However, the southmost section designated TH01ME-001(50) has a PCI of 50 which indicates complete reconstruction is recommended. The asphalt layer in area TH01ME-001(50) is generally thinner than the minimum 3-inch recommended by FAA for flexible pavement structures, and some borings have little to no base layer underlying the asphalt. We presented several options for rehabilitation including milling and overlaying, a reconstruction option, and a full depth reclamation option. The milling and overlay option will require some sections of the pavement to be removed and reconstructed as the asphalt section is approximately 2 inches, primarily the southmost pavement area designated as TH01ME-001(50).

Full depth reclamation (FDR) methods can be considered for rehabilitation of sections of the apron or the entire apron. The benefits of FDR include not exposing the underlying subgrade to weather and reducing the amount of material needed to construct the pavement base course. However, the FDR option may require specialized equipment and also requires the contractor to construct a control strip to demonstrate the equipment and process to be used to pulverize, mix, spread and compact the FDR material. The asphalt and base thicknesses vary across the apron, and the contractor should consider this when preparing plans for full depth reclamation. Constructability issues should be reviewed for this option. The existing utilities and structures may create limitations for the FDR equipment and may limit the depth of pulverization. Some areas may

require more aggregate and/or chemical stabilization. The FDR material should meet specifications in AC 150/5370-10, item P-207.

The costs and benefits of each option should be discussed with the design team. The design team can consider rehabilitation of some sections and preventative maintenance for others. Preventative maintenance is generally always the most economical option when considering pavement rehabilitation, but the pavement will continue to degrade with time and use. Preventative maintenance should follow the guidelines and procedures for maintaining airports outlined in AC 150/5380-6C. Mill and overlay may be the next most economical option, but the southmost pavement area will require reconstruction as discussed previously in this section.

9.0 RECOMMENDED ADDITIONAL SERVICES

The conclusions and recommendations given in this report are based on: Geotechnology's understanding of the proposed design and construction, as outlined in this report; site observations; interpretation of the exploration data; and our experience. Since the intent of the design recommendations is best understood by Geotechnology, we recommend that Geotechnology be included in the final design and construction process, and be retained to review the project plans and specifications to confirm that the recommendations given in this report have been correctly implemented. We recommend that Geotechnology be retained to participate in pre-bid and preconstruction conferences to reduce the risk of misinterpretation of the conclusions and recommendations in this report relative to the proposed construction of the subject project.

Since actual subsurface conditions between boring locations could vary from those encountered in the borings, our design recommendations are subject to adjustment in the field based on the subsurface conditions encountered during construction. Therefore, we recommend that Geotechnology be retained to provide construction observation services as a continuation of the design process to confirm the recommendations in this report and to revise them accordingly to accommodate differing subsurface conditions. Construction observation is intended to enhance compliance with project plans and specifications. It is not insurance, nor does it constitute a warranty or guarantee of any type. Regardless of construction observation, contractors, suppliers, and others are solely responsible for the quality of their work and for adhering to plans and specifications.

10.0 LIMITATIONS

This report has been prepared on behalf of, and for the exclusive use of, the client for specific application to the named project as described herein. If this report is provided to other parties, it should be provided in its entirety with all supplementary information. In addition, the client should make it clear that the information is provided for factual data only, and not as a warranty of subsurface conditions presented in this report.

Geotechnology has attempted to conduct the services reported herein in a manner consistent with that level of care and skill ordinarily exercised by members of the profession currently practicing in the same locality and under similar conditions. The recommendations and

conclusions contained in this report are professional opinions. The report is not a bidding document and should not be used for that purpose.

Our scope for this phase of the project did not include any environmental assessment or investigation for the presence or absence of wetlands or hazardous or toxic materials in the soil, surface water, groundwater, or air, on or below or around this site. Any statements in this report or on the boring logs regarding odors noted or unusual or suspicious items or conditions observed are strictly for the information of our client. Our scope did not include an assessment of the effects of flooding and erosion of creeks or rivers adjacent to or on the project site.

Our scope did not include: any services to investigate or detect the presence of mold or any other biological contaminants (such as spores, fungus, bacteria, viruses, and the by-products of such organisms) on and around the site; or any services, designed or intended, to prevent or lower the risk of the occurrence of an infestation of mold or other biological contaminants.

The analyses, conclusions, and recommendations contained in this report are based on the data obtained from the geotechnical exploration. The field exploration methods used indicate subsurface conditions only at the specific locations where samples were obtained, only at the time they were obtained, and only to the depths penetrated. Consequently, subsurface conditions could vary gradually, abruptly, and/or nonlinearly between sample locations and/or intervals.

The conclusions or recommendations presented in this report should not be used without Geotechnology's review and assessment if the nature, design, or location of the facilities is changed, if there is a lapse in time between the submittal of this report and the start of work at the site, or if there is a substantial interruption or delay during work at the site. If changes are contemplated or delays occur, Geotechnology must be allowed to review them to assess their impact on the findings, conclusions, and/or design recommendations given in this report. Geotechnology will not be responsible for any claims, damages, or liability associated with any other party's interpretations of the subsurface data or with reuse of the subsurface data or engineering analyses in this report.

The recommendations included in this report have been based in part on assumptions about variations in site stratigraphy that can be evaluated further during earthwork and foundation construction. Geotechnology should be retained to perform construction observation and continue its geotechnical engineering service using observational methods. Geotechnology cannot assume liability for the adequacy of its recommendations when they are used in the field without Geotechnology being retained to observe construction.

APPENDIX A – IMPORTANT INFORMATION ABOUT THIS GEOTECHNICAL-ENGINEERING REPORT

DRAFT

Important Information about This

Geotechnical-Engineering Report

Subsurface problems are a principal cause of construction delays, cost overruns, claims, and disputes.

While you cannot eliminate all such risks, you can manage them. The following information is provided to help.

Geotechnical Services Are Performed for Specific Purposes, Persons, and Projects

Geotechnical engineers structure their services to meet the specific needs of their clients. A geotechnical-engineering study conducted for a civil engineer may not fulfill the needs of a constructor — a construction contractor — or even another civil engineer. Because each geotechnical- engineering study is unique, each geotechnical-engineering report is unique, prepared *solely* for the client. No one except you should rely on this geotechnical-engineering report without first conferring with the geotechnical engineer who prepared it. *And no one — not even you* — should apply this report for any purpose or project except the one originally contemplated.

Read the Full Report

Serious problems have occurred because those relying on a geotechnical-engineering report did not read it all. Do not rely on an executive summary. Do not read selected elements only.

Geotechnical Engineers Base Each Report on a Unique Set of Project-Specific Factors

Geotechnical engineers consider many unique, project-specific factors when establishing the scope of a study. Typical factors include: the client's goals, objectives, and risk-management preferences; the general nature of the structure involved, its size, and configuration; the location of the structure on the site; and other planned or existing site improvements, such as access roads, parking lots, and underground utilities. Unless the geotechnical engineer who conducted the study specifically indicates otherwise, do not rely on a geotechnical-engineering report that was:

- not prepared for you;
- not prepared for your project;
- not prepared for the specific site explored; or
- completed before important project changes were made.

Typical changes that can erode the reliability of an existing geotechnical-engineering report include those that affect:

- the function of the proposed structure, as when it's changed from a parking garage to an office building, or from a light-industrial plant to a refrigerated warehouse;
- the elevation, configuration, location, orientation, or weight of the proposed structure;
- the composition of the design team; or
- project ownership.

As a general rule, *always* inform your geotechnical engineer of project changes—even minor ones—and request an assessment of their impact. *Geotechnical engineers cannot accept responsibility or liability for problems that occur because their reports do not consider developments of which they were not informed.*

Subsurface Conditions Can Change

A geotechnical-engineering report is based on conditions that existed at the time the geotechnical engineer performed the study. *Do not rely on a geotechnical-engineering report whose adequacy may have been affected by*: the passage of time; man-made events, such as construction on or adjacent to the site; or natural events, such as floods, droughts, earthquakes, or groundwater fluctuations. *Contact the geotechnical engineer before applying this report to determine if it is still reliable.* A minor amount of additional testing or analysis could prevent major problems.

Most Geotechnical Findings Are Professional Opinions

Site exploration identifies subsurface conditions only at those points where subsurface tests are conducted or samples are taken. Geotechnical engineers review field and laboratory data and then apply their professional judgment to render an opinion about subsurface conditions throughout the site. Actual subsurface conditions may differ — sometimes significantly — from those indicated in your report. Retaining the geotechnical engineer who developed your report to provide geotechnical-construction observation is the most effective method of managing the risks associated with unanticipated conditions.

A Report's Recommendations Are Not Final

Do not overrely on the confirmation-dependent recommendations included in your report. *Confirmation-dependent recommendations are not final,* because geotechnical engineers develop them principally from judgment and opinion. Geotechnical engineers can finalize their recommendations *only* by observing actual subsurface conditions revealed during construction. *The geotechnical engineer who developed your report cannot assume responsibility or liability for the report's confirmation-dependent recommendations if that engineer does not perform the geotechnical-construction observation required to confirm the recommendations' applicability.*

A Geotechnical-Engineering Report Is Subject to Misinterpretation

Other design-team members' misinterpretation of geotechnical-engineering reports has resulted in costly

problems. Confront that risk by having your geotechnical engineer confer with appropriate members of the design team after submitting the report. Also retain your geotechnical engineer to review pertinent elements of the design team's plans and specifications. Constructors can also misinterpret a geotechnical-engineering report. Confront that risk by having your geotechnical engineer participate in prebid and preconstruction conferences, and by providing geotechnical construction observation.

Do Not Redraw the Engineer's Logs

Geotechnical engineers prepare final boring and testing logs based upon their interpretation of field logs and laboratory data. To prevent errors or omissions, the logs included in a geotechnical-engineering report should *never* be redrawn for inclusion in architectural or other design drawings. Only photographic or electronic reproduction is acceptable, *but recognize that separating logs from the report can elevate risk.*

Give Constructors a Complete Report and Guidance

Some owners and design professionals mistakenly believe they can make constructors liable for unanticipated subsurface conditions by limiting what they provide for bid preparation. To help prevent costly problems, give constructors the complete geotechnical-engineering report, *but* preface it with a clearly written letter of transmittal. In that letter, advise constructors that the report was not prepared for purposes of bid development and that the report's accuracy is limited; encourage them to confer with the geotechnical engineer who prepared the report (a modest fee may be required) and/or to conduct additional study to obtain the specific types of information they need or prefer. A prebid conference can also be valuable. *Be sure constructors have sufficient time* to perform additional study. Only then might you be in a position to give constructors the best information available to you, while requiring them to at least share some of the financial responsibilities stemming from unanticipated conditions.

Read Responsibility Provisions Closely

Some clients, design professionals, and constructors fail to recognize that geotechnical engineering is far less exact than other engineering disciplines. This lack of understanding has created unrealistic expectations that have led to disappointments, claims, and disputes. To help reduce the risk of such outcomes, geotechnical engineers commonly include a variety of explanatory provisions in their reports. Sometimes labeled "limitations," many of these provisions indicate where geotechnical engineers' responsibilities begin and end, to help others recognize their own responsibilities and risks. *Read these provisions closely.* Ask questions. Your geotechnical engineer should respond fully and frankly.

Environmental Concerns Are Not Covered

The equipment, techniques, and personnel used to perform an *environmental* study differ significantly from those used to perform a *geotechnical* study. For that reason, a geotechnical-engineering report does not usually relate any environmental findings, conclusions, or recommendations; e.g., about the likelihood of encountering underground storage tanks or regulated contaminants. *Unanticipated environmental problems have led to numerous project failures.* If you have not yet obtained your own environmental information, ask your geotechnical consultant for risk-management guidance. *Do not rely on an environmental report prepared for someone else.*

Obtain Professional Assistance To Deal with Mold

Diverse strategies can be applied during building design, construction, operation, and maintenance to prevent significant amounts of mold from growing on indoor surfaces. To be effective, all such strategies should be devised for the *express purpose* of mold prevention, integrated into a comprehensive plan, and executed with diligent oversight by a professional mold-prevention consultant. Because just a small amount of water or moisture can lead to the development of severe mold infestations, many mold- prevention strategies focus on keeping building surfaces dry. While groundwater, water infiltration, and similar issues may have been addressed as part of the geotechnical- engineering study whose findings are conveyed in this report, the geotechnical engineer in charge of this project is not a mold prevention consultant; *none of the services performed in connection with the geotechnical engineer's study were designed or conducted for the purpose of mold prevention. Proper implementation of the recommendations conveyed in this report will not of itself be sufficient to prevent mold from growing in or on the structure involved.*

Rely, on Your GBC-Member Geotechnical Engineer for Additional Assistance

Membership in the Geotechnical Business Council of the Geoprofessional Business Association exposes geotechnical engineers to a wide array of risk-confrontation techniques that can be of genuine benefit for everyone involved with a construction project. Confer with you GBC-Member geotechnical engineer for more information.

GEOTECHNICAL BUSINESS COUNCIL
of the Geoprofessional Business Association

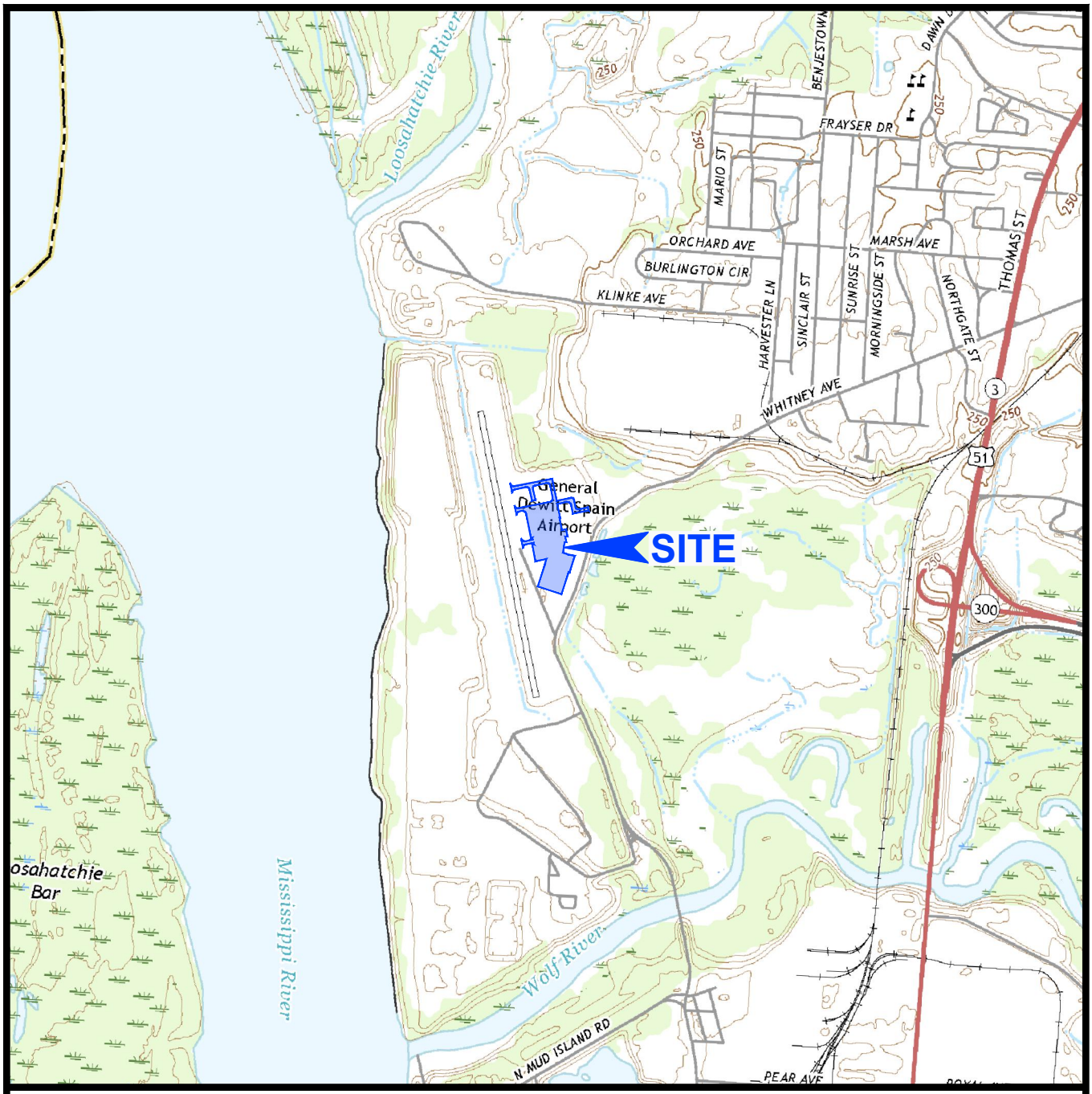
8811 Colesville Road/Suite G106, Silver Spring, MD 20910
Telephone: 301/565-2733 Facsimile: 301/589-2017
e-mail: info@geoprofessional.org www.geoprofessional.org

APPENDIX B – FIGURES

Figure 1 – Site Location and Topography

Figure 2 – Aerial Photograph of Site and Exploration Locations

DRAFT



NOTES

1. Plan adapted from a 7.5 minute U.S.G.S. map for Northwest Memphis, Tennessee-Arkansas quadrangle, last revised in 2016.

0 2,000 4,000

SCALE IN FEET

N

Drawn By: WAH	Ck'd By:DBA	App'vd By:ASE
Date: 6-3-21	Date:6-17-21	Date:6-17-21

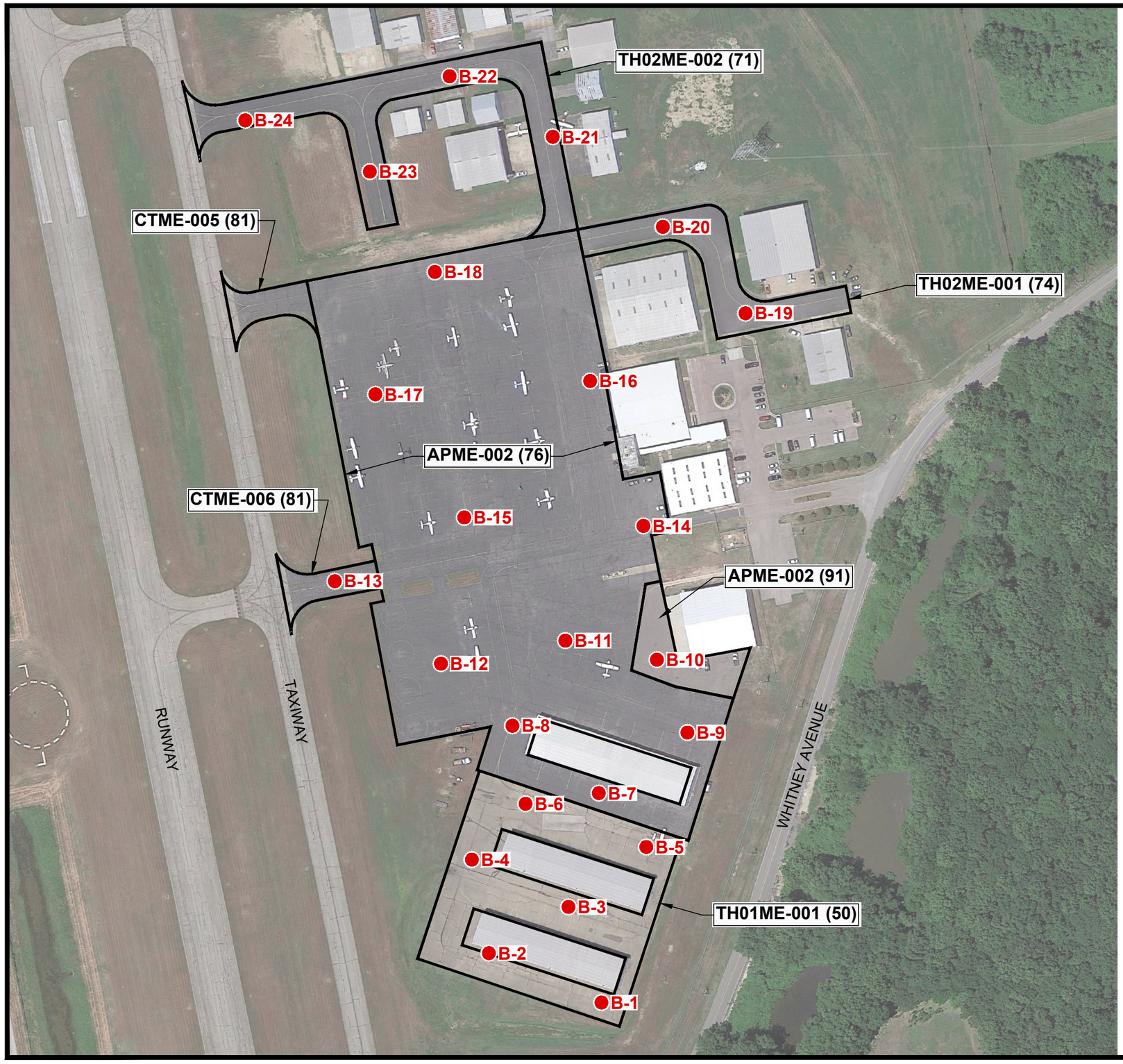
GEOTECHNOLOGY INC
FROM THE GROUND UP

Apron Remediation
DeWitt Spain Airport
Memphis, Tennessee

SITE LOCATION AND TOPOGRAPHY

Project Number	FIGURE 1
J038313.01	

DRAFT



NOTES

1. Plan adapted from a drawing dated January 2019, titled "Pavement Condition Index Map" prepared by applied pavement TECHNOLOGY.
2. Borings were located in the field with reference to site features and are shown approximate only.

LEGEND

● Boring Location

N

0 80 160 320

SCALE IN FEET

Drawn By: WAH	Ck'd By: DBA	App'vd By: ASE
Date: 6-3-21	Date: 6-17-21	Date:6-17-21

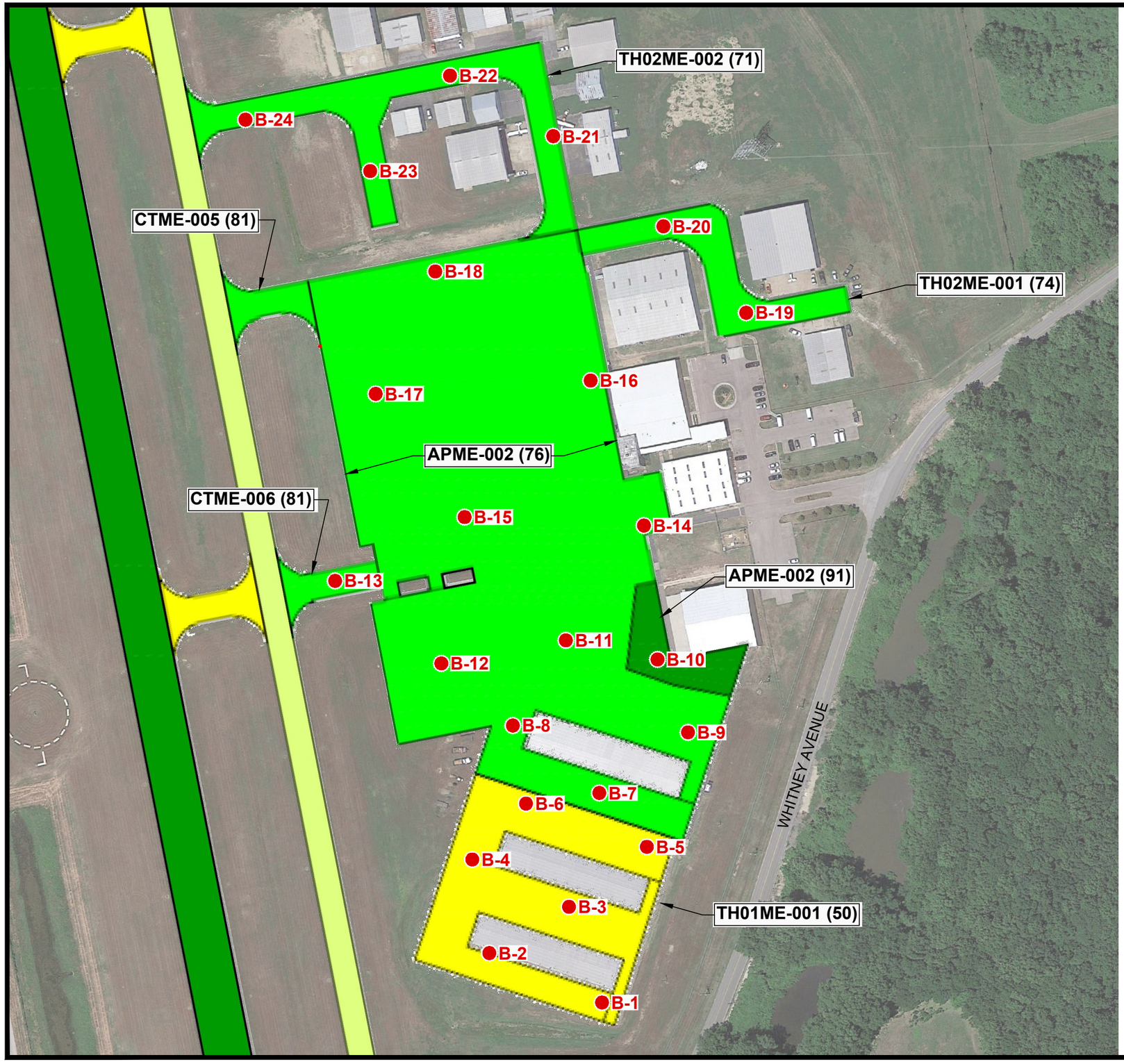
GEOTECHNOLOGY INC
FROM THE GROUND UP

Apron Remediation
General DeWitt Spain Airport
Memphis, Tennessee

AERIAL PHOTOGRAPH OF SITE AND BORING LOCATIONS

Project Number J038313.01	FIGURE 2

DRAFT



NOTES

1. Plan adapted from a drawing dated January 2019, titled "Pavement Condition Index Map" prepared by applied pavement TECHNOLOGY.
2. Borings were located in the field with reference to site features and are shown approximate only.

LEGEND

● Boring Location

PAVEMENT CONDITION INDEX

PCI	REPAIR
100	Preventative Maintenance
85	
70	
55	Major Rehabilitation
40	
25	
10	Reconstruction
0	

N

0 80 160 320

SCALE IN FEET

Drawn By: WAH	Ck'd By:DBA	App'vd By:ASE
Date: 6-15-21	Date:6-17-21	Date:6-17-21

GEOTECHNOLOGY INC
FROM THE GROUND UP

Apron Remediation
General DeWitt Spain Airport
Memphis, Tennessee

PLAN OF SITE AND PAVEMENT CONDITION INDEX

Project Number	FIGURE 3
J038313.01	

APPENDIX C – BORING INFORMATION

Boring Log Terms and Symbols

Boring Logs

Surface Elevation: _____ Completion Date: 5/19/21

Datum NA

DEPTH IN FEET	DESCRIPTION OF MATERIAL	GRAPHIC LOG	DRY UNIT WEIGHT (pcf) SPT BLOW COUNTS CORE RECOVERY/RQD	SAMPLES
	ASPHALT: 3 inches			
	Base Material: Cement treated base - 9 inches			
	Medium dense, tan SAND - SP		9-9-12	SS2
			4-5-6	SS3
5				
	Soft, gray, FAT CLAY - CH		1-1-2	SS4
			1-1-3	SS5
10	Boring terminated at 10 feet.			

SHEAR STRENGTH, tsf

△ - UU/2 ○ - QU/2 □ - SV

0.5 1.0 1.5 2.0 2.5

STANDARD PENETRATION RESISTANCE

(ASTM D 1586)

▲ N-VALUE (BLOWS PER FOOT)

WATER CONTENT, %

PL 10 20 30 40 50 LL

NOTE: STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARIES BETWEEN SOIL TYPES AND THE TRANSITION MAY BE GRADUAL. GRAPHIC LOG FOR ILLUSTRATION PURPOSES ONLY.

GROUNDWATER DATA

ENCOUNTERED AT 7 FEET ▽

DRILLING DATA

___ AUGER 3 3/4 HOLLOW STEM

WASHBORING FROM ___ FEET

KJB DRILLER SWF LOGGER

CME 75 DRILL RIG

HAMMER TYPE Auto

REMARKS:

Drawn by: EJH	Checked by: JDM	App'vd. by: DBA
Date: 5/20/21	Date: 6/17/21	Date: 6/17/21

GEOTECHNOLOGY INC
FROM THE GROUND UP

Dewitt-Spain Airport Apron Rehabilitation
Memphis, Tennessee

LOG OF BORING: B- 1

Project No. J038313.01

LOG OF BORING 2002.WL J038313.01.GPJ GTINC 0638301.GPJ 6/17/21

Surface Elevation: _____ Completion Date: 5/19/21

Datum NA

DEPTH IN FEET	DESCRIPTION OF MATERIAL	GRAPHIC LOG	DRY UNIT WEIGHT (pcf) SPT BLOW COUNTS CORE RECOVERY/RQD	SAMPLES	SHEAR STRENGTH, tsf (△ - UU/2, ○ - QU/2, □ - SV; 0.5 1.0 1.5 2.0 2.5) / STANDARD PENETRATION RESISTANCE (ASTM D 1586) ▲ N-VALUE (BLOWS PER FOOT) / WATER CONTENT, % PL 10 20 30 40 50 LL
	ASPHALT: 2.25 inches Base Material: Cement treated base - 9.75 inches				
	Stiff, gray, sandy, FAT CLAY - CH		3-4-5	SS2	▲
5	Loose, gray SAND - SP 2.0% passing No. 200 sieve		2-2-4	SS3	▲
	Soft, gray, FAT CLAY - CH ▽		1-2-2	SS4	▲ ●
	Very loose, gray SAND - SP		1-0-1	SS5	▲
10	Boring terminated at 10 feet.				

NOTE: STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARIES BETWEEN SOIL TYPES AND THE TRANSITION MAY BE GRADUAL. GRAPHIC LOG FOR ILLUSTRATION PURPOSES ONLY.

GROUNDWATER DATA

ENCOUNTERED AT 6.5 FEET ▽

DRILLING DATA

___ AUGER 3 3/4 HOLLOW STEM
WASHBORING FROM ___ FEET
KJB DRILLER SWF LOGGER
CME 75 DRILL RIG
HAMMER TYPE Auto

REMARKS:

Drawn by: EJH	Checked by: JDM	App'vd. by: DBA
Date: 5/20/21	Date: 6/17/21	Date: 6/17/21

GEOTECHNOLOGY INC
FROM THE GROUND UP

Dewitt-Spain Airport Apron Rehabilitation
Memphis, Tennessee

LOG OF BORING: B- 2

Project No. J038313.01

LOG OF BORING 2002.WL J038313.01.GPJ GTINC 0638301.GPJ 6/17/21

Surface Elevation: _____ Completion Date: 5/19/21

Datum NA

DEPTH IN FEET	DESCRIPTION OF MATERIAL	GRAPHIC LOG	DRY UNIT WEIGHT (pcf) SPT BLOW COUNTS CORE RECOVERY/RQD	SAMPLES
	ASPHALT: 2 inches - No base			
	Medium dense, tan SAND - SP			
			6-12-12	SS2
			2-6-6	SS3
5				
	Soft, gray, FAT CLAY - CH		1-1-2	SS4
			1-2-2	SS5
10	Boring terminated at 10 feet.			

SHEAR STRENGTH, tsf

△ - UU/2 ○ - QU/2 □ - SV

0.5 1.0 1.5 2.0 2.5

STANDARD PENETRATION RESISTANCE

(ASTM D 1586)

▲ N-VALUE (BLOWS PER FOOT)

WATER CONTENT, %

PL 10 20 30 40 50 LL

NOTE: STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARIES BETWEEN SOIL TYPES AND THE TRANSITION MAY BE GRADUAL. GRAPHIC LOG FOR ILLUSTRATION PURPOSES ONLY.

GROUNDWATER DATA

ENCOUNTERED AT 6 FEET ▽

DRILLING DATA

___ AUGER 3 3/4 HOLLOW STEM

WASHBORING FROM ___ FEET

KJB DRILLER SWF LOGGER

CME 75 DRILL RIG

HAMMER TYPE Auto

REMARKS:

Drawn by: EJH	Checked by: JDM	App'vd. by: DBA
Date: 5/20/21	Date: 6/17/21	Date: 6/17/21

GEOTECHNOLOGY INC
FROM THE GROUND UP

Dewitt-Spain Airport Apron Rehabilitation
Memphis, Tennessee

LOG OF BORING: B- 3

Project No. J038313.01

LOG OF BORING 2002.WL J038313.01.GPJ GTINC 0638301.GPJ 6/17/21

Surface Elevation: _____ Completion Date: 5/19/21

Datum NA

DEPTH IN FEET	DESCRIPTION OF MATERIAL	GRAPHIC LOG	DRY UNIT WEIGHT (pcf) SPT BLOW COUNTS CORE RECOVERY/RQD	SAMPLES
	ASPHALT: 2 inches Base Material: Cement treated base - 10 inches			
	Medium dense, tan SAND - SP		8-11-12	SS2
5	Soft, gray, FAT CLAY - CH		1-1-2	SS3
	Loose, tan SAND - SP		1-2-3	SS4
	Medium stiff, gray to gray and orange, FAT CLAY - CH		2-3-5	SS5
10	Boring terminated at 10 feet.			

SHEAR STRENGTH, tsf
Δ - UU/2 ○ - QU/2 □ - SV
0.5 1.0 1.5 2.0 2.5

STANDARD PENETRATION RESISTANCE
(ASTM D 1586)
▲ N-VALUE (BLOWS PER FOOT)

WATER CONTENT, %
PL 10 20 30 40 50 LL

NOTE: STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARIES BETWEEN SOIL TYPES AND THE TRANSITION MAY BE GRADUAL. GRAPHIC LOG FOR ILLUSTRATION PURPOSES ONLY.

GROUNDWATER DATA

X FREE WATER NOT ENCOUNTERED DURING DRILLING

DRILLING DATA

___ AUGER 3 3/4 HOLLOW STEM
WASHBORING FROM ___ FEET
KJB DRILLER SWF LOGGER
CME 75 DRILL RIG
HAMMER TYPE Auto

REMARKS:

Drawn by: EJH	Checked by: JDM	App'vd. by: DBA
Date: 5/20/21	Date: 6/17/21	Date: 6/17/21

GEOTECHNOLOGY INC
FROM THE GROUND UP

Dewitt-Spain Airport Apron Rehabilitation
Memphis, Tennessee

LOG OF BORING: B- 4

Project No. J038313.01

LOG OF BORING 2002.WL J038313.01.GPJ GTINC 0638301.GPJ 6/17/21

Surface Elevation: _____ Completion Date: 5/19/21

Datum NA

DEPTH IN FEET	DESCRIPTION OF MATERIAL	GRAPHIC LOG	DRY UNIT WEIGHT (pcf) SPT BLOW COUNTS CORE RECOVERY/RQD	SAMPLES
	ASPHALT: 2 inches - No base			
	Medium dense, tan SAND - SP		7-8-12	SS2
			3-8-8	SS3
5				
	Soft, gray, FAT CLAY - CH ▽		1-1-2	SS4
	Loose, gray SAND - SP			
	little clay		2-2-4	SS5
10	Boring terminated at 10 feet.			

SHEAR STRENGTH, tsf

△ - UU/2 ○ - QU/2 □ - SV

0.5 1.0 1.5 2.0 2.5

STANDARD PENETRATION RESISTANCE

(ASTM D 1586)

▲ N-VALUE (BLOWS PER FOOT)

WATER CONTENT, %

PL 10 20 30 40 50 LL

NOTE: STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARIES BETWEEN SOIL TYPES AND THE TRANSITION MAY BE GRADUAL. GRAPHIC LOG FOR ILLUSTRATION PURPOSES ONLY.

GROUNDWATER DATA

ENCOUNTERED AT 7 FEET ▽

DRILLING DATA

___ AUGER 3 3/4 HOLLOW STEM

WASHBORING FROM ___ FEET

KJB DRILLER SWF LOGGER

CME 75 DRILL RIG

HAMMER TYPE Auto

REMARKS:

Drawn by: EJH	Checked by: JDM	App'vd. by: DBA
Date: 5/20/21	Date: 6/17/21	Date: 6/17/21

GEOTECHNOLOGY INC
FROM THE GROUND UP

Dewitt-Spain Airport Apron Rehabilitation
Memphis, Tennessee

LOG OF BORING: B- 5

Project No. J038313.01

LOG OF BORING 2002.WL J038313.01.GPJ GTINC 0638301.GPJ 6/17/21

Surface Elevation: _____ Completion Date: 5/19/21

Datum NA

DEPTH IN FEET	DESCRIPTION OF MATERIAL	GRAPHIC LOG	DRY UNIT WEIGHT (pcf) SPT BLOW COUNTS CORE RECOVERY/RQD	SAMPLES
	ASPHALT: 2 inches Base Material: Cement treated base - 10 inches			
	Medium dense, gray SAND - SP 2.6% passing No. 2 sieve		5-9-9	SS2
5	Soft to medium stiff, gray, FAT CLAY - (CH)		3-2-2	SS3
			1-2-3	SS4
	Soft, gray, FAT CLAY - CH sand seam		3-2-1	SS5
10	Boring terminated at 10 feet.			

SHEAR STRENGTH, tsf

△ - UU/2 ○ - QU/2 □ - SV

0.5 1.0 1.5 2.0 2.5

STANDARD PENETRATION RESISTANCE

(ASTM D 1586)

▲ N-VALUE (BLOWS PER FOOT)

WATER CONTENT, %

PL 10 20 30 40 50 LL

81 >>

NOTE: STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARIES BETWEEN SOIL TYPES AND THE TRANSITION MAY BE GRADUAL. GRAPHIC LOG FOR ILLUSTRATION PURPOSES ONLY.

GROUNDWATER DATA

ENCOUNTERED AT 7 FEET ▽

DRILLING DATA

___ AUGER 3 3/4 HOLLOW STEM

WASHBORING FROM ___ FEET

KJB DRILLER SWF LOGGER

CME 75 DRILL RIG

HAMMER TYPE Auto

REMARKS:

Drawn by: EJH	Checked by: JDM	App'vd. by: DBA
Date: 5/20/21	Date: 6/17/21	Date: 6/17/21

GEOTECHNOLOGY INC
FROM THE GROUND UP

Dewitt-Spain Airport Apron Rehabilitation
Memphis, Tennessee

LOG OF BORING: B- 6

Project No. J038313.01

LOG OF BORING 2002.WL J038313.01.GPJ GTINC 0638301.GPJ 6/17/21

Surface Elevation: _____ Completion Date: 5/19/21

Datum NA

DEPTH IN FEET	DESCRIPTION OF MATERIAL	GRAPHIC LOG	DRY UNIT WEIGHT (pcf) SPT BLOW COUNTS CORE RECOVERY/RQD	SAMPLES
	ASPHALT: 2.5 inches - No base			
	Medium dense to loose, gray SAND - SP			
			7-12-12	SS2
			6-7-7	SS3
5		▽		
			1-1-2	SS4
	Soft to medium stiff, gray, FAT CLAY - CH		1-2-3	SS5
10	Boring terminated at 10 feet.			

SHEAR STRENGTH, tsf

△ - UU/2 ○ - QU/2 □ - SV

0.5 1.0 1.5 2.0 2.5

STANDARD PENETRATION RESISTANCE

(ASTM D 1586)

▲ N-VALUE (BLOWS PER FOOT)

WATER CONTENT, %

PL 10 20 30 40 50 LL

NOTE: STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARIES BETWEEN SOIL TYPES AND THE TRANSITION MAY BE GRADUAL. GRAPHIC LOG FOR ILLUSTRATION PURPOSES ONLY.

GROUNDWATER DATA

ENCOUNTERED AT 5 FEET ▽

DRILLING DATA

___ AUGER 3 3/4 HOLLOW STEM

WASHBORING FROM ___ FEET

KJB DRILLER SWF LOGGER

CME 75 DRILL RIG

HAMMER TYPE Auto

REMARKS:

Drawn by: EJH	Checked by: JDM	App'vd. by: DBA
Date: 5/20/21	Date: 6/17/21	Date: 6/17/21

GEOTECHNOLOGY INC
FROM THE GROUND UP

Dewitt-Spain Airport Apron Rehabilitation
Memphis, Tennessee

LOG OF BORING: B- 7

Project No. J038313.01

LOG OF BORING 2002.WL J038313.01.GPJ GTINC 0638301.GPJ 6/17/21

DRAFT

Surface Elevation: _____ Datum NA

Completion Date: 5/19/21

DEPTH IN FEET	DESCRIPTION OF MATERIAL	GRAPHIC LOG	DRY UNIT WEIGHT (pcf) SPT BLOW COUNTS CORE RECOVERY/RQD	SAMPLES
	ASPHALT: 7.25 inches - No base			
	Medium dense to very loose, tan to gray SAND - SP some clay		8-13-14	SS2
			6-8-10	SS3
5				
	0.0% passing No. 200 sieve little lignite	▽	1-1-2	SS4
	Soft, gray, FAT CLAY - CH		1-1-1	SS5
10	Boring terminated at 10 feet.			

SHEAR STRENGTH, tsf

△ - UU/2 ○ - QU/2 □ - SV

0.5 1.0 1.5 2.0 2.5

STANDARD PENETRATION RESISTANCE

(ASTM D 1586)

▲ N-VALUE (BLOWS PER FOOT)

WATER CONTENT, %

PL 10 20 30 40 50 LL

NOTE: STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARIES BETWEEN SOIL TYPES AND THE TRANSITION MAY BE GRADUAL. GRAPHIC LOG FOR ILLUSTRATION PURPOSES ONLY.

GROUNDWATER DATA

ENCOUNTERED AT 6 FEET ▽

DRILLING DATA

___ AUGER 3 3/4 HOLLOW STEM

WASHBORING FROM ___ FEET

KJB DRILLER SWF LOGGER

CME 75 DRILL RIG

HAMMER TYPE Auto

REMARKS:

Drawn by: EJH	Checked by: JDM	App'vd. by: DBA
Date: 5/20/21	Date: 6/17/21	Date: 6/17/21

GEOTECHNOLOGY INC
FROM THE GROUND UP

Dewitt-Spain Airport Apron Rehabilitation
Memphis, Tennessee

LOG OF BORING: B- 8

Project No. J038313.01

LOG OF BORING 2002.WL J038313.01.GPJ GTINC 0638301.GPJ 6/17/21

Surface Elevation: _____ Completion Date: 5/18/21

Datum NA

DEPTH IN FEET	DESCRIPTION OF MATERIAL	GRAPHIC LOG	DRY UNIT WEIGHT (pcf) SPT BLOW COUNTS CORE RECOVERY/RQD	SAMPLES
	ASPHALT: 5 inches			
	Base Material: Cement treated base - 13 inches			
	Medium dense to very loose, tan to gray SAND - SP		7-12-14	SS2
			7-8-8	SS3
5			2-2-3	SS4
			1-1-2	SS5
10	Boring terminated at 10 feet.			

SHEAR STRENGTH, tsf
△ - UU/2 ○ - QU/2 □ - SV
0.5 1.0 1.5 2.0 2.5

STANDARD PENETRATION RESISTANCE
(ASTM D 1586)
▲ N-VALUE (BLOWS PER FOOT)

WATER CONTENT, %
PL 10 20 30 40 50 LL

NOTE: STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARIES BETWEEN SOIL TYPES AND THE TRANSITION MAY BE GRADUAL. GRAPHIC LOG FOR ILLUSTRATION PURPOSES ONLY.

GROUNDWATER DATA

ENCOUNTERED AT 7 FEET ▽

DRILLING DATA

___ AUGER 3 3/4 HOLLOW STEM
WASHBORING FROM ___ FEET
KJB DRILLER SWF LOGGER
CME 75 DRILL RIG
HAMMER TYPE Auto

REMARKS:

Drawn by: EJH	Checked by: JDM	App'vd. by: DBA
Date: 5/20/21	Date: 6/17/21	Date: 6/17/21

GEOTECHNOLOGY INC
FROM THE GROUND UP

Dewitt-Spain Airport Apron Rehabilitation
Memphis, Tennessee

LOG OF BORING: B- 9

Project No. J038313.01

LOG OF BORING 2002.WL J038313.01.GPJ GTINC 0638301.GPJ 6/17/21

Surface Elevation: _____ Completion Date: 5/18/21

Datum NA

DEPTH IN FEET	DESCRIPTION OF MATERIAL	GRAPHIC LOG	DRY UNIT WEIGHT (pcf) SPT BLOW COUNTS CORE RECOVERY/RQD	SAMPLES
	ASPHALT: 4 inches			
	Base Material: Cement treated base - 15 inches			
	Medium dense to very loose, tan SAND - SP		8-14-15	SS2
			6-7-7	SS3
5			1-1-2	SS4
			1-2-2	SS5
10	Boring terminated at 10 feet.			

SHEAR STRENGTH, tsf

Δ - UU/2 ○ - QU/2 □ - SV

0.5 1.0 1.5 2.0 2.5

STANDARD PENETRATION RESISTANCE

(ASTM D 1586)

▲ N-VALUE (BLOWS PER FOOT)

WATER CONTENT, %

PL 10 20 30 40 50 LL

NOTE: STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARIES BETWEEN SOIL TYPES AND THE TRANSITION MAY BE GRADUAL. GRAPHIC LOG FOR ILLUSTRATION PURPOSES ONLY.

GROUNDWATER DATA

ENCOUNTERED AT 6.5 FEET ▽

DRILLING DATA

___ AUGER 3 3/4 HOLLOW STEM

WASHBORING FROM ___ FEET

KJB DRILLER SWF LOGGER

CME 75 DRILL RIG

HAMMER TYPE Auto

REMARKS:

Drawn by: EJH	Checked by: JDM	App'vd. by: DBA
Date: 5/20/21	Date: 6/17/21	Date: 6/17/21

GEOTECHNOLOGY INC
FROM THE GROUND UP

Dewitt-Spain Airport Apron Rehabilitation
Memphis, Tennessee

LOG OF BORING: B-10

Project No. J038313.01

LOG OF BORING 2002.WL J038313.01.GPJ GTINC 0638301.GPJ 6/17/21

Surface Elevation: _____ Completion Date: 5/18/21

Datum NA

DEPTH IN FEET	DESCRIPTION OF MATERIAL	GRAPHIC LOG	DRY UNIT WEIGHT (pcf) SPT BLOW COUNTS CORE RECOVERY/RQD	SAMPLES	SHEAR STRENGTH, tsf (△ - UU/2, ○ - QU/2, □ - SV; 0.5 1.0 1.5 2.0 2.5) / STANDARD PENETRATION RESISTANCE (ASTM D 1586) ▲ N-VALUE (BLOWS PER FOOT) / WATER CONTENT, % PL 10 20 30 40 50 LL
	ASPHALT: 3 inches Base Material: Cement treated base - 12 inches				
	Medium dense, tan to gray SAND - SP		6-12-14	SS2	▲
			5-8-9	SS3	▲
5			1-2-2	SS4	▲
	Soft, gray, FAT CLAY - CH		1-1-1	SS5	▲
10	Boring terminated at 10 feet				

NOTE: STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARIES BETWEEN SOIL TYPES AND THE TRANSITION MAY BE GRADUAL. GRAPHIC LOG FOR ILLUSTRATION PURPOSES ONLY.

GROUNDWATER DATA

X FREE WATER NOT ENCOUNTERED DURING DRILLING

DRILLING DATA

___ AUGER 3 3/4 HOLLOW STEM
WASHBORING FROM ___ FEET
KJB DRILLER SWF LOGGER
CME 75 DRILL RIG
HAMMER TYPE Auto

REMARKS:

Drawn by: EJH	Checked by: JDM	App'vd. by: DBA
Date: 5/20/21	Date: 6/17/21	Date: 6/17/21

GEOTECHNOLOGY INC
FROM THE GROUND UP

Dewitt-Spain Airport Apron Rehabilitation
Memphis, Tennessee

LOG OF BORING: B-11

Project No. J038313.01

LOG OF BORING 2002.WL J038313.01.GPJ GTINC 0638301.GPJ 6/17/21

Surface Elevation: _____ Completion Date: 5/18/21

Datum NA

DEPTH IN FEET	DESCRIPTION OF MATERIAL	GRAPHIC LOG	DRY UNIT WEIGHT (pcf) SPT BLOW COUNTS CORE RECOVERY/RQD	SAMPLES
	ASPHALT: 4.5 inches			
	Base Material: Cement treated base - 12 inches			
	Medium dense to very loose, tan to gray SAND - SP		6-10-11	SS2
	0.6% passing No. 200 sieve		5-8-7	SS3
5			1-1-1	SS4
			1-1-1	SS5
10	Boring terminated at 10 feet.			

SHEAR STRENGTH, tsf
Δ - UU/2 ○ - QU/2 □ - SV
0.5 1.0 1.5 2.0 2.5

STANDARD PENETRATION RESISTANCE
(ASTM D 1586)
▲ N-VALUE (BLOWS PER FOOT)

WATER CONTENT, %
PL 10 20 30 40 50 LL

NOTE: STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARIES BETWEEN SOIL TYPES AND THE TRANSITION MAY BE GRADUAL. GRAPHIC LOG FOR ILLUSTRATION PURPOSES ONLY.

GROUNDWATER DATA

ENCOUNTERED AT 7 FEET ▽

DRILLING DATA

___ AUGER 3 3/4 HOLLOW STEM
WASHBORING FROM ___ FEET
KJB DRILLER SWF LOGGER
CME 75 DRILL RIG
HAMMER TYPE Auto

REMARKS:

Drawn by: EJH	Checked by: JDM	App'vd. by: DBA
Date: 5/20/21	Date: 6/17/21	Date: 6/17/21

GEOTECHNOLOGY INC
FROM THE GROUND UP

Dewitt-Spain Airport Apron Rehabilitation
Memphis, Tennessee

LOG OF BORING: B-12

Project No. J038313.01

LOG OF BORING 2002.WL J038313.01.GPJ GTINC 0638301.GPJ 6/17/21

Surface Elevation: _____ Completion Date: 5/17/21

Datum NA

DEPTH IN FEET	DESCRIPTION OF MATERIAL	GRAPHIC LOG	DRY UNIT WEIGHT (pcf) SPT BLOW COUNTS CORE RECOVERY/RQD	SAMPLES
	ASPHALT: 7.25 inches			
	Base Material: Cement treated base - 4.75 inches			
	Medium dense to very loose, tan to gray SAND - SP		8-12-19	SS2
			8-7-8	SS3
5				
			1-1-3	SS4
	Soft, gray, FAT CLAY - CH		1-1-1	SS5
10	Boring terminated at 10 feet.			

SHEAR STRENGTH, tsf

△ - UU/2 ○ - QU/2 □ - SV

0.5 1.0 1.5 2.0 2.5

STANDARD PENETRATION RESISTANCE

(ASTM D 1586)

▲ N-VALUE (BLOWS PER FOOT)

WATER CONTENT, %

PL 10 20 30 40 50 LL

NOTE: STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARIES BETWEEN SOIL TYPES AND THE TRANSITION MAY BE GRADUAL. GRAPHIC LOG FOR ILLUSTRATION PURPOSES ONLY.

GROUNDWATER DATA

X FREE WATER NOT ENCOUNTERED DURING DRILLING

DRILLING DATA

___ AUGER 3 3/4 HOLLOW STEM

WASHBORING FROM ___ FEET

KJB DRILLER SWF LOGGER

CME 75 DRILL RIG

HAMMER TYPE Auto

REMARKS:

Drawn by: EJH	Checked by: JDM	App'vd. by: DBA
Date: 5/20/21	Date: 6/17/21	Date: 6/17/21

GEOTECHNOLOGY INC
FROM THE GROUND UP

Dewitt-Spain Airport Apron Rehabilitation
Memphis, Tennessee

LOG OF BORING: B-13

Project No. J038313.01

LOG OF BORING 2002.WL J038313.01.GPJ GTINC 0638301.GPJ 6/17/21

Surface Elevation: _____ Completion Date: 5/17/21

Datum NA

DEPTH IN FEET	DESCRIPTION OF MATERIAL	GRAPHIC LOG	DRY UNIT WEIGHT (pcf) SPT BLOW COUNTS CORE RECOVERY/RQD	SAMPLES
	ASPHALT: 7 inches			
	Base Material: Cement treated base - 5 inches			
	Medium dense, tan SAND - SP		7-15-16	SS2
5	Medium dense to loose, tan, GRAVELLY SAND - SP		14-14-18	SS3
			3-5-7	SS4
			1-2-4	SS5
10	Boring terminated at 10 feet.			

SHEAR STRENGTH, tsf

△ - UU/2 ○ - QU/2 □ - SV

0.5 1.0 1.5 2.0 2.5

STANDARD PENETRATION RESISTANCE

(ASTM D 1586)

▲ N-VALUE (BLOWS PER FOOT)

WATER CONTENT, %

PL 10 20 30 40 50 LL

NOTE: STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARIES BETWEEN SOIL TYPES AND THE TRANSITION MAY BE GRADUAL. GRAPHIC LOG FOR ILLUSTRATION PURPOSES ONLY.

GROUNDWATER DATA

X FREE WATER NOT ENCOUNTERED DURING DRILLING

DRILLING DATA

___ AUGER 3 3/4 HOLLOW STEM

WASHBORING FROM ___ FEET

KJB DRILLER SWF LOGGER

CME 75 DRILL RIG

HAMMER TYPE Auto

REMARKS:

Drawn by: EJH	Checked by: JDM	App'vd. by: DBA
Date: 5/20/21	Date: 6/17/21	Date: 6/17/21

GEOTECHNOLOGY INC
FROM THE GROUND UP

Dewitt-Spain Airport Apron Rehabilitation
Memphis, Tennessee

LOG OF BORING: B-14

Project No. J038313.01

LOG OF BORING 2002.WL J038313.01.GPJ GTINC 0638301.GPJ 6/17/21

Surface Elevation: _____ Completion Date: 5/17/21

Datum NA

DEPTH IN FEET	DESCRIPTION OF MATERIAL	GRAPHIC LOG	DRY UNIT WEIGHT (pcf) SPT BLOW COUNTS CORE RECOVERY/RQD	SAMPLES
	ASPHALT: 3.25 inches			
	Base Material: Cement treated base - 12.25 inches			
	Medium dense, tan to gray SAND - SP 3.7% passing No. 2 sieve		8-12-16	SS2
			7-11-12	SS3
5			2-6-6	SS4
	Soft, gray, FAT CLAY - CH ▽		1-1-2	SS5
10	Boring terminated at 10 feet.			

SHEAR STRENGTH, tsf

△ - UU/2 ○ - QU/2 □ - SV

0.5 1.0 1.5 2.0 2.5

STANDARD PENETRATION RESISTANCE

(ASTM D 1586)

▲ N-VALUE (BLOWS PER FOOT)

WATER CONTENT, %

PL 10 20 30 40 50 LL

NOTE: STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARIES BETWEEN SOIL TYPES AND THE TRANSITION MAY BE GRADUAL. GRAPHIC LOG FOR ILLUSTRATION PURPOSES ONLY.

GROUNDWATER DATA

ENCOUNTERED AT 9 FEET ▽

DRILLING DATA

___ AUGER 3 3/4 HOLLOW STEM

WASHBORING FROM ___ FEET

KJB DRILLER SWF LOGGER

CME 75 DRILL RIG

HAMMER TYPE Auto

REMARKS: Composite bucket samples recovered for relative density testing.

Drawn by: EJH	Checked by: JDM	App'vd. by: DBA
Date: 5/20/21	Date: 6/17/21	Date: 6/17/21

GEOTECHNOLOGY INC
FROM THE GROUND UP

Dewitt-Spain Airport Apron Rehabilitation
Memphis, Tennessee

LOG OF BORING: B-15

Project No. J038313.01

LOG OF BORING 2002.WL J038313.01.GPJ GTINC 0638301.GPJ 6/17/21

Surface Elevation: _____ Completion Date: 5/17/21

Datum NA

DEPTH IN FEET	DESCRIPTION OF MATERIAL	GRAPHIC LOG	DRY UNIT WEIGHT (pcf) SPT BLOW COUNTS CORE RECOVERY/RQD	SAMPLES
	ASPHALT: 5 inches			
	Base Material: Cement treated base - 10 inches			
	Medium dense, tan SAND - SP		6-11-13	SS2
			7-11-12	SS3
5				
			4-6-7	SS4
	Soft, gray, FAT CLAY - CH		1-1-1	SS5
10	Boring terminated at 10 feet.			

SHEAR STRENGTH, tsf

△ - UU/2 ○ - QU/2 □ - SV

0.5 1.0 1.5 2.0 2.5

STANDARD PENETRATION RESISTANCE

(ASTM D 1586)

▲ N-VALUE (BLOWS PER FOOT)

WATER CONTENT, %

PL 10 20 30 40 50 LL

NOTE: STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARIES BETWEEN SOIL TYPES AND THE TRANSITION MAY BE GRADUAL. GRAPHIC LOG FOR ILLUSTRATION PURPOSES ONLY.

GROUNDWATER DATA

ENCOUNTERED AT 8.5 FEET ▽

DRILLING DATA

___ AUGER 3 3/4 HOLLOW STEM

WASHBORING FROM ___ FEET

KJB DRILLER SWF LOGGER

CME 75 DRILL RIG

HAMMER TYPE Auto

REMARKS:

Drawn by: EJH	Checked by: JDM	App'vd. by: DBA
Date: 5/20/21	Date: 6/17/21	Date: 6/17/21

GEOTECHNOLOGY INC
FROM THE GROUND UP

Dewitt-Spain Airport Apron Rehabilitation
Memphis, Tennessee

LOG OF BORING: B-16

Project No. J038313.01

LOG OF BORING 2002.WL J038313.01.GPJ GTINC 0638301.GPJ 6/17/21

Surface Elevation: _____ Completion Date: 5/17/21

Datum NA

DEPTH IN FEET	DESCRIPTION OF MATERIAL	GRAPHIC LOG	DRY UNIT WEIGHT (pcf) SPT BLOW COUNTS CORE RECOVERY/RQD	SAMPLES
	ASPHALT: 2.5 inches			
	Base Material: Cement treated base - 15.5 inches			
	Medium dense to very loose, tan SAND - SP		7-10-14	SS2
			5-9-10	SS3
5			0-1-1	SS4
	Gray, CLAYEY SAND - SC 21.3% passing No. 200 sieve			ST5
10	Boring terminated at 10 feet.			

SHEAR STRENGTH, tsf

△ - UU/2 ○ - QU/2 □ - SV

0.5 1.0 1.5 2.0 2.5

STANDARD PENETRATION RESISTANCE

(ASTM D 1586)

▲ N-VALUE (BLOWS PER FOOT)

WATER CONTENT, %

PL 10 20 30 40 50 LL

NOTE: STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARIES BETWEEN SOIL TYPES AND THE TRANSITION MAY BE GRADUAL. GRAPHIC LOG FOR ILLUSTRATION PURPOSES ONLY.

GROUNDWATER DATA

ENCOUNTERED AT 4.5 FEET ▽

DRILLING DATA

___ AUGER 3 3/4 HOLLOW STEM

WASHBORING FROM ___ FEET

KJB DRILLER SWF LOGGER

CME 75 DRILL RIG

HAMMER TYPE Auto

REMARKS:

Drawn by: EJH	Checked by: JDM	App'vd. by: DBA
Date: 5/20/21	Date: 6/17/21	Date: 6/17/21

GEOTECHNOLOGY INC
FROM THE GROUND UP

Dewitt-Spain Airport Apron Rehabilitation
Memphis, Tennessee

LOG OF BORING: B-17

Project No. J038313.01

LOG OF BORING 2002.WL J038313.01.GPJ GTINC 0638301.GPJ 6/17/21

Surface Elevation: _____ Completion Date: 5/17/21

Datum NA

DEPTH IN FEET	DESCRIPTION OF MATERIAL	GRAPHIC LOG	DRY UNIT WEIGHT (pcf) SPT BLOW COUNTS CORE RECOVERY/RQD	SAMPLES
	ASPHALT: 2.25 inches			
	Base Material: Cement treated base - 9.75 inches			
	Medium dense, tan to gray SAND - SP		6-9-12	SS2
	0.7% passing No. 200 sieve		5-7-6	SS3
5				
	Medium stiff, gray, FAT CLAY - CH		2-2-4	SS4
			2-2-3	SS5
10	Boring terminated at 10 feet.			

SHEAR STRENGTH, tsf

△ - UU/2 ○ - QU/2 □ - SV

0.5 1.0 1.5 2.0 2.5

STANDARD PENETRATION RESISTANCE

(ASTM D 1586)

▲ N-VALUE (BLOWS PER FOOT)

WATER CONTENT, %

PL 10 20 30 40 50 LL

NOTE: STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARIES BETWEEN SOIL TYPES AND THE TRANSITION MAY BE GRADUAL. GRAPHIC LOG FOR ILLUSTRATION PURPOSES ONLY.

GROUNDWATER DATA

ENCOUNTERED AT 8 FEET ▽

DRILLING DATA

___ AUGER 3 3/4 HOLLOW STEM

WASHBORING FROM ___ FEET

KJB DRILLER SWF LOGGER

CME 75 DRILL RIG

HAMMER TYPE Auto

REMARKS:

Drawn by: EJH	Checked by: JDM	App'vd. by: DBA
Date: 5/20/21	Date: 6/17/21	Date: 6/17/21

GEOTECHNOLOGY INC
FROM THE GROUND UP

Dewitt-Spain Airport Apron Rehabilitation
Memphis, Tennessee

LOG OF BORING: B-18

Project No. J038313.01

LOG OF BORING 2002.WL J038313.01.GPJ GTINC 0638301.GPJ 6/17/21

Surface Elevation: _____ Completion Date: 5/14/21

Datum NA

DEPTH IN FEET	DESCRIPTION OF MATERIAL	GRAPHIC LOG	DRY UNIT WEIGHT (pcf) SPT BLOW COUNTS CORE RECOVERY/RQD	SAMPLES
	ASPHALT: 5.5 inches			
	Base Material: Cement treated base - 9 inches			
	Very stiff to soft, brown and gray to brown, silty, LEAN CLAY - CL		3-4-12	SS2
	some gravel			
			3-7-10	SS3
5				
			2-3-3	SS4
			1-2-2	SS5
10	Boring terminated at 10 feet.			

SHEAR STRENGTH, tsf

△ - UU/2 ○ - QU/2 □ - SV

0.5 1.0 1.5 2.0 2.5

STANDARD PENETRATION RESISTANCE

(ASTM D 1586)

▲ N-VALUE (BLOWS PER FOOT)

WATER CONTENT, %

PL 10 20 30 40 50 LL

NOTE: STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARIES BETWEEN SOIL TYPES AND THE TRANSITION MAY BE GRADUAL. GRAPHIC LOG FOR ILLUSTRATION PURPOSES ONLY.

GROUNDWATER DATA

X FREE WATER NOT ENCOUNTERED DURING DRILLING

DRILLING DATA

___ AUGER 3 3/4 HOLLOW STEM

WASHBORING FROM ___ FEET

CRF DRILLER SWF LOGGER

Geoprobe 7822 DT DRILL RIG

HAMMER TYPE Auto

REMARKS:

Drawn by: EJH	Checked by: JDM	App'vd. by: DBA
Date: 5/21/21	Date: 6/17/21	Date: 6/17/21

GEOTECHNOLOGY INC
FROM THE GROUND UP

Dewitt-Spain Airport Apron Rehabilitation
Memphis, Tennessee

LOG OF BORING: B-19

Project No. J038313.01

LOG OF BORING 2002.WL J038313.01.GPJ GTINC 0638301.GPJ 6/17/21

Surface Elevation: _____ Completion Date: 5/14/21

Datum NA

DEPTH IN FEET	DESCRIPTION OF MATERIAL	GRAPHIC LOG	DRY UNIT WEIGHT (pcf) SPT BLOW COUNTS CORE RECOVERY/RQD	SAMPLES
	ASPHALT: 5.75 inches			
	Base Material: Cement treated base - 13.25 inches			
	Very stiff to medium stiff, gray to brown, silty, LEAN CLAY - (CL)		5-10-11	SS2
			2-4-5	SS3
5			98	ST4
			2-2-3	SS5
10	Boring terminated at 10 feet.			

SHEAR STRENGTH, tsf

Δ - UU/2 ○ - QU/2 □ - SV

0.5 1.0 1.5 2.0 2.5

STANDARD PENETRATION RESISTANCE

(ASTM D 1586)

▲ N-VALUE (BLOWS PER FOOT)

WATER CONTENT, %

PL 10 20 30 40 50 LL

NOTE: STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARIES BETWEEN SOIL TYPES AND THE TRANSITION MAY BE GRADUAL. GRAPHIC LOG FOR ILLUSTRATION PURPOSES ONLY.

GROUNDWATER DATA

X FREE WATER NOT ENCOUNTERED DURING DRILLING

DRILLING DATA

___ AUGER 3 3/4 HOLLOW STEM

WASHBORING FROM ___ FEET

CRF DRILLER SWF LOGGER

Geoprobe 7822 DT DRILL RIG

HAMMER TYPE Auto

REMARKS:

Drawn by: EJH	Checked by: JDM	App'vd. by: DBA
Date: 5/21/21	Date: 6/17/21	Date: 6/17/21

GEOTECHNOLOGY INC
FROM THE GROUND UP

Dewitt-Spain Airport Apron Rehabilitation
Memphis, Tennessee

LOG OF BORING: B-20

Project No. J038313.01

LOG OF BORING 2002.WL J038313.01.GPJ GTINC 0638301.GPJ 6/17/21

Surface Elevation: _____ Completion Date: 5/15/21

Datum NA

DEPTH IN FEET	DESCRIPTION OF MATERIAL	GRAPHIC LOG	DRY UNIT WEIGHT (pcf) SPT BLOW COUNTS CORE RECOVERY/RQD	SAMPLES
	ASPHALT: 5 inches			
	Base Material: Cement treated base - 9 inches			
	Very stiff to soft, brown, silty, LEAN CLAY - (CL)		4-8-9	SS2
			105	ST3
5			2-3-4	SS4
			1-2-2	SS5
10	Boring terminated at 10 feet.			

SHEAR STRENGTH, tsf
△ - UU/2 ○ - QU/2 □ - SV
0.5 1.0 1.5 2.0 2.5

STANDARD PENETRATION RESISTANCE
(ASTM D 1586)
▲ N-VALUE (BLOWS PER FOOT)

WATER CONTENT, %
PL 10 20 30 40 50 LL

NOTE: STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARIES BETWEEN SOIL TYPES AND THE TRANSITION MAY BE GRADUAL. GRAPHIC LOG FOR ILLUSTRATION PURPOSES ONLY.

GROUNDWATER DATA

X FREE WATER NOT ENCOUNTERED DURING DRILLING

DRILLING DATA

___ AUGER 3 3/4 HOLLOW STEM
WASHBORING FROM ___ FEET
KJB DRILLER SWF LOGGER
CME 75 DRILL RIG
HAMMER TYPE Auto

REMARKS: Composite bucket sample obtained for standard proctor testing.

Drawn by: EJH	Checked by: JDM	App'vd. by: DBA
Date: 5/21/21	Date: 6/17/21	Date: 6/17/21

GEOTECHNOLOGY INC
FROM THE GROUND UP

Dewitt-Spain Airport Apron Rehabilitation
Memphis, Tennessee

LOG OF BORING: B-21

Project No. J038313.01

LOG OF BORING 2002.WL J038313.01.GPJ GTINC 0638301.GPJ 6/17/21

Surface Elevation: _____ Completion Date: 5/18/21

Datum NA

DEPTH IN FEET	DESCRIPTION OF MATERIAL	GRAPHIC LOG	DRY UNIT WEIGHT (pcf) SPT BLOW COUNTS CORE RECOVERY/RQD	SAMPLES
	ASPHALT: 4 inches			
	Base Material: Cement treated base - 11 inches			
	Medium dense, tan SAND - SP		5-10-11	SS2
	0.8% passing No. 200 sieve		4-6-9	SS3
5			3-6-6	SS4
	Stiff, brown and gray, silty, LEAN CLAY - CL		2-4-7	SS5
10	Boring terminated at 10 feet.			

SHEAR STRENGTH, tsf

△ - UU/2 ○ - QU/2 □ - SV

0.5 1.0 1.5 2.0 2.5

STANDARD PENETRATION RESISTANCE

(ASTM D 1586)

▲ N-VALUE (BLOWS PER FOOT)

WATER CONTENT, %

PL 10 20 30 40 50 LL

NOTE: STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARIES BETWEEN SOIL TYPES AND THE TRANSITION MAY BE GRADUAL. GRAPHIC LOG FOR ILLUSTRATION PURPOSES ONLY.

GROUNDWATER DATA

X FREE WATER NOT ENCOUNTERED DURING DRILLING

DRILLING DATA

___ AUGER 3 3/4 HOLLOW STEM

WASHBORING FROM ___ FEET

KJB DRILLER SWF LOGGER

CME 75 DRILL RIG

HAMMER TYPE Auto

REMARKS:

Drawn by: EJH	Checked by: JDM	App'vd. by: DBA
Date: 5/21/21	Date: 6/17/21	Date: 6/17/21

GEOTECHNOLOGY INC
FROM THE GROUND UP

Dewitt-Spain Airport Apron Rehabilitation
Memphis, Tennessee

LOG OF BORING: B-22

Project No. J038313.01

LOG OF BORING 2002.WL J038313.01.GPJ GTINC 0638301.GPJ 6/17/21

Surface Elevation: _____ Completion Date: 5/15/21

Datum NA

DEPTH IN FEET	DESCRIPTION OF MATERIAL	GRAPHIC LOG	DRY UNIT WEIGHT (pcf) SPT BLOW COUNTS CORE RECOVERY/RQD	SAMPLES
	ASPHALT: 4.5 inches			
	Base Material: Cement treated base - 8.5 inches			
	Medium dense, tan SAND - SP		9-9-13	SS2
			5-8-10	SS3
5				
	Very loose, tan, GRAVELLY SAND - SP		2-2-2	SS4
			1-1-1	SS5
10	Boring terminated at 10 feet.			

SHEAR STRENGTH, tsf

△ - UU/2 ○ - QU/2 □ - SV

0.5 1.0 1.5 2.0 2.5

STANDARD PENETRATION RESISTANCE

(ASTM D 1586)

▲ N-VALUE (BLOWS PER FOOT)

WATER CONTENT, %

PL 10 20 30 40 50 LL

NOTE: STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARIES BETWEEN SOIL TYPES AND THE TRANSITION MAY BE GRADUAL. GRAPHIC LOG FOR ILLUSTRATION PURPOSES ONLY.

GROUNDWATER DATA

ENCOUNTERED AT 7 FEET ▽

DRILLING DATA

___ AUGER 3 3/4 HOLLOW STEM

WASHBORING FROM ___ FEET

KJB DRILLER SWF LOGGER

CME 75 DRILL RIG

HAMMER TYPE Auto

REMARKS:

Drawn by: EJH	Checked by: JDM	App'vd. by: DBA
Date: 5/21/21	Date: 6/17/21	Date: 6/17/21

GEOTECHNOLOGY INC
FROM THE GROUND UP

Dewitt-Spain Airport Apron Rehabilitation
Memphis, Tennessee

LOG OF BORING: B-23

Project No. J038313.01

LOG OF BORING 2002.WL J038313.01.GPJ GTINC 0638301.GPJ 6/17/21

Surface Elevation: _____ Completion Date: 5/14/21

Datum NA

DEPTH IN FEET	DESCRIPTION OF MATERIAL	GRAPHIC LOG	DRY UNIT WEIGHT (pcf) SPT BLOW COUNTS CORE RECOVERY/RQD	SAMPLES
	ASPHALT: 4.75 inches			
	Base Material: Cement treated base - 13.25 inches			
	Medium stiff, gray, LEAN CLAY - CL		7-3-4	SS2
5	Medium dense, tan and orange to tan, GRAVELLY SAND - SP		6-7-9	SS3
	Very loose, gray, CLAYEY SAND - SP 49.5% passing No. 200 sieve		2-1-1	SS4
	Soft, gray, FAT CLAY - CH		1-1-2	SS5
10	Boring terminated at 10 feet.			

SHEAR STRENGTH, tsf

△ - UU/2 ○ - QU/2 □ - SV

0.5 1.0 1.5 2.0 2.5

STANDARD PENETRATION RESISTANCE

(ASTM D 1586)

▲ N-VALUE (BLOWS PER FOOT)

WATER CONTENT, %

PL 10 20 30 40 50 LL

NOTE: STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARIES BETWEEN SOIL TYPES AND THE TRANSITION MAY BE GRADUAL. GRAPHIC LOG FOR ILLUSTRATION PURPOSES ONLY.

GROUNDWATER DATA

ENCOUNTERED AT 6 FEET ▽

DRILLING DATA

___ AUGER 3 3/4 HOLLOW STEM

WASHBORING FROM ___ FEET

CRF DRILLER SWF LOGGER

Geoprobe 7822 DT DRILL RIG

HAMMER TYPE Auto

REMARKS:

Drawn by: EJH	Checked by: JDM	App'vd. by: DBA
Date: 5/21/21	Date: 6/17/21	Date: 6/17/21

GEOTECHNOLOGY INC
FROM THE GROUND UP

Dewitt-Spain Airport Apron Rehabilitation
Memphis, Tennessee

LOG OF BORING: B-24

Project No. J038313.01

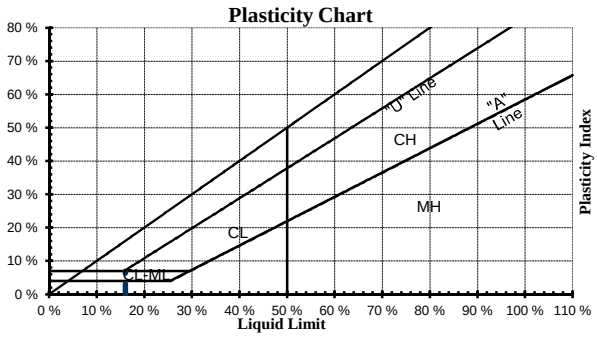
LOG OF BORING 2002.WL J038313.01.GPJ GTINC 0638301.GPJ 6/17/21

DRAFT

BORING LOG: TERMS AND SYMBOLS

LEGEND

CS	Continuous Sampler
GB	Grab Sample
NQ	NQ Rock Core
PST	Three-Inch Diameter Piston Tube Sample
SS	Split-Spoon Sample (Standard Penetration Test)
ST	Three-Inch Diameter Shelby Tube Sample
*	Sample Not Recovered
PL	Plastic Limit (ASTM D4318)
LL	Liquid Limit (ASTM D4318)
SV	Shear Strength from Field Vane (ASTM D2573)
UU	Shear Strength from Unconsolidated-Undrained Triaxial Compression Test (ASTM D2850)
QU	Shear Strength from Unconfined Compression Test (ASTM D2166)



SOIL GRAIN SIZE

US STANDARD SIEVE

12"	3"	3/4"	4	10	40	200	
BOULDERS	COBBLES	GRAVEL		SAND			SILT / CLAY
		COARSE	FINE	COARSE	MEDIUM	FINE	

300	76.2	19.1	4.76	2.00	0.42	0.074	0.005

SOIL GRAIN SIZE IN MILLIMETERS

UNIFIED SOIL CLASSIFICATION SYSTEM

Major Divisions			*Symbol*	*Description*
Coarse-Grained Soils (More than 50% Larger than No. 200 Sieve Size)	Gravel and Gravelly Soil	Clean Gravels Little or no Fines	GW	Well-Graded Gravel, Gravel- Sand Mixture
			GP	Poorly-Graded Gravel, Gravel-Sand Mixture
		Gravels with Appreciable Fines	GM	Silty Gravel, Gravel-Sand-Silt Mixture
			GC	Clayey-Gravel, Gravel-Sand-Clay Mixture
	Sand and Sandy Soils	Clean Sands Little or no Fines	SW	Well-Graded Sand, Gravelly Sand
			SP	Poorly-Graded Sand, Gravelly Sand
		Sands with Appreciable Fines	SM	Silty Sand, Sand-Silt Mixture
			SC	Clayey-Sand, Sand-Clay Mixture
Fine-Grained Soils (More than 50% Smaller than No. 200 Sieve Size)	Silts and Clays	Liquid Limit Less Than 50	ML	Silt, Sandy Silt, Clayey Silt, Slight Plasticity
			CL	Lean Clay, Sandy Clay, Silty Clay, Low to Medium Plasticity
			OL	Organic Silts or Lean Clays, Low Plasticity
	Silts and Clays	Liquid Limit Greater Than 50	MH	Silt, High Plasticity
			CH	Fat Clay, High Plasticity
			OH	Organic Clay, Medium to High Plasticity
	Highly Organic Soils		PT	Peat, Humus, Swamp Soil

STRENGTH OF COHESIVE SOILS

Consistency	*Undrained Shear Strength (tsf)*	*Unconfined Comp. Strength (tsf)*
Very Soft	less than 0.125	less then 0.25
Soft	0.125 to 0.25	0.25 to 0.5
Medium Stiff	0.25 to 0.5	0.5 to 1.0
Stiff	0.5 to 1.0	1.0 to 2.0
Very Stiff	1.0 to 2.0	2.0 to 3.0
Hard	greater than 2.0	greater than 4.0

DENSITY OF GRANULAR SOILS

Descriptive Term	*Approximate N_{60}-Value Range*
Very Loose	0 to 4
Loose	5 to 10
Medium Dense	11 to 30
Dense	31 to 50
Very Dense	>50

N-Value (Blow Count) is the last two, 6-inch drive increments (i.e. 4/7/9, N = 7 + 9 = 16). Values are shown as a summation on the grid plot and shown in the Unit Dry Weight/SPT column.

RELATIVE COMPOSITION

Trace	0 to 10%
Little	10 to 20%
Some	20 to 35%
And	35 to 50%

OTHER TERMS

Layer - Inclusion greater than 3 inches thick.

Seam - Inclusion 1/8-inch to 3 inches thick

Parting - Inclusion less than 1/8-inch thick

Pocket - Inclusion of material that is smaller than sample diameter

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Relative composition and Unified Soil Classification System (USCS) designations are based on visual descriptions and are approximate only. If laboratory tests were performed to classify the soil, the USCS designation is shown in parenthesis.

APPENDIX D – LABORATORY TEST DATA

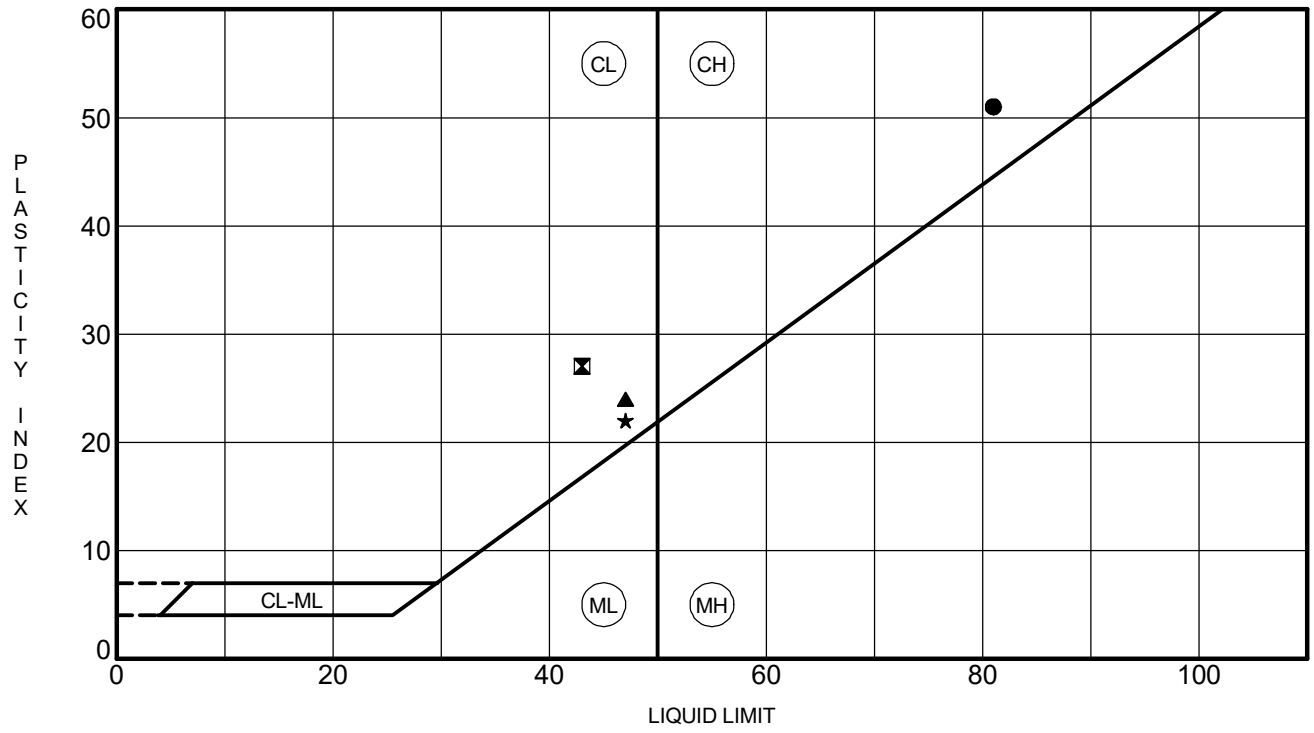
Atterberg Limits

Grain Size Distributions

Unconsolidated-Undrained Triaxial Compressions

Standard Proctor Compaction

Relative Density Plot



	Specimen Identification		LL	PL	PI	Fines	Classification
●	**B- 6**	**6.0**	**81**	**30**	**51**		**FAT CLAY(CH)**
⊠	**B-20**	**6.0**	**43**	**16**	**27**		**LEAN CLAY(CL)**
▲	**B-21**	**0.0**	**47**	**23**	**24**		**LEAN CLAY(CL)**
★	**B-21**	**3.0**	**47**	**25**	**22**		**LEAN CLAY(CL)**

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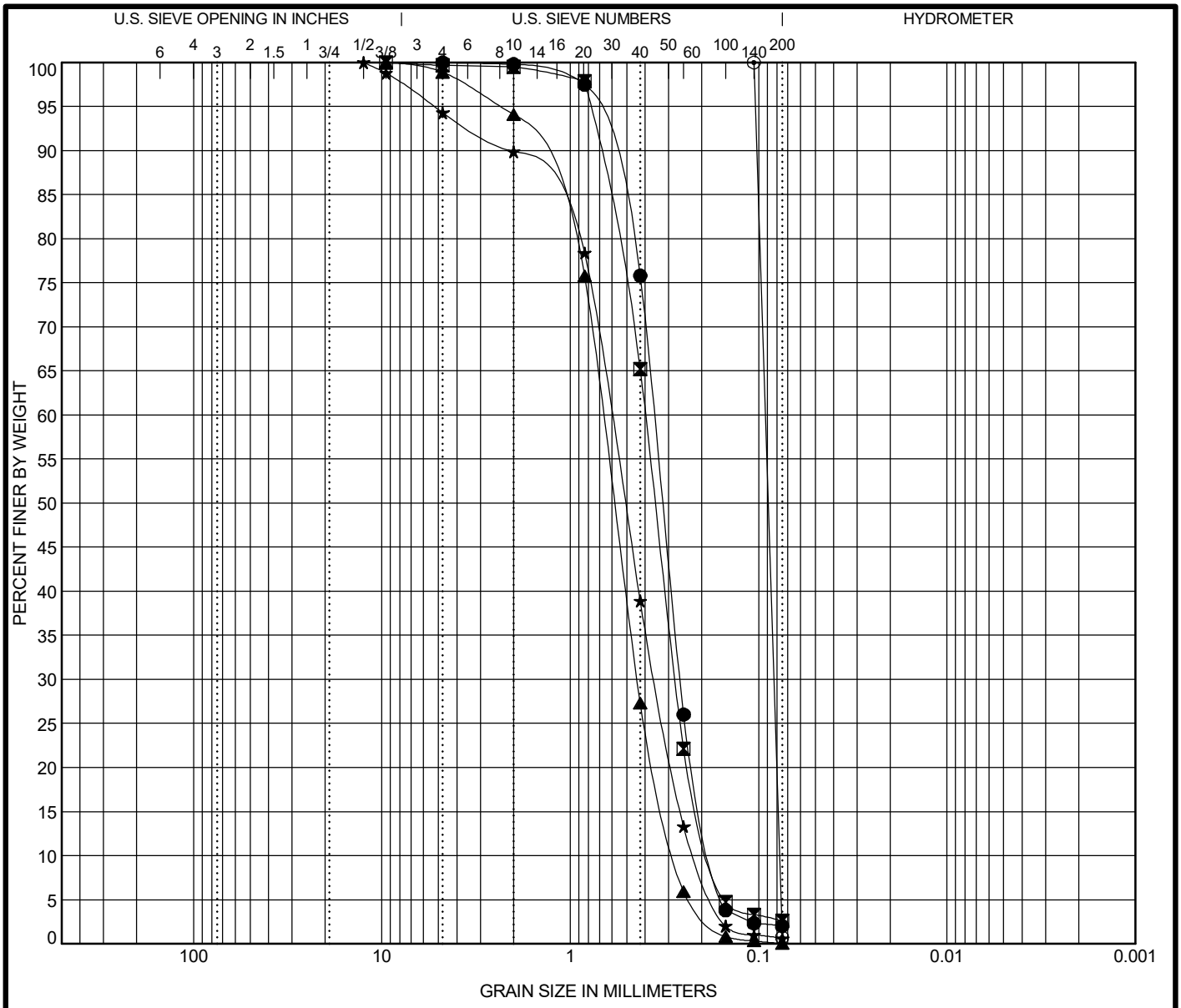
ATTERBERG LIMITS RESULTS

Dewitt-Spain Airport Apron Rehabilitation
Memphis, Tennessee
J038313.01

US_ATTERBERG_LIMITS_J038313.01.GPJ_US_LAB.GDT_6/16/21

DRAFT



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

Specimen Identification			Classification	LL	PL	PI	Cc	Cu
●	B- 2	3.5	POORLY GRADED SAND(SP)				1.10	2.08
⊠	B- 6	1.0	POORLY GRADED SAND(SP)				1.09	2.27
▲	B- 8	6.0	POORLY GRADED SAND(SP)				1.05	2.43
★	B-12	3.5	POORLY GRADED SAND(SP)				0.95	2.84
⊙	B-15	0.0	POORLY GRADED SAND(SP)				0.97	1.19

Specimen Identification			D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
●	B- 2	3.5	4.75	0.359	0.261	0.173	0.0	98.0	2.0	
⊠	B- 6	1.0	9.5	0.399	0.276	0.175	0.3	97.1	2.6	
▲	B- 8	6.0	9.5	0.673	0.441	0.277	1.1	98.9	0.0	
★	B-12	3.5	12.5	0.612	0.353	0.215	5.7	93.7	0.6	
⊙	B-15	0.0	0.106	0.092	0.083	0.077	0.0	99.3	0.7	

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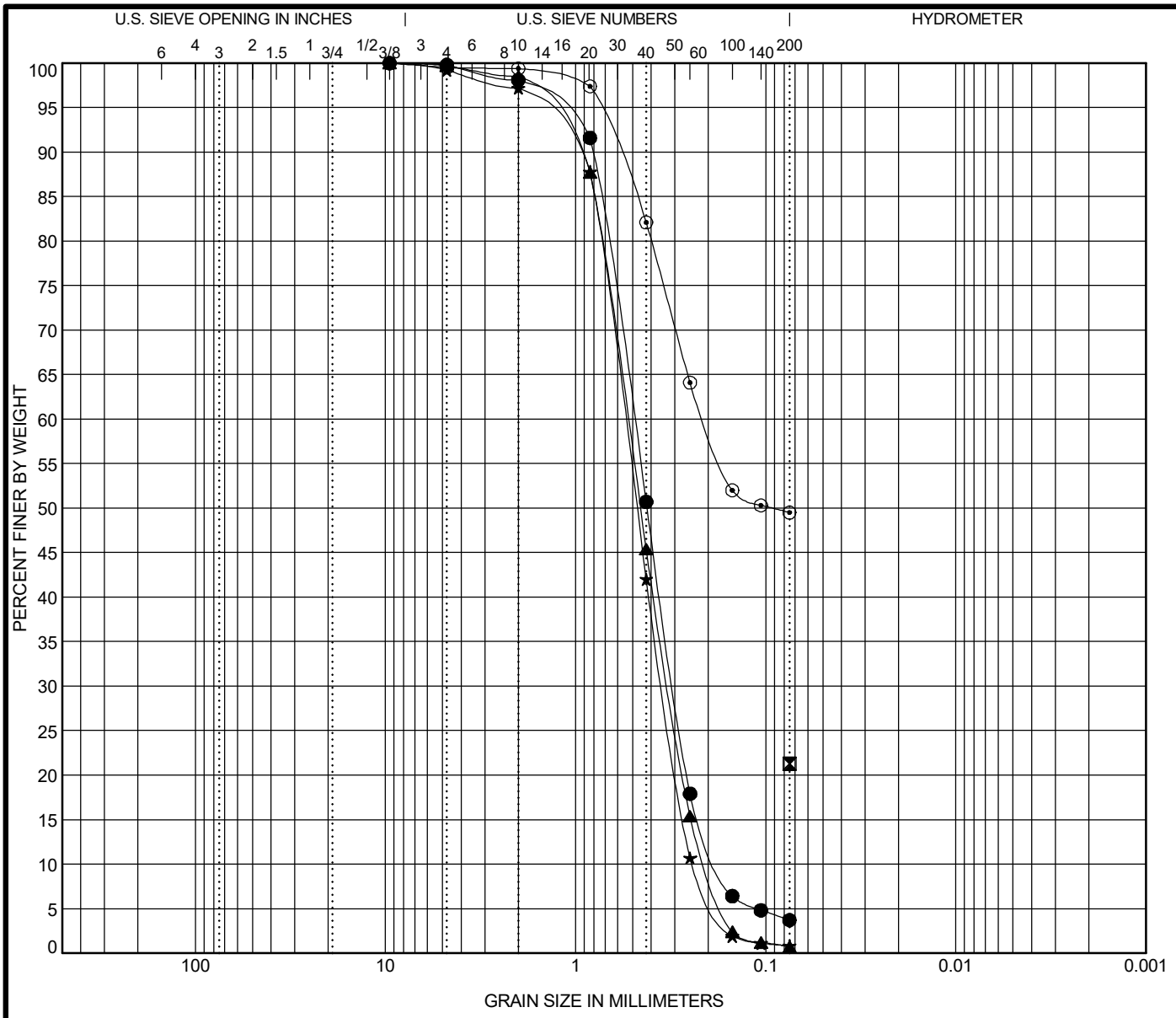
GRAIN SIZE DISTRIBUTION

Dewitt-Spain Airport Apron Rehabilitation
Memphis, Tennessee
J038313.01

US GRAIN SIZE J038313.01.GPJ US LAB.GDT 6/16/21

DRAFT



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

Specimen Identification			Classification	LL	PL	PI	Cc	Cu
●	B-15	1.0	POORLY GRADED SAND(SP)				1.06	2.82
⊠	B-17	8.0	CLAYEY SAND(SC)					
▲	B-18	3.5	POORLY GRADED SAND(SP)				0.96	2.66
★	B-22	3.5	POORLY GRADED SAND(SP)				0.90	2.31
⊙	B-24	6.0	CLAYEY SAND(SC)					

Specimen Identification			D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
●	B-15	1.0	9.5	0.496	0.304	0.176	0.2	96.1	3.7	
⊠	B-17	8.0	0.075				0.0	0.0	21.3	
▲	B-18	3.5	9.5	0.538	0.324	0.202	0.3	99.0	0.7	
★	B-22	3.5	9.5	0.555	0.347	0.24	0.8	98.4	0.8	
⊙	B-24	6.0	9.5	0.21			0.5	50.0	49.5	

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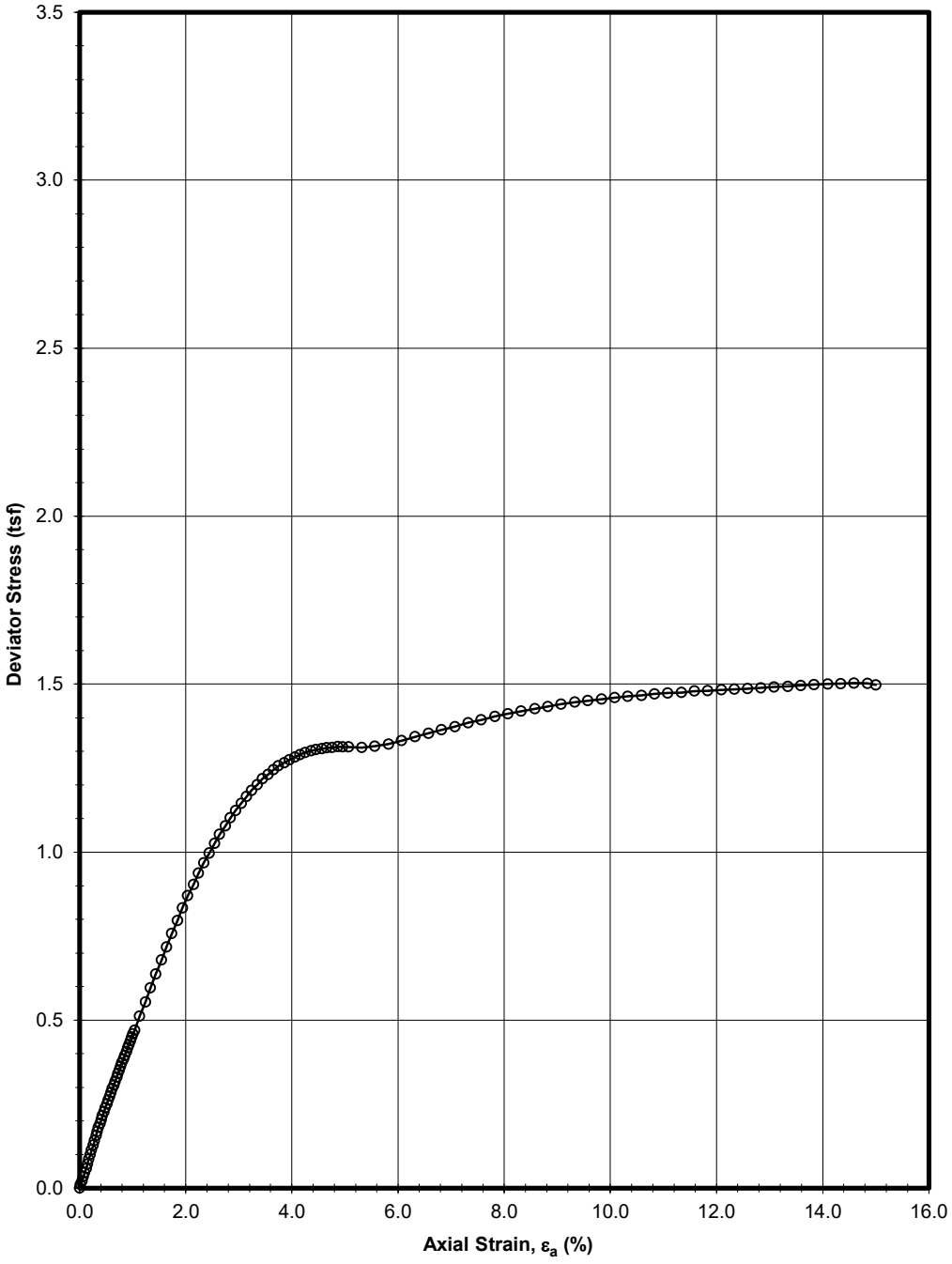
FROM THE GROUND UP

GRAIN SIZE DISTRIBUTION

Dewitt-Spain Airport Apron Rehabilitation
Memphis, Tennessee
J038313.01

US GRAIN SIZE J038313.01.GPJ US LAB.GDT 6/16/21



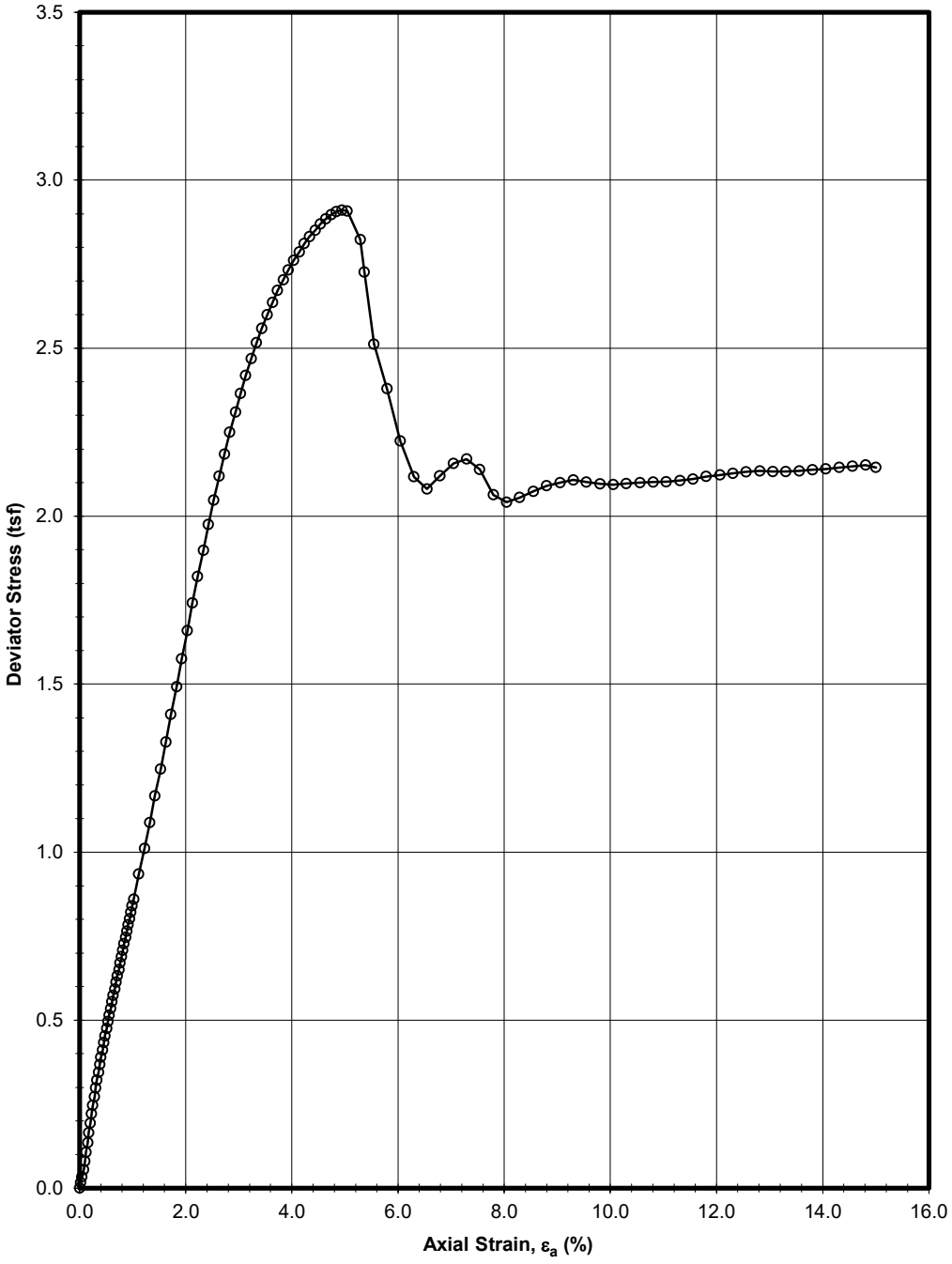
UNCONSOLIDATED-UNDRAINED TRIAXIAL COMPRESSION TEST

ASTM D 2850

Project No.: J038313.01

Boring: B-20

Sample: ST-3 - Depth: 6 ft.



UNCONSOLIDATED-UNDRAINED TRIAXIAL COMPRESSION TEST

ASTM D 2850

Project No.: J038313.01

Boring: B-21

Sample: ST-2 - Depth: 3 ft.

DRAFT

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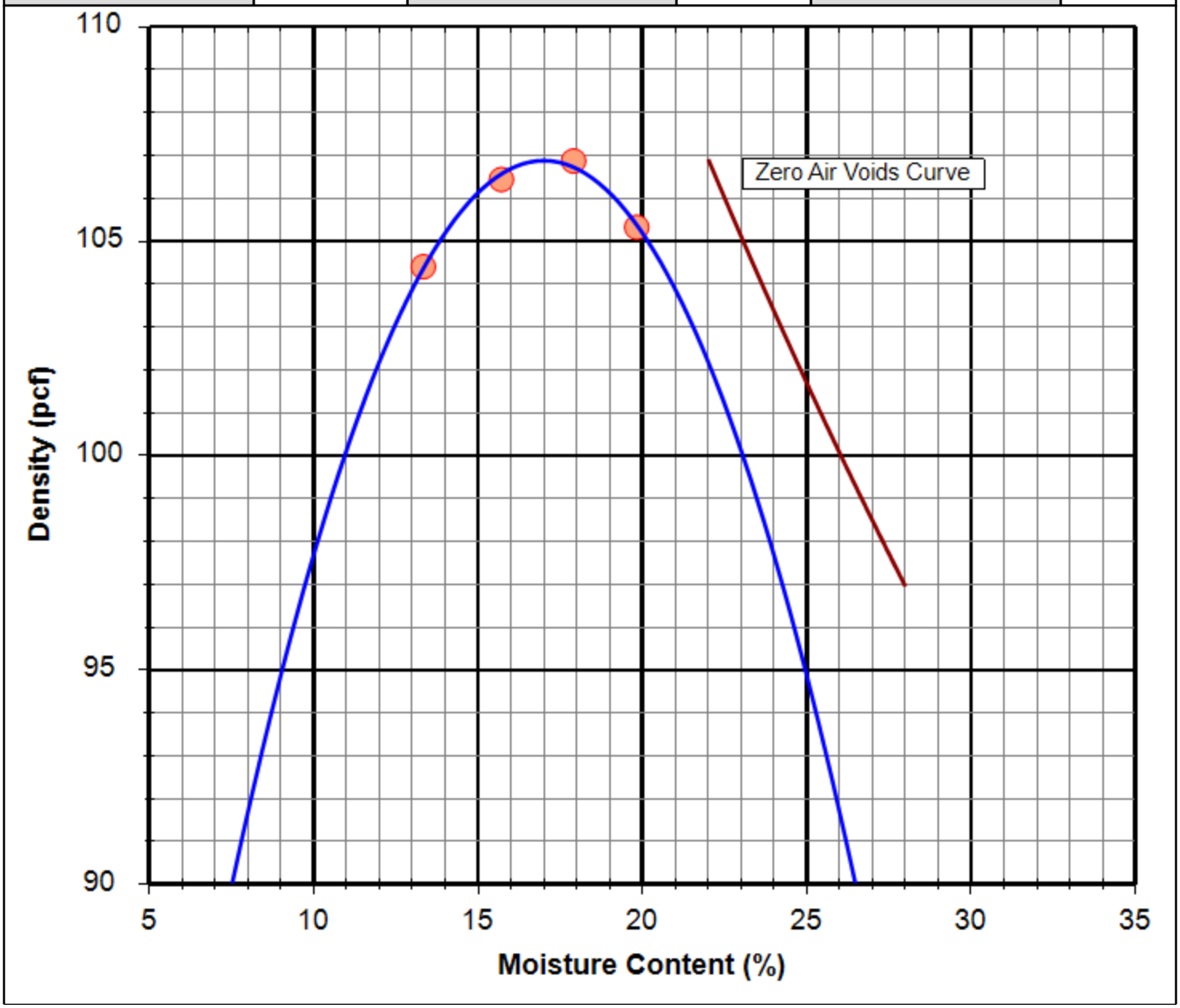
STANDARD PROCTOR MOISTURE DENSITY TEST, ASTM D698, METHOD A

Client:	Powers Hill Design, LLC	**Project No.:**	J038313.01
Project:	DeWitt-Spain Airport Apron Rehabilitation, Memphis, TN, Memphis, TN	**Date:**	5/28/2021
Sample Obtained From:	B-21	**Depth (ft.):**	1.0'-5.0'

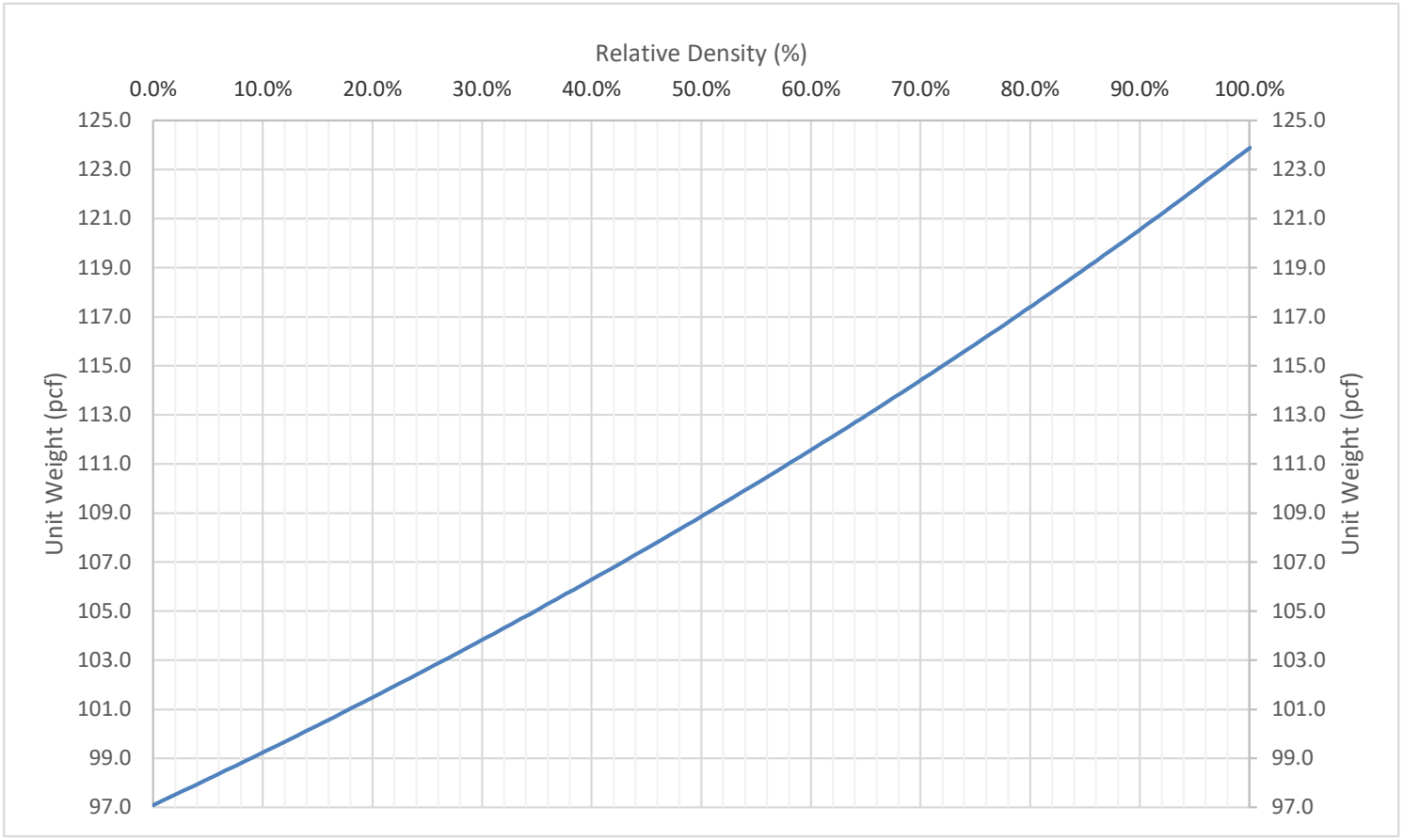
Sample Description:	Reddish Brown Silty Clay	**LL**	**PL**	**PI**	**USCS**
		47	23	24	CL

Maximum Dry Density (pcf):	106.9	**Optimum Moisture Content:**	17.0%	**In Situ Moisture Content:**	20.9%



3312 Winbrook Drive | Memphis, Tennessee 38116
(901) 353-1981 | Fax: (901) 353-2248 | geotechnology.com

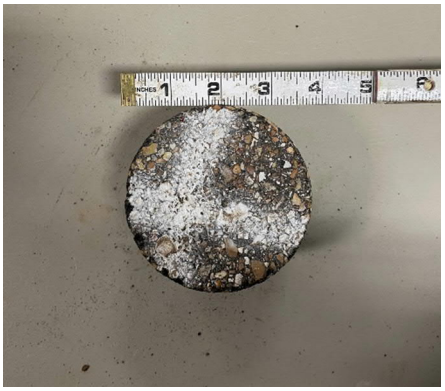
DRAFT

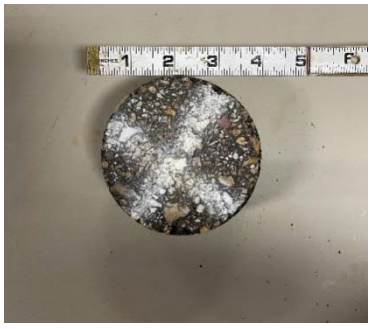


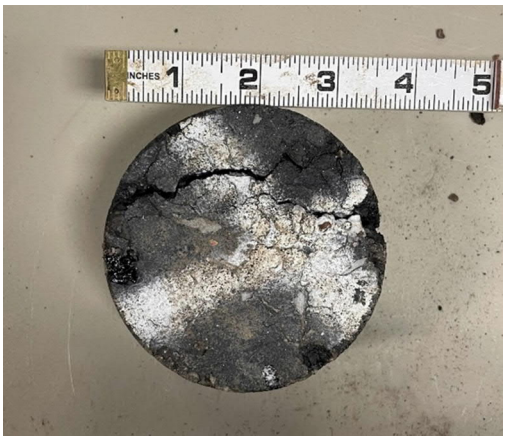
RELATIVE DENSITY PLOT
ASTM D 4253 AND ASTM D 4254
Project No. J038313.01
Boring B-15
Bulk Sample Depth: 1-5 feet

APPENDIX E – ASPHALT CORE PHOTOGRAPHS

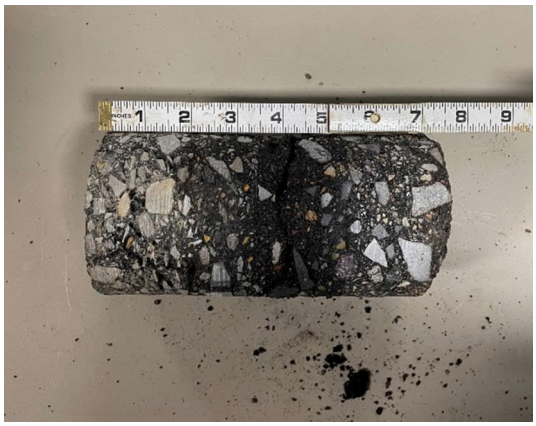
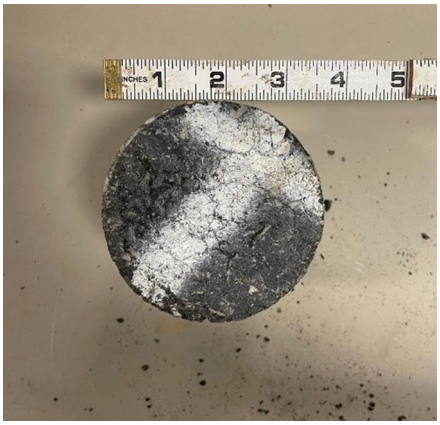
PAVEMENT SAMPLE DOCUMENTATION

BORING B-2	
Profile of Pavement Section	**Top of Pavement**
	
Length of Sample: 2.25 inches	Minimal cracks in pavement sample

BORING B-5	
Profile of Pavement Section	**Top of Pavement**
	
Length of Sample: 2 inches	Minimal cracks in pavement sample

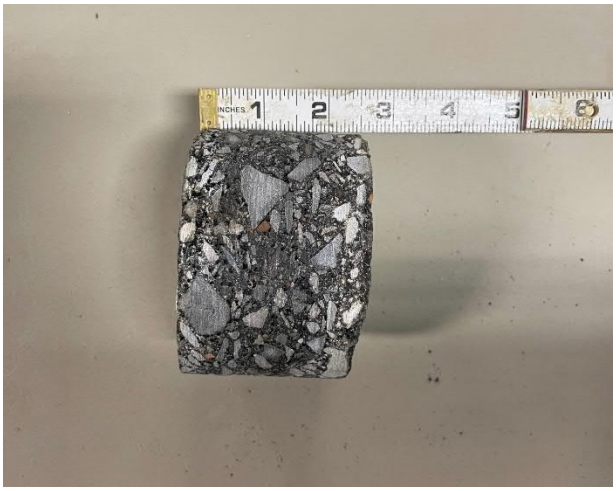
BORING B-8	
Profile of Pavement Section	**Top of Pavement**
	
Length of Sample: 7.25 inches	Surficial crack – Depth estimated at ~0.5 inch

BORING B-10	
Profile of Pavement Section	**Top of Pavement**
	
Length of Sample: 4 inches	Minimal cracks in pavement sample

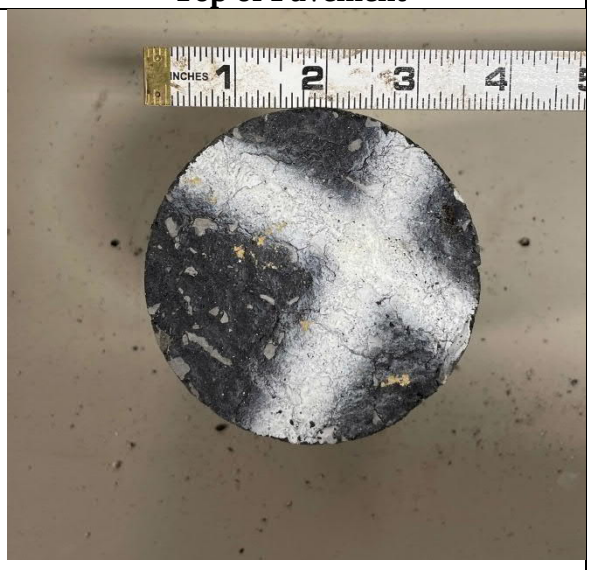
BORING B-13	
Profile of Pavement Section	**Top of Pavement**
	
Length of Sample: 7.25 inches	Minimal cracks in pavement sample

BORING B-15	
Profile of Pavement Section	**Top of Pavement**
	
Length of Sample: 3.25 inches	Minimal cracks in pavement sample

BORING B-16	
Profile of Pavement Section	**Top of Pavement**
	
Length of Sample: 5 inches	Minimal cracks in pavement sample

BORING B-17	
Profile of Pavement Section	**Top of Pavement**
	
Length of Sample: 2.50 inches	Minimal cracks in pavement sample

BORING B-18	
Profile of Pavement Section	**Top of Pavement**
	
Length of Sample: 2.25 inches	Minimal cracks in pavement sample

BORING B-20	
Profile of Pavement Section	**Top of Pavement**
	
Length of Sample: 5.75 inches	Minimal cracks in pavement sample

BORING B-24	
Profile of Pavement Section	**Top of Pavement**
	
Length of Sample: 5.75 inches	Minimal cracks in pavement sample

APPENDIX F – FAARFIELD OUTPUT

Federal Aviation Administration FAARFIELD 2.0 Section Report

FAARFIELD 2.0.0.e RC 06/19/2020

Working directory is C:\Users\dadrian\Documents\My FAARFIELD

Job Name: Dewitt Spain Apron Option 1 - Mill and Overlay

Section: Section 1

Analysis Type: HMA on Flexible

Last Run: Thickness Design

Design Life = 20 Years

Total thickness to the top of the subgrade = 11.4in.

Pavement Structure Information by Layer

No.	Type	Thickness in.	Modulus psi	Poisson's Ratio	Strength R psi
1	P-401/P-403 HMA Overlay	3.4	200000	0.35	0
2	User Defined	2.0	100000	0.35	0
3	P-154 Uncrushed Aggregate	6.0	40000	0.35	0
4	Subgrade	0	12000	0.35	0

Airplane Information

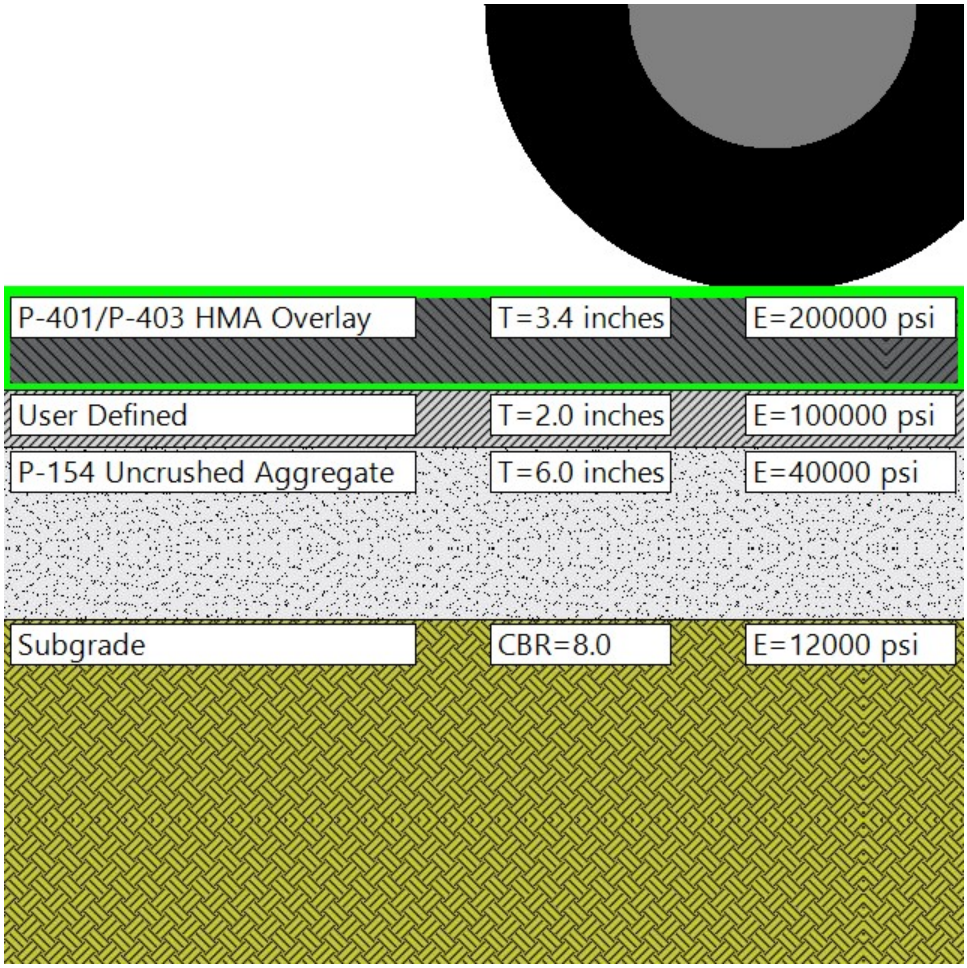
No.	Name	Gross Wt. lbs	Annual Departures	% Annual Growth
1	Cessna 172 Skyhawk	2558	100	0
2	Cessna 182 Skylane	3110	500	0
3	Beechcraft Bonanza F33A	3412	1200	0
4	Cessna 206 Stationair	3612	150	0
5	PA-32R-301 Saratoga	3616	600	0

No.	Name	Gross Wt. lbs	Annual Departures	% Annual Growth
6	Beechcraft Baron 55	5424	300	0
7	Beechcraft King Air B200	12590	300	0
8	S-25	25000	1500	0
9	D-35	35000	750	0
10	Cessna Citation V	16500	750	0

Additional Airplane Information

No.	Name	CDF Contribution	CDF Max for Airplane	P/C Ratio
1	Cessna 172 Skyhawk	0.0	0.00	0
2	Cessna 182 Skylane	0.0	0.00	0
3	Beechcraft Bonanza F33A	0.0	0.00	0
4	Cessna 206 Stationair	0.0	0.00	0
5	PA-32R-301 Saratoga	0.0	0.00	0
6	Beechcraft Baron 55	0.0	0.00	0
7	Beechcraft King Air B200	0.0	0.00	0
8	S-25	0.0	0.00	0
9	D-35	0.0	0.00	0
10	Cessna Citation V	0.0	0.00	0

User Is responsible For checking frost protection requirements.


P-401/P-403 HMA Overlay
T=3.4 inches
E=200000 psi
User Defined
T=2.0 inches
E=100000 psi
P-154 Uncrushed Aggregate
T=6.0 inches
E=40000 psi
Subgrade
CBR=8.0
E=12000 psi

Federal Aviation Administration FAARFIELD 2.0 Section Report

FAARFIELD 2.0.0.e RC 06/19/2020

Working directory is C:\Users\dadrian\Documents\My FAARFIELD

Job Name: Dewitt Spain Apron Option 2 - Remove and Replace

Section: Section 1

Analysis Type: New Flexible

Last Run: Thickness Design

Design Life = 20 Years

Total thickness to the top of the subgrade = 11.1in.

Pavement Structure Information by Layer

No.	Type	Thickness in.	Modulus psi	Poisson's Ratio	Strength R psi
1	P-401/P-403 HMA Surface	4.0	200000	0.35	0
2	P-208 Crushed Aggregate	7.1	75000	0.35	0
3	Subgrade	0	12000	0.35	0

Airplane Information

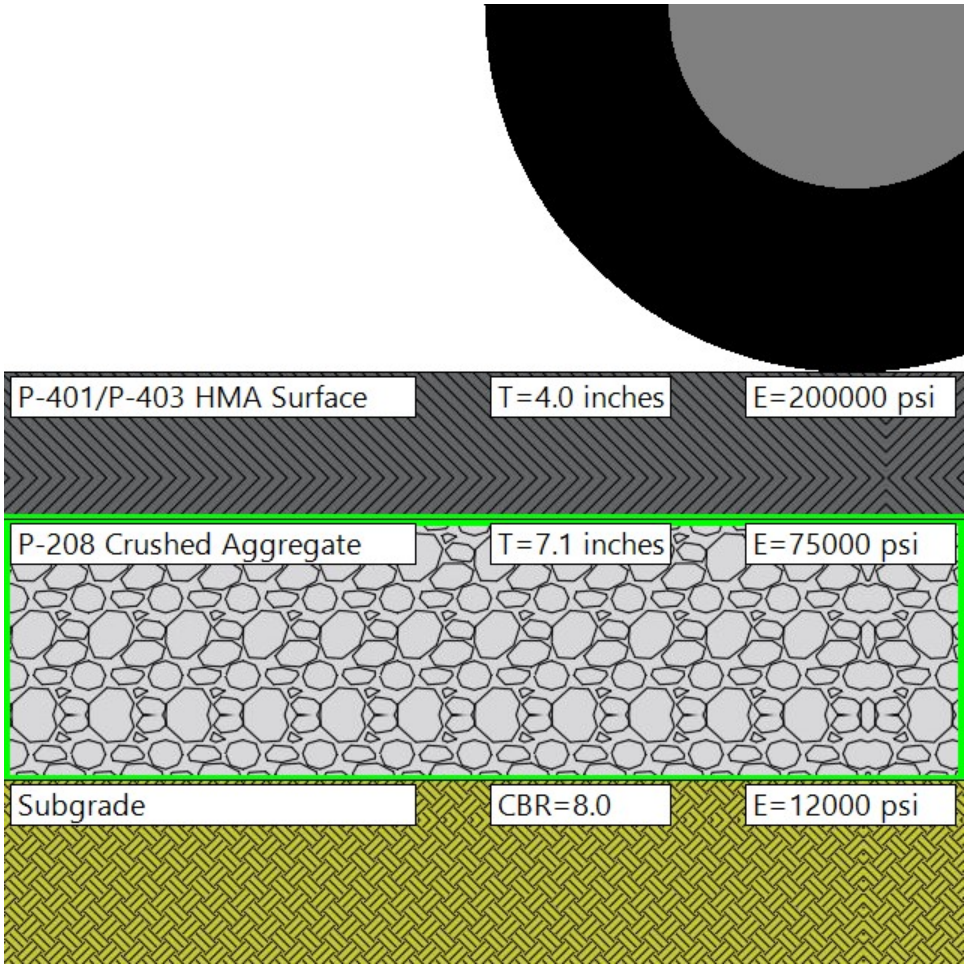
No.	Name	Gross Wt. lbs	Annual Departures	% Annual Growth
1	Cessna 172 Skyhawk	2558	100	0
2	Cessna 182 Skylane	3110	500	0
3	Beechcraft Bonanza F33A	3412	1200	0
4	Cessna 206 Stationair	3612	150	0
5	PA-32R-301 Saratoga	3616	600	0
6	Beechcraft Baron 55	5424	300	0

No.	Name	Gross Wt. lbs	Annual Departures	% Annual Growth
7	Beechcraft King Air B200	12590	300	0
8	S-25	25000	1500	0
9	D-35	35000	750	0
10	Cessna Citation V	16500	750	0

Additional Airplane Information

No.	Name	CDF Contribution	CDF Max for Airplane	P/C Ratio
1	Cessna 172 Skyhawk	0.0	0.00	0
2	Cessna 182 Skylane	0.0	0.00	0
3	Beechcraft Bonanza F33A	0.0	0.00	0
4	Cessna 206 Stationair	0.0	0.00	0
5	PA-32R-301 Saratoga	0.0	0.00	0
6	Beechcraft Baron 55	0.0	0.00	0
7	Beechcraft King Air B200	0.0	0.00	0
8	S-25	0.0	0.00	0
9	D-35	0.0	0.00	0
10	Cessna Citation V	0.0	0.00	0

User Is responsible For checking frost protection requirements.


P-401/P-403 HMA Surface
T=4.0 inches
E=200000 psi
P-208 Crushed Aggregate
T=7.1 inches
E=75000 psi
Subgrade
CBR=8.0
E=12000 psi

Federal Aviation Administration FAARFIELD 2.0 Section Report

FAARFIELD 2.0.0.e RC 06/19/2020

Working directory is C:\Users\dadrian\Documents\My FAARFIELD

Job Name: Dewitt Spain Apron Option 3 - FDR

Section: Section 1

Analysis Type: New Flexible

Last Run: Life/Compaction Analysis

Calculated Life = 20.01 Years

Total thickness to the top of the subgrade = 10.4in.

Pavement Structure Information by Layer

No.	Type	Thickness in.	Modulus psi	Poisson's Ratio	Strength R psi
1	P-401/P-403 HMA Surface	4.0	200000	0.35	0
2	User Defined	6.4	50000	0.35	0
3	Subgrade	0	12000	0.35	0

Airplane Information

No.	Name	Gross Wt. lbs	Annual Departures	% Annual Growth
1	Cessna 172 Skyhawk	2558	100	0
2	Cessna 182 Skylane	3110	500	0
3	Beechcraft Bonanza F33A	3412	1200	0
4	Cessna 206 Stationair	3612	150	0
5	PA-32R-301 Saratoga	3616	600	0
6	Beechcraft Baron 55	5424	300	0

No.	Name	Gross Wt. lbs	Annual Departures	% Annual Growth
7	Beechcraft King Air B200	12590	300	0
8	S-25	25000	1500	0
9	D-35	35000	750	0
10	Cessna Citation V	16500	750	0

Additional Airplane Information

Subgrade CDF

No.	Name	CDF Contribution	CDF Max for Airplane	P/C Ratio
1	Cessna 172 Skyhawk	0.0	0.00	5.1
2	Cessna 182 Skylane	0.0	0.00	5.03
3	Beechcraft Bonanza F33A	0.0	0.00	4.81
4	Cessna 206 Stationair	0.0	0.00	4.94
5	PA-32R-301 Saratoga	0.0	0.00	4.74
6	Beechcraft Baron 55	0.0	0.00	4.67
7	Beechcraft King Air B200	0.0	0.00	2.94
8	S-25	0.9	0.87	3.91
9	D-35	0.1	0.13	2.39
10	Cessna Citation V	0.0	0.00	4.51

HMA CDF

No.	Name	CDF Contribution	CDF Max for Airplane	P/C Ratio
1	Cessna 172 Skyhawk	0.00	0.00	8.93

No.	Name	CDF Contribution	CDF Max for Airplane	P/C Ratio
2	Cessna 182 Skylane	0.00	0.00	8.62
3	Beechcraft Bonanza F33A	0.00	0.00	7.94
4	Cessna 206 Stationair	0.00	0.00	8.35
5	PA-32R-301 Saratoga	0.00	0.00	7.72
6	Beechcraft Baron 55	0.00	0.00	7.60
7	Beechcraft King Air B200	0.00	0.00	4.39
8	S-25	0.01	0.01	5.68
9	D-35	0.01	0.01	3.19
10	Cessna Citation V	0.01	0.01	7.10

Subgrade Compaction Requirements

NonCohesive Soil

Percent Maximum Dry Density(%)	Depth of compaction from pavement surface (in)	Depth of compaction from top of subgrade (in)	Critical Airplane for Compaction
100	0 - 11	0 - 0	S-25
95	11 - 24	0 - 14	D-35
90	24 - 38	14 - 28	D-35
85	38 - 55	28 - 45	D-35

Cohesive Soil

Percent Maximum Dry Density(%)	Depth of compaction from pavement surface (in)	Depth of compaction from top of subgrade (in)	Critical Airplane for Compaction
95	0 - 10	--	S-25
90	10 - 19	0 - 9	D-35

Percent Maximum Dry Density(%)	Depth of compaction from pavement surface (in)	Depth of compaction from top of subgrade (in)	Critical Airplane for Compaction
85	19 - 28	9 - 18	D-35
80	28 - 38	18 - 27	D-35

Subgrade Compaction Notes:

1. Noncohesive soils, for the purpose of determining compaction control, are those with a plasticity index (PI) less than 3.

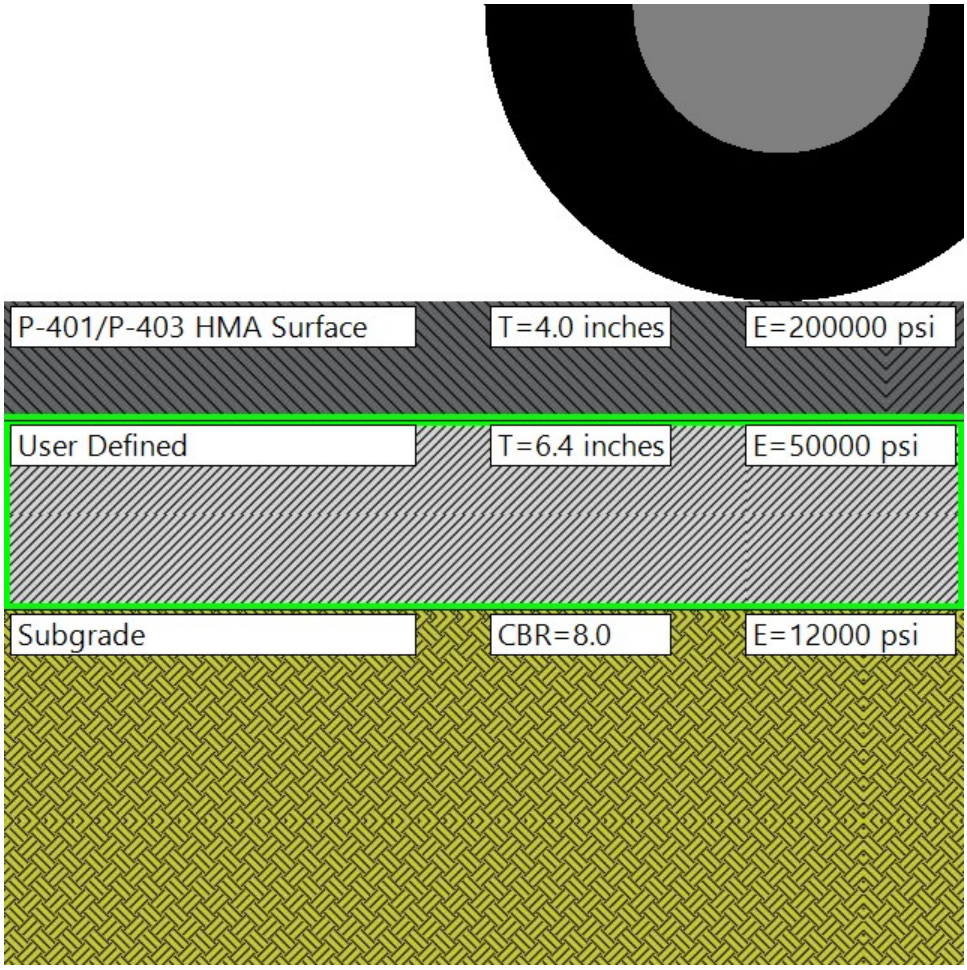
2. Tabulated values indicate depth ranges within which densities should equal or exceed the indicated percentage of the maximum dry density as specified in item P-152.

3. Maximum dry density is determined using ASTM Method D 698.

4. The subgrade in cut areas should have natural densities shown or should (a) be compacted from the surface to achieve the required densities, (b) be removed and replaced at the densities shown, or (c) when economics and grades permit, be covered with sufficient select or subbase material so that the uncompacted subgrade is at a depth where the in-place densities are satisfactory.

5. For swelling soils refer to AC 150/5320-6F paragraph 3.10.

User Is responsible For checking frost protection requirements.



APPENDIX D

Storm Water Pollution Prevention Plan

for

General DeWitt Spain Airport
Apron Rehabilitation
2787 N. Second Avenue
Memphis, Tennessee 38127

Owner

Memphis Shelby County Airport Authority
2491 Winchester Road
Memphis, Tennessee 38116
901-922-2297

SWPPP Contact(s):

Powers Hill Design, LLC
80 Monroe Avenue, Suite 420
Memphis, Tennessee 38103
901-543-8000

SWPPP Preparation Date:

November 2024

Estimated Project Dates:

Project Start Date: March 2025
Project Completion Date: September 2025

Contents

SECTION 1: SITE EVALUATION, ASSESSMENT, AND PLANNING

1.1 General

This Storm Water Pollution Prevention Plan (SWPPP) is developed in accordance with the Tennessee General NPDES Permit (TNR100000) for Storm Water Discharges Associated with Construction Activity (TNCGP) dated October 1, 2021 and is prepared using sound engineering practices. It is the intention and goal of this SWPPP to prevent storm water discharge from the subject site that has objectionable pollutant characteristics which could impair the usefulness of the waters on the property or downstream of the property. A copy of the SWPPP will be maintained at the construction site at all times.

As instructed by Section 3.3 of the CGP, this plan and all attachments are hereby submitted to the local Environmental Field Office (EFO), along with the complete, signed Notice of Intent (NOI). Construction activities that could result in the release of storm water runoff from disturbed areas will not be initiated prior to 30 days from the date of submittal of this document, or prior to receipt of a Notice of Coverage (NOC) from the Tennessee Department of Environment and Conservation (TDEC). A copy of the NOC with the associated NPDES permit number for the project and a contact person and phone number will be posted at the site.

A Notice of Intent (NOI) is being submitted in conjunction with this SWPPP (Appendix D). Upon commencement of construction, the SWPPP instructions will be implemented. In the event of a change of operator or an additional operator, a new NOI will be submitted as soon as practicable and at least 48 hours prior to when the new operator assumes operational control over the site specifications or work commencement.

This SWPPP will be kept current throughout the project. It will also be amended if there is a change in scope of the project that affects the volume of discharge or the quality of discharge; if inspections indicate that the current SWPPP is ineffective in eliminating, controlling or significantly reducing pollutants being discharged; if there is a change in contractor; or if there is a need to include measures that legally protect state or federally listed or proposed threatened or endangered aquatic fauna.

Upon completion of construction and final stabilization of the site, a Notice of Termination (NOT) will be submitted (Appendix L). In the event all operations and responsibilities are transferred to a new individual, a NOT will be submitted by the original operator.

1.2 Project/Site Information

The project site is located at 2787 North Second Avenue north of downtown Memphis.

The proposed project consists of the rehabilitation of approximately 4.8 acres of the existing asphalt apron in front of the Terminal Building.

The construction work will be performed under a contract between the Memphis Shelby County Airport Authority and a general contractor to be selected by competitive bidding.

Project/Site Name: General DeWitt Spain Airport – Apron Rehabilitation
Project Street/Location: 2787 North Second Avenue
City: Memphis State: TN ZIP Code: 38103
County or Similar Subdivision: Shelby County, Tennessee

Latitude/Longitude of Site

Latitude: Longitude:
1. 35 º 12 ‘07’’ N (deg., min., sec.) 1. 90 º 03 ‘09’’ W (deg., min., sec.)

Method for determining latitude/longitude:
☐ USGS topographic map (specify scale: ___) ☐ EPA Web site ☐ GPS
☒ Other (please specify): Google Earth Maps

Is the project located in Indian country? ☐ Yes ☒ No
If yes, name of Reservation, or if not part of a Reservation, indicate “not applicable.” Not Applicable

Is this project considered a federal facility? ☐ Yes ☒ No

NPDES project or permit tracking number*:_____

**(This is the unique identifying number assigned to your project by your permitting authority after you have applied for coverage under the appropriate National Pollutant Discharge Elimination System (NPDES) construction general permit.)*

1.3 Contact Information / Responsible Parties

Operator(s):

Brian Tenkhoff, Director of Development
Memphis Shelby County Airport Authority
2491 Winchester Road, Suite 113
Memphis, TN 38116
Phone: 901-922-2297

Project Manager:

Pov Chin, Engineering Project Manager
Memphis Shelby County Airport Authority
2491 Winchester Road, Suite 113
Memphis, TN 38116
Phone: 901-922-8043

This SWPPP was Prepared by:

Steven Hill, P.E.
Powers Hill Design, LLC
80 Monroe Ave., Suite 420
Memphis, TN 38103
Phone: 901-543-8000

Contractor(s):

To be determined

Emergency 24-Hour Contact:

To be determined

1.4 Nature and Sequence of Construction Activity

The work to be done under this construction project that will disturb the surface will be the full depth reclamation of the existing asphalt pavement. In addition, an open area adjacent to the asphalt apron will be filled, re-graded and sodded.

What is the function of the construction activity?

Residential ☐ Commercial ☐ Industrial ☐ Road Construction ☐ Linear Utility

☒ Other (please specify): Airport parking apron reconstruction

Estimated Project Start Date:	March 2025
Estimated Project Completion Date:	September 2025

1.5 Soils, Slopes, Vegetation, and Current Drainage Patterns

Project Site – Soil type: The project site is comprised predominantly of asphalt pavement, with some open area adjacent to the pavement. Appendix M includes soil information for the site.

Slopes: The site slopes west. Site slopes vary from 2 - 5%.

Drainage Patterns: The project site is located within an area protected by levees along the Mississippi River. The airport drains north to a culvert through the levee, then west to the Mississippi River. No changes in current drainage patterns will result from the proposed project.

Vegetation: The site has been occupied by a general aviation airport since the 1970's. The site contains no trees and the areas around the asphalt pavement are grassed.

1.6 Construction Site Estimates

The following are estimates of the construction site.

Total Project Area:	5.6 acres
Construction site area to be disturbed:	5.6 acres
Percentage impervious area before construction:	85 %
Runoff coefficient before construction:	0.90
Percentage impervious area after construction:	85 %
Runoff coefficient after construction	0.90

1.7 Receiving Waters

Description of receiving waters: Runoff from the project site flows via open ditches into the Mississippi River.

Description of storm sewer systems: The construction site drains west through a 30" pipe crossing the airport runway to an open ditch. The open ditch drains north to a pipe through the flood protection levee, then via an open ditch to the Mississippi River.

Description of impaired waters or waters subject to TMDLs: The Mississippi River is listed as "Not Supporting" on TDEC's list, with one or more uses impaired.

Describe measures to protect these features: Silt fence and inlet protections will be installed during construction to minimize siltation outside the limits of the project. **All erosion control measures for the disturbed areas of the site are designed for the 5-year, 24 hour storm event.**

1.8 Site Features and Sensitive Areas to be Protected

Description of unique features that are to be preserved: No Exceptional Waters exist within the proposed area, nor will any be indirectly affected by the proposed project.

1.9 Potential Sources of Pollution

Potential sources of sediment to stormwater runoff:

- Filling and grading of area adjacent to the apron
- Full depth reclamation of existing asphalt pavement
- Vehicle tracking

Potential pollutants and sources, other than sediment, to stormwater runoff:

- Equipment Staging and Fueling Area – fueling activities, minor equipment maintenance and sanitary facilities
- Concrete Washout Area

Areas of Consideration	Primary Pollutant	Other Pollutants	
	Sediment	Oil & grease	Trash, debris & solids
Filling and grading of area adjacent to the apron	X		X
Full depth reclamation of existing asphalt pavement			X
Concrete washout and waste			X
Vehicle/equipment use, maintenance & fueling		X	

1.10 Endangered Species Certification

Are endangered or threatened species and critical habitats on or near the project area?

☐ Yes ☒ No

Describe how this determination was made: A search was performed on the Tennessee Department of Environment and Conservation Interactive Rare Species Database. No threatened or endangered species were listed within the area that would be affected by the project.

1.11 Maps

Site maps are included in the Appendix.

SECTION 2: EROSION AND SEDIMENT CONTROL BMPS

2.1 General Information

This permit does **not** authorize discharges of storm water or other discharges that would result in a violation of a State water quality standard. Discharges of this type are a direct violation of this permit. In addition to storm water discharges, this SWPPP and the associated permit covers the following non-storm water components of discharge:

- Dewatering of work areas;
- Waters used to wash vehicles (only of dust and soil and NOT process materials);
- Water used to control dust; and
- Potable water

These non-storm water related discharges will be allowed only if detergents are not used, detention and filtering is provided, and no other solvents are used in any of the water-related activities. This SWPPP and associated permit do **not** cover the release of any hazardous substance or oil in the storm water discharges from the site of construction. These actions will be prevented or minimized, and in the event of a release, the permittee is obligated under the reporting requirements of 40 CFR 117 and 40 CFR 302. The following actions will be taken:

- The National Response Center (800-424-8802) and the Tennessee Emergency Management Agency (emergencies: 800-262-3300; non-emergencies: 800-262-3400) will be notified as soon as the discharge has been acknowledged;
- Within 14 calendar days of the knowledge of the release, the permittee will submit a description of the release to the EAC; and
- The SWPPP will be modified within 14 calendar days of the knowledge of release to provide a description of the release and the plan will be reviewed to prevent any reoccurrences.

The following items were considered for the development of this Storm Water Pollution Prevention Plan (SWPPP) and the selection of erosion and sediment controls:

- Installing erosion and sediment controls prior to earth-disturbing activities

2.2 Planned Erosion and Sediment Controls

Erosion and sediment control measures must be in place and functioning before any construction operations begin and must be constructed and maintained throughout the construction period. All erosion and sediment control practices will be inspected at least twice weekly, a minimum of 72 hours apart. These inspections will be performed by personnel who have completed the Level 1 Fundamentals of Erosion Prevention and Sediment Control training course. Needed repairs will be made immediately by the responsible Contractor. Temporary measures may be removed at the beginning of the workday but must be replaced at the end of the workday.

Stabilization measures shall be initiated as soon as practicable in portions of the site where construction activities have temporarily or permanently ceased, but in no case more than seven days after the construction activity in that portion of the site has temporarily or permanently ceased. There are two exceptions: where the initiation of stabilization measures by the seventh day is precluded by snow cover or frozen ground conditions; or where construction activity on a portion of the site has temporarily ceased, and earth-disturbing activities will be resumed within 15 days. The erosion and sediment controls and management techniques planned for this site include structural controls and construction management.

2.2.1 Phased Construction Activity

All construction work will be done under a single contract, with continuous construction operations throughout the project schedule. Appendix C includes details of specific erosion control measures to be implemented.

2.2.2 Implement BMP's as Needed Throughout the Project

The following BMP's will be used to control stormwater within the project site.

BMP Description: Inlet Protection	
Installation Schedule:	Install Inlet Protection at all affected inlets prior to initiating any construction operations.
Maintenance and Inspection:	Inspect inlet protection before anticipated storm events and within 24 hours after the end of a storm event of 0.5 inches or greater, and a minimum of two (2) times per week at least 72 hours apart. Sediment shall be removed after every storm event.
Responsible Staff:	Construction contractor personnel

BMP Description: Silt Fence.	
Installation Schedule:	Install Silt Fence prior to starting work.
Maintenance and Inspection:	Inspect silt fence before anticipated storm events and within 24 hours after the end of a storm event of 0.5 inches or greater, and a minimum of two (2) times per week at least 72 hours apart. Sediment shall be removed after every storm event.
Responsible Staff:	Construction contractor personnel

2.2.3 Dewatering Activities

Dewatering activities will be conducted as needed during the construction process. Dewatering pump discharges shall be directed into sediment bags to allow for sediment capture before release.

2.2.4 Stabilize Soils

BMP Description: Seeding & Mulch	
☐ ***Permanent***	☒ ***Temporary***
Installation Schedule:	If construction activity is temporarily halted on any disturbed area for more than 14 days.
Maintenance and Inspection:	Inspection of the seeding and mulch application shall be performed within 24 hours after the end of a storm event of 0.5 inches or greater and along with other regularly scheduled erosion and sediment control inspections. Any areas that have washed out due to high storm water flows, areas that have been disturbed by blowing wind, and areas that do not show good germination should be re-treated. Maintenance needs identified in inspections or by other means shall be accomplished before the next storm event if possible, but in no case more than seven days after the need is identified.
Responsible Staff:	Construction contractor personnel

BMP Description: Sodding	
☒ ***Permanent***	☐ ***Temporary***
Installation Schedule:	Upon completion of final grading.
Maintenance and Inspection:	Inspection of sod application shall be performed within 24 hours after the end of a storm event of 0.5 inches or greater and along with other regularly scheduled erosion and sediment control inspections. Any areas that have washed out due to high storm water flows, areas that have been disturbed, and areas that do not show greening and growth shall be re-sodded. Maintenance needs identified in inspections or by other means shall be accomplished before the next storm event, if possible, but in no case more than seven days after the need is identified.
Responsible Staff:	Construction contractor personnel

SECTION 3: GOOD HOUSEKEEPING BMPS

3.1 Material Handling and Waste Management

Solid Wastes:

A waste collection area will be designated on the site in a location that does not receive a substantial amount of runoff from upland areas and does not drain directly to a water body. All containers shall have lids so they can be covered before periods of rain and kept in a covered area where possible. Scheduled waste collection shall be practiced to prevent the containers from overfilling. All construction site wastes shall be collected, removed and disposed of at authorized disposal areas.

Petroleum Products:

Petroleum products and fuel for vehicles may be stored within the project site in approved areas, and in accordance with regulations governing such operations. Vehicle and equipment fueling may be done on-site from such facilities in designated areas. Contractor shall have approved absorbent materials readily available adjacent to any fueling areas, and any spills shall be immediately contained and cleaned up. Any spill incidents shall be logged and documented as part of the weekly inspections.

Maintenance Considerations

Storage and use areas shall be inspected regularly to identify containers or equipment that could malfunction and cause leaks or spills. Equipment and containers shall be checked for leaks, corrosion, support or foundation failure, or other signs of deterioration, and tested for soundness. Any found to be defective shall immediately be repaired or replaced.

3.2 Establish Proper Building Material Staging Areas

Materials that are expected to be stored on the project site include:

- Millings of asphalt pavement

Millings storage area is designated on the project site. Employees and subcontractors shall be trained in proper handling, storage and erosion protection practices to use until materials are incorporated into the work.

3.3 Designate Washout Areas

A location shall be designated on the project site specifically for the emptying and washing out of concrete mixer trucks. This area will be bermed and protected so that materials discharged from the washout operation shall be fully contained and subsequently removed from the site and disposed of in an acceptable location.

SECTION 4: INSPECTIONS

4.1 Inspections

Inspections will be performed by qualified personnel and must be conducted a minimum of two (2) times per week at least 72 hours apart. In addition, inspections should be carried out before anticipated storm events (or series of storm events such as intermittent showers over one or more days), and within 24 hours after the end of a storm event of 0.5 inch or greater. They should also be conducted within 24 hours after commencement of a rainfall event greater than or equal to a two year 24-hour storm event. These inspections will be performed by personnel who have completed the Level 1 Fundamentals of Erosion Prevention and Sediment Control training course. Inspections will cover, at a minimum, all disturbed areas that have not undergone final stabilization, sediment control structures, outfall points, and streams. The inspections will be conducted with the purpose of determining whether erosion prevention and sediment control measures are effective in preventing impacts to receiving waters. If during these inspections it is discovered that repair or maintenance is required of any temporary or permanent control measure, the action taken to correct the problem will be documented. If the controls are installed and maintained correctly but are found to provide an inadequate level of protection, revisions will be made to this plan and these revisions will be implemented by the contractor. The inspector will certify on a weekly basis (on the form found in Appendix E) that the inspection described above has been performed and whether or not all of the erosion and sediment control measures are installed and in working order. Inspection documentation will be maintained on site and made available to the Division upon request. Inspection reports must be submitted to the Division within 10 days of the request. The inspector will maintain a rain gage and a daily log of readings.

Any inadequate control measures or control measures in disrepair shall be replaced, modified, or repaired as necessary, before the next rain event (if possible), but in no case more than seven days after the need is identified. If maintenance prior to the next anticipated storm event is impractical, maintenance must be scheduled and accomplished as soon as possible.

If periodic inspections or other information indicates a control has been used inappropriately, or incorrectly, the permittee must replace or modify the control for site situations. If sediment escapes the construction site, off-site accumulations of sediment that have not reached a stream must be removed at a frequency sufficient to minimize offsite impacts. This permit, however, does not authorize access to private property. Litter, construction debris, and construction chemicals exposed to storm water will be picked up prior to anticipated storm events.

4.2 Records and Reports

The following records must be maintained on site: the date(s) when major grading activities occur, the date(s) when construction activities temporarily or permanently cease on a portion of the site, and the date(s) when stabilization measures are initiated. The permittee shall retain copies of storm water pollution prevention plans, and all reports required by the permit and records of all data used to complete the Notice of Intent covered by this permit for a period of at least three years from the date of notice of termination is filed. The permittee will submit a Notice of Termination (NOT in Appendix L) in accordance with the requirements of the NPDES

permit when the site has been finally stabilized and all storm water discharges from construction activities authorized by the permit are eliminated.

The following information must be posted near the main entrance of the construction site:

- The SWPPP;
- The location of the SWPPP, if the site is inactive or does not have an on-site location to store the plan;
- A copy of the Notice of Coverage with the NPDES permit number for the project;
- The name and telephone number of the local contact person; and
- A brief description of the project.

4.3 Delegation of Authority

Duly Authorized Representative(s) or Position(s):
(To be determined)

4.4 Corrective Action Log

All corrective actions that are required during the course of the construction will be documented by the project inspector. A Corrective Action Log is included in Appendix F.

SECTION 5: TRAINING

5.1 Employee Continuing Education

New employees to the site will be familiarized with the erosion, sediment, and stormwater control plan and the implementation schedule.

Subcontractors and their employees shall be given an overview of the plan and their responsibilities for following the plan.

Employees responsible for long-term maintenance will be informed of the proper function of BMPs, how to detect deficiencies, and how to take corrective action.

All site inspectors must, as a minimum, complete the "Level 1 – Fundamentals of Erosion Prevention and Sediment Control" course. A copy of the certification for the site inspector must be kept on site. Any person working on this site will be familiar with this Storm Water Pollution Prevention Plan and follow its guidelines.

5.2 Log of Changes to the SWPPP

This SWPPP will be kept current throughout the project. It will be amended if there is a change in scope of the project that affects the volume of discharge or the quality of discharge; if inspections indicate that the current SWPPP is ineffective in eliminating, controlling or significantly reducing pollutants being discharged; if there is a change in contractor; or if there is a need to include measures that legally protect state or federally listed or proposed threatened or endangered aquatic fauna. A Log of Changes (Appendix G) will be maintained throughout the project.

SECTION 6: CERTIFICATION AND NOTIFICATION

Developer: Memphis Shelby County Airport Authority

I certify under penalty of law that this document and all attachments were prepared by me, or under my direction or supervision. The submitted information is to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment. As specified in Tennessee Code Annotated Section 39-16-702(a)(4), this declaration is made under penalty of perjury.

Name: Brian Tenkhoff, P.E. Title: Director of Development

Signature: _____ Date: _____

Email: BTenkhoff@flymemphis.com

Primary Contractor: (TO BE DETERMINED)

I certify under penalty of law that I have reviewed this document, any attachments, and the SWPPP referenced above. Based on my inquiry of the construction site owner/developer identified above and/or my inquiry of the person directly responsible for assembling this NOI and SWPPP, I believe the information submitted is accurate. I am aware that this NOI, if approved, makes the above-described construction activity subject to NPDES permit number TNR100000, and that certain of my activities on-site are thereby regulated. I am aware that there are significant penalties, including the possibility of fine and imprisonment for knowing violations, and for failure to comply with these permit requirements. As specified in Tennessee Code Annotated Section 39-16-702(a)(4), this declaration is made under penalty of perjury.

Name: _____ Title: _____

Signature: _____ Date: _____

Email: _____

SWPPP APPENDICES

Appendix A – Site Location Map

Appendix B – Site Maps

Appendix C – Erosion Control Plans

Appendix D – NOI

Appendix E – Inspection Reports

Appendix F – Corrective Action Log

Appendix G – SWPPP Amendment Log

Appendix H – Subcontractor Certifications/Agreements

Appendix I – Construction and Stabilization Activities Log

Appendix J – Training Log

Appendix K – Delegation of Authority

Appendix L – Notice of Termination

Appendix M – Site Soils Information

Appendix A – Site Location Map

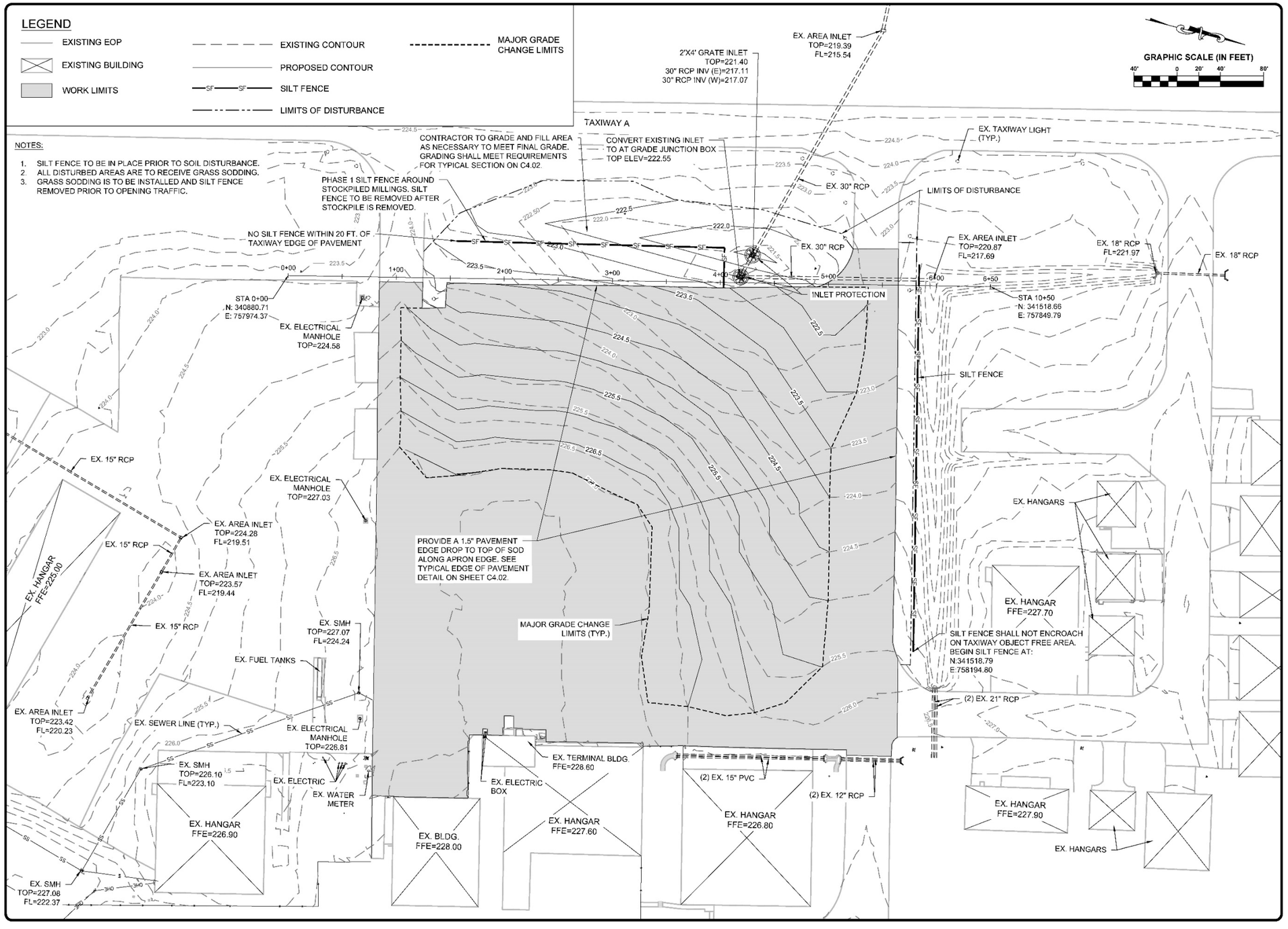

N
0
500
1,000
Feet
PROJECT SITE
MISSISSIPPI RIVER
Orchard Ave
Klinke Ave
Whitney Ave
N 2nd St
Wolf River
Sources: Esri, HERE, Garmin, USGS, Intermap, INCREMENT P, NRCan, Esri Japan, METI, Esri China (Hong Kong), Esri Korea, Esri (Thailand), NGCC, (c) OpenStreetMap contributors, and the GIS User Community

Appendix B – Site Maps


N
0
250
500
Feet
PROJECT SITE
SECOND ST
17
35


ORCHARD
BURLINGTON
Substation
KLINKE
KLINKE
KLINKE
N
0
500
1,000
Feet
SINCLAIR
SINCLAIR ST
BENJESTOWN RD
WHITNEY AV
General Dewitt Spain Airport
PROJECT SITE
Mile 740
REVETMENT
SECOND ST
Light
Sewage Treatment Plant
STILES DR
STILES DR
WOLF
FLOODWALL
LEO
Copyright © 2013 National Geographic Society, i-cubed

Appendix C – Erosion Control Plans



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PARSONS
Program Management Consultant
Parsons Transportation Group Inc.
Project Office:
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Memphis TN, 38116

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CHECKED BY: AM
APPROVED BY: TCH

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REVISIONS

MARK	DATE	DESCRIPTION

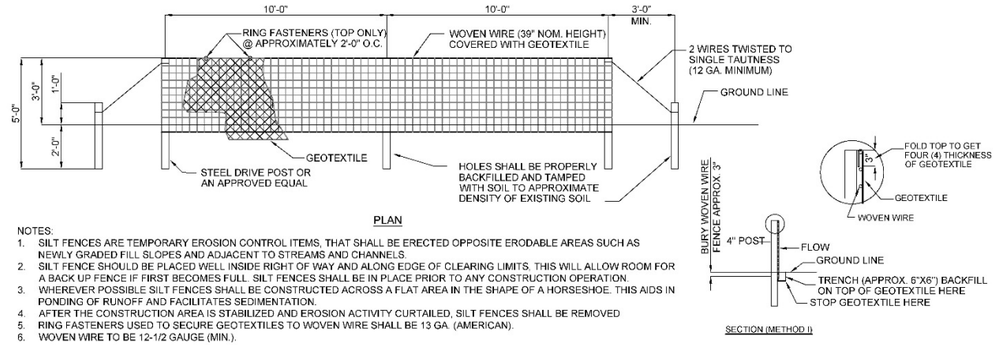
MSCAA PROJ. NO.
20-1440-00

PROJECT:
DEWITT SPAIN AIRPORT APRON REHABILITATION

SHEET TITLE:
GRADING, DRAINAGE, & EROSION CONTROL PLAN

DWG. FILE NAME:

DATE: NOV. 2024
SCALE: 1" = 40'
SHEET NO.: **C5.00**

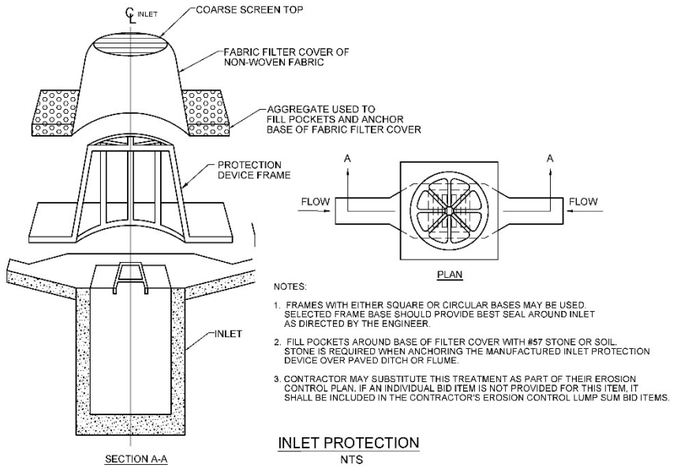


PLAN

SECTION (METHOD I)

NOTES:
1. SILT FENCES ARE TEMPORARY EROSION CONTROL ITEMS, THAT SHALL BE ERECTED OPPOSITE ERODABLE AREAS SUCH AS NEWLY GRADED FILL SLOPES AND ADJACENT TO STREAMS AND CHANNELS.
2. SILT FENCE SHOULD BE PLACED WELL INSIDE RIGHT OF WAY AND ALONG EDGE OF CLEARING LIMITS. THIS WILL ALLOW ROOM FOR A BACK UP FENCE IF FIRST BECOMES FULL. SILT FENCES SHALL BE IN PLACE PRIOR TO ANY CONSTRUCTION OPERATION.
3. WHEREVER POSSIBLE SILT FENCES SHALL BE CONSTRUCTED ACROSS A FLAT AREA IN THE SHAPE OF A HORSESHOE. THIS AIDS IN PONDING OF RUNOFF AND FACILITATES SEDIMENTATION.
4. AFTER THE CONSTRUCTION AREA IS STABILIZED AND EROSION ACTIVITY CURTAILED, SILT FENCES SHALL BE REMOVED
5. RING FASTENERS USED TO SECURE GEOTEXTILES TO WOVEN WIRE SHALL BE 13 GA. (AMERICAN).
6. WOVEN WIRE TO BE 12-1/2 GAUGE (MIN.).

SILT FENCE "TYPE A"
NTS

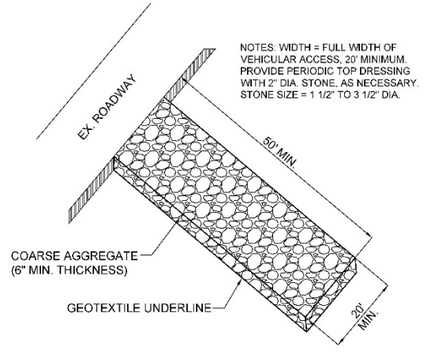


SECTION A-A

PLAN

NOTES:
1. FRAMES WITH EITHER SQUARE OR CIRCULAR BASES MAY BE USED. SELECTED FRAME BASE SHOULD PROVIDE BEST SEAL AROUND INLET AS DIRECTED BY THE ENGINEER.
2. FILL POCKETS AROUND BASE OF FILTER COVER WITH #57 STONE OR SOIL. STONE IS REQUIRED WHEN ANCHORING THE MANUFACTURED INLET PROTECTION DEVICE OVER PAVED DITCH OR FLUME.
3. CONTRACTOR MAY SUBSTITUTE THIS TREATMENT AS PART OF THEIR EROSION CONTROL PLAN. IF AN INDIVIDUAL BID ITEM IS NOT PROVIDED FOR THIS ITEM, IT SHALL BE INCLUDED IN THE CONTRACTOR'S EROSION CONTROL LUMP SUM BID ITEMS.

INLET PROTECTION
NTS



STONE CONSTRUCTION ENTRANCE
NTS

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PARSONS
Program Management Consultant
Parsons Transportation Group Inc
Project Office:
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REVISIONS

MARK	DATE	DESCRIPTION

MSCAA PROJ. NO.
20-1440-00

PROJECT:
DEWITT SPAIN AIRPORT APRON REHABILITATION

SHEET TITLE:
MISCELLANEOUS DETAILS

DWG. FILE NAME:

DATE: NOV. 2024
SCALE: N/A
SHEET NO.
C7.00

Appendix D – NOI

TENNESSEE DEPARTMENT OF ENVIRONMENT AND CONSERVATION
DIVISION OF WATER RESOURCES
Davy Crockett Tower, 500 James Robertson Parkway 9th Floor Nashville, TN 37243
Toll Free Number: 1-888-891-8332 (TDEC)

NOTICE OF INTENT (NOI) FOR GENERAL NPDES PERMIT FOR STORMWATER DISCHARGES FROM CONSTRUCTION ACTIVITIES (TNR100000)

Site or Project Name: General DeWitt Spain Airport - Apron Reconstruction		**NPDES Tracking Number: TNR**
Street Address including city or zip code or Location: 2787 N. Second St. Memphis, TN 38127		Construction Start Date: March 2025
		Estimated End Date: September 2025
Site Description: The project involves the reconstruction of the existing asphalt parking apron at the airport.		Latitude (dd.dddd): 35.2019
		Longitude (-dd.dddd): -90.0525
County(ies): Shelby	MS4 Jurisdiction (if applicable): Memphis	Acres Disturbed: 5.6
		Total Acres: 5.6
Are there any streams ☐ and/or wetlands ☐ on or adjacent to the construction site? If wetlands are located on-site and may be impacted, attach wetlands delineation report. If an Aquatic Resource Alteration Permit has been obtained for this site, what is the permit number?		ARAP Number: N/A
Receiving waters: Mississippi River		
Include the SWPPP with the NOI ■ SWPPP Included	Include a site location map ■ Map Included	

Name of Site Owner or Developer (Site-Wide Permittee): (correct legal name of person, company, or entity that has operational or design control over construction plans and specifications) Memphis Shelby County Airport Authority			
For corporate entities only, provide the Tennessee Secretary of State (SOS) Control Number:			
Site Owner or Developer Contact Name: (individual responsible for site) Brian Tenkhoff, P.E.	Title or Position: (the party who signs the certification below): Director of Development		
Mailing Address: 2491 Winchester Road, Suite 113	City: Memphis	State: TN	Zip: 38116
Phone: 901-922-2297	E-mail: BTenkhoff@flymemphis.com		

Optional Contact Name:	Title or Position:		
Mailing Address:	City:	State:	Zip:
Phone:	E-mail:		

CN-0940 (Rev. 04-24) RDA 2366

Owner or Developer Certification: (must be signed by president, vice-president or equivalent, or ranking elected official) (Primary Permittee) Memphis Shelby County Airport Authority		
I certify under penalty of law that this document and all attachments were prepared by me, or under my direction or supervision. The submitted information is to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment. As specified in Tennessee Code Annotated Section 39-16-702(a)(4), this declaration is made under penalty of perjury.		
Owner or Developer Name: (print or type): Brian Tenkhoff, P.E.	Signature:	Date:

Contractor(s) Certification: (must be signed by president, vice-president or equivalent, or ranking elected official) (Secondary Permittee)		
I certify under penalty of law that I have reviewed this document, any attachments, and the SWPPP referenced above. Based on my inquiry of the construction site owner/developer identified above and/or my inquiry of the person directly responsible for assembling this NOI and SWPPP, I believe the information submitted is accurate. I am aware that this NOI, if approved, makes the above-described construction activity subject to NPDES permit number TNR100000, and that certain of my activities on-site are thereby regulated. I am aware that there are significant penalties, including the possibility of fine and imprisonment for knowing violations, and for failure to comply with these permit requirements. As specified in Tennessee Code Annotated Section 39-16-702(a)(4), this declaration is made under penalty of perjury.		
Primary contractor name, address, and SOS control number (if applicable): (print or type)	Signature:	Date:
Primary contractor name, address, and SOS control number (if applicable): (print or type)	Signature:	Date:
Primary contractor name, address, and SOS control number (if applicable): (print or type)	Signature:	Date:

CN-0940 (Rev. 04-24) (Instructions on reverse) RDA 2366

NOTICE OF INTENT (NOI) FOR GENERAL NPDES PERMIT FOR STORMWATER DISCHARGES FROM CONSTRUCTION ACTIVITIES (TNR100000)

Purpose of this form - A completed notice of intent (NOI) must be submitted to obtain coverage under the Tennessee General NPDES Permit for Discharges of Stormwater Associated with Construction Activity (permit). **Requesting coverage under this permit means that an applicant has obtained and examined a copy of this permit, and thereby acknowledges applicant's claim of ability to be in compliance with permit terms and conditions.** This permit is required for stormwater discharge(s) from construction activities including clearing, grading, filling, and excavating (including borrow pits) of one or more acres of land. This form should be submitted at least 30 days prior to the commencement of land disturbing activities, or no later than 48 hours prior to when a new operator assumes operational control over site specifications or commences work at the site.

The appropriate permit application fee must accompany the NOI and is based on total acreage to be disturbed by an entire project, including any associated construction support activities (e.g., equipment staging yards, material storage areas, excavated material disposal areas, borrow or waste sites):

(i) Projects equal to or greater than 150 acres	$10,000
(ii) Projects equal to or greater than 50 acres and less than 150 acres	$6,000
(iii) Projects equal to or greater than 20 acres and less than 50 acres	$3,000
(iv) Projects equal to or greater than 5 acres and less than 20 acres	$1,000
(v) Projects equal to or greater than 1 acre and less than 5 acres	$250
(vi) Projects seeking subsequent coverage under an actively covered larger common plan of development or sale	$100

There is no fee for sites less than 1 acre. A separate annual maintenance fee is also required for construction activities that exceed 1 year under general permit coverage. Tennessee Rules, Chapter 0400-40-11-.02(b)(12)).

Who must submit the NOI form? Per Section 2 of the permit, all site operators must submit an NOI form. "Operator" for the purpose of this permit and in the context of stormwater associated with construction activity means any person associated with a construction project who meets either or both of the following two criteria: (1) The person has operational or design control over construction plans and specifications, including the ability to make modifications to those plans and specifications. This person is typically the owner or developer of the project or a portion of the project (e.g. subsequent builder), or the person that is the current landowner of the construction site. This person is considered the primary permittee; or (2) The person has day-to-day operational control of those activities at a project which are necessary to ensure compliance with a SWPPP for the site or other permit conditions. This person is typically a contractor or a commercial builder who is hired by the primary permittee and is considered a secondary permittee.

Owners, developers, and all contractors that meet the definition of the operator in subsection 2.2 of the permit shall apply for permit coverage on the same NOI, insofar as possible. After permit coverage has been granted to the primary permittee, any separate or subsequent NOI submittals must include the site's previously assigned permit tracking number and the project name. The site-wide site-specific SWPPP shall be prepared in accordance with the requirements of part 5 of the permit and must be submitted with the NOI unless the NOI being submitted is to only add a contractor (secondary permittee) to an existing coverage. Artificial entities (e.g., corporations or partnerships excluding entities not required to register) must submit the TN Secretary of State, Division of Business Services, control number. The Division reserves the right to deny coverage to artificial entities that are not properly registered and in good standing with the TN Secretary of State.

Notice of Coverage - The division will review the NOI for completeness and accuracy and prepare a notice of coverage (NOC). Stormwater discharge from the construction site is authorized as of the effective date of the NOC.

Complete the form - Type or print clearly, using ink and not markers or pencil. Answer each item or enter "NA," for not applicable, if a particular item does not fit the circumstances or characteristics of your construction site or activity. If you need additional space, attach a separate piece of paper to the NOI form. **The NOI will be considered incomplete without a permit fee, a map, and the SWPPP.**

Describe and locate the project - Use the legal or official name of the construction site. If a construction site lacks street name or route number, give the most accurate geographic information available to describe the location (reference to adjacent highways, roads, and structures, e.g., intersection of state highways 70 and 100). Latitude and longitude (expressed in decimal degrees) of the center of the site can be located on USGS quadrangle maps. The maps can be obtained at the USGS World Wide Web site: http://www.usgs.gov/; latitude and longitude information can be found at numerous other web sites. Attach a copy of a portion of a 7.5-minute topographic map, a city map, or a county map showing location of site, with boundaries at least one mile outside the site boundaries. Provide estimated starting date of clearing activities and completion date of the project, and an estimate of the number of acres of the site on which soil will be disturbed, including borrow areas, fill areas, stockpiles and the total acres. For linear projects, give location at each end of the construction area.

Give name of the receiving waters - Trace the route of stormwater runoff from the construction site and determine the name of the river(s), stream(s), creek(s), wetland(s), lake(s) or any other water course(s) into which the stormwater runoff drains. Note that the receiving water course may or may not be located on the construction site. If the first water body receiving construction site runoff is unnamed ("unnamed tributary"), determine the name of the water body that the unnamed tributary enters.

An ARAP may be required - If your work will disturb or cause alterations of a stream or wetland, you must obtain an appropriate Aquatic Resource Alteration Permit (ARAP). If you have a question about the ARAP program, contact your local Environmental Field Office (EFO).

Submitting the form and obtaining more information - Note that this form must be signed by the company President, Vice-President, or a ranking elected official in the case of a municipality, for details see subpart 2.5. For more information, contact your local EFO at the toll-free number 1-888-891-8332 (TDEC). Submit the completed NOI form (keep a copy for your records) to the appropriate EFO for the county(ies) where the construction activity is located, addressed to **Attention: Stormwater NOI Processing** or use MyTDEC Forms for electronic submittal.

EFO	Street Address	Zip Code	EFO	Street Address	Zip Code
Memphis	8383 Wolf Lake Drive, Bartlett	38133-4119	Cookeville	1221 South Willow Ave.	38506
Jackson	1625 Hollywood Drive	38305-4316	Chattanooga	1301 Riverfront Parkway, Suite 206	37402-2013
Nashville	711 R S Gass Boulevard	37243	Knoxville	3711 Middlebrook Pike	37921
Columbia	1421 Hampshire Pike	38401	Johnson City	2305 Silverdale Road	37601

CN-0940 (Rev. 04-24) RDA 2366

Appendix E – Inspection Reports

TENNESSEE DEPARTMENT OF ENVIRONMENT AND CONSERVATION (TDEC)
DIVISION OF WATER RESOURCES
William R. Snodgrass Tennessee Tower, 312 Rosa L. Parks Avenue, 11th Floor
Nashville, Tennessee 37243
1-888-891-8332 (TDEC)

General NPDES Permit for Stormwater Discharges from Construction Activities (CGP)
Construction Stormwater Inspection Certification (Inspection Form)

Site or Project Name:		**NPDES Tracking Number: TNR**
Primary Permittee Name:		Date of Inspection:
Current approximate disturbed acreage:	Has rainfall been checked/documented daily? ☐ Yes ☐ No	Name of Inspector:
Current weather/ground conditions:	Rainfall total since last inspection:	Inspector's TNEPSC Certification Number:
Site Assessment ☐ Yes ☐ No	Assessor's TN PE registration number:	Assessor's TNEPSC Level II/CPESC number:

Check the box if the following items are on-site:	
☐	Notice of Coverage (NOC)
☐	Stormwater Pollution Prevention Plan (SWPPP)
☐	Weekly inspection documentation
☐	Site contact information
☐	Rain Gage
Off-site Reference Rain Gage Location	

Best Management Practices (BMPs):

Are the Erosion Prevention and Sediment Controls (EPSCs) functioning correctly? If "No," describe below in Comment Section				
1.	Are all applicable EPSCs installed and maintained per the SWPPP per the current phase?		☐ Yes	☐ No
2.	Are EPSCs functioning correctly at all disturbed areas/material storage areas? (permit section 5.5.3)		☐ Yes	☐ No
3.	Are EPSCs functioning correctly at outfall/discharge points such that there is no objectionable color contrast in the receiving stream, and no other water quality impacts? (permit section 5.5.3.5 and 6.3.2)		☐ Yes	☐ No
4.	Are EPSCs functioning correctly at ingress/egress points such that there is no evidence of track-out? (permit section 5.5.3.1)		☐ Yes	☐ No
5.	If applicable, have discharges from dewatering activities been managed by appropriate controls? (permit section 4.1.3) If "No," describe below the measure to be implemented to address deficiencies.	☐ N/A	☐ Yes	☐ No
6.	If construction activity at any location on-site has temporarily/permanently ceased, was the area stabilized within 14 days? (permit section 5.5.3.4) If "No," describe below each location and measures taken to stabilize the area(s).	☐ N/A	☐ Yes	☐ No
7.	Have pollution prevention measures been installed, implemented, and maintained to minimize the discharge of pollutants from wash waters, exposure of materials and discharges from spills and leaks per section 4.1.4? If "No," describe below the measure to be implemented to address deficiencies.	☐ N/A	☐ Yes	☐ No

CN-1173 (Rev. 03-22) RDA 2366

Site or Project Name:		**NPDES Tracking Number: TNR**		
Primary Permittee Name:		Date of Inspection:		
8.	If a concrete washout facility is located on site, is it clearly identified on the project and maintained? If "No," describe below the measures to be implemented to address deficiencies. (permit section 1.2.2)	☐ N/A	☐ Yes	☐ No
9.	Have all previous deficiencies been addressed? If "No," describe the remaining deficiencies in the Comments section. ☐ Check if deficiencies/corrective measures have been reported on a previous form.	☐ N/A	☐ Yes	☐ No
Comment Section. If the answer is "No" for any of the above, describe the problem and summarize corrective actions to be taken. Otherwise, describe any pertinent observations:				
Certification and Signature (must be signed by the certified inspector and the permittee per Sections 5.5.3.11 (g) and 8.7.2 of the CGP)				
I certify under penalty of law that this document and all attachments were prepared by me, or under my direction or supervision. The submitted information is to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment. As specified in Tennessee Code Annotated Section 39-16-702(a)(4), this declaration is made under penalty of perjury.				
Inspector Name and Title :		Signature:		Date:
Primary Permittee Name and Title:		Signature:		Date:

CN-1173 (Rev. 03/22) (Instructions on next page) RDA 2366

Construction Stormwater Inspection Certification Form (Inspection Form)

Purpose of this form / Instructions

An inspection, as described in subsection 5.5.3.9. of the General Permit for Stormwater Discharges from Construction Activities ("Permit"), shall be performed at the specified frequency and documented on this form. Inspections shall be performed at least 72 hours apart. Where sites or portion(s) of construction sites have been temporarily stabilized, or runoff is unlikely due to winter conditions (e.g., site covered with snow or ice), such inspection only has to be conducted once per month until thawing results in runoff or construction activity resumes.

Inspections can be performed by:

a) a person with a valid certification from the "Fundamentals of Erosion Prevention and Sediment Control Level I" course,
b) a licensed professional engineer or landscape architect,
c) a Certified Professional in Erosion and Sediment Control (CPESC), or
d) a person who has successfully completed the "Level II Design Principles for Erosion Prevention and Sediment Control for Construction Sites" course.

Qualified personnel, as defined in subsection 5.5.3.10 of the Permit (provided by the permittee or cooperatively by multiple permittees) shall inspect disturbed areas of the construction site that have not been permanently stabilized, areas used for storage of materials that are exposed to precipitation, structural control measures, locations where vehicles enter or exit the site, and each outfall.

Disturbed areas and areas used for storage of materials that are exposed to precipitation shall be inspected for evidence of, or the potential for, pollutants entering the site's drainage system. Erosion prevention and sediment control measures shall be observed to ensure that they are operating correctly.

Outfall points (where discharges leave the site and/or enter waters of the state) shall be inspected to determine whether erosion prevention and sediment control measures are effective in preventing significant impacts to receiving waters. Where discharge locations are inaccessible, nearby downstream locations shall be inspected. Locations where vehicles enter or exit the site shall be inspected for evidence of offsite sediment tracking.

Based on the results of the inspection, any inadequate control measures or control measures in disrepair shall be replaced or modified, or repaired as necessary, before the next rain event if possible, but in no case more than 7 days after the need is identified.

Based on the results of the inspection, the site description identified in the SWPPP in accordance with section 5.5.1 of the Permit and pollution prevention measures identified in the SWPPP in accordance with section 5.5.2 of the Permit, shall be revised as appropriate, but in no case later than 7 days following the inspection. Such modifications shall provide for timely implementation of any changes to the SWPPP, but in no case later than 14 days following the inspection.

All inspections shall be documented on this Construction Stormwater Inspection Certification form. Alternative inspection forms may be used as long as the form contents and the inspection certification language are, at a minimum, equivalent to the Division's form and the permittee has obtained a written approval from the Division to use the alternative form. Inspection documentation will be maintained on site and made available to the Division upon request. Inspection reports must be submitted to the Division within 10 days of the request.

Trained certified inspectors shall complete inspection documentation to the best of their ability. Falsifying inspection records or other documentation or failure to complete inspection documentation shall result in a violation of this permit and any other applicable acts or rules.

Appendix F – Corrective Action Log

Project Name: General DeWitt Spain Airport – Apron Reconstruction
SWPPP Contact:

Inspection Date	Inspector Name(s)	Description of BMP Deficiency	Corrective Action Needed (including planned date/responsible person)	Date Action Taken/Responsible person

Appendix G – SWPPP Amendment Log

Project Name: General DeWitt Spain Airport – Apron Reconstruction
SWPPP Contact:

Amendment No.	Description of the Amendment	Date of Amendment	Amendment Prepared by [Name(s) and Title]

Appendix H – Subcontractor Certifications/Agreements

SUBCONTRACTOR CERTIFICATION
STORMWATER POLLUTION PREVENTION PLAN

Project Number: _____

Project Title: _____

Operator(s): _____

As a subcontractor, you are required to comply with the Stormwater Pollution Prevention Plan (SWPPP) for any work that you perform on-site. Any person or group who violates any condition of the SWPPP may be subject to substantial penalties or loss of contract. You are encouraged to advise each of your employees working on this project of the requirements of the SWPPP. A copy of the SWPPP is available for your review at the office trailer.

Each subcontractor engaged in activities at the construction site that could impact stormwater must be identified and sign the following certification statement:

I certify under the penalty of law that I have read and understand the terms and conditions of the SWPPP for the above designated project and agree to follow the BMPs and practices described in the SWPPP.

This certification is hereby signed in reference to the above named project:

Company: _____

Address: _____

Telephone Number: _____

Type of construction service to be provided: _____

_____

_____

Signature: _____

Title: _____

Date: _____

Appendix I – Construction and Stabilization Activities Log

Project Name: General DeWitt Spain Airport – Apron Reconstruction
SWPPP Contact:

Date Construction Activity Initiated	Description of Construction Activity	Date Construction Activity Ceased (Indicate Temporary or Permanent)	Date When Stabilization Measures are Initiated	Description of Stabilization Measure and Location

Appendix J – SWPPP Training Log

Stormwater Pollution Prevention Training Log

Project Name:

Project Location:

Instructor's Name(s):

Instructor's Title(s):

Course Location: _____ Date: _____

Course Length (hours): _____

Stormwater Training Topic: *(check as appropriate)*

- ❑ **Erosion Control BMPs**
- ❑ **Emergency Procedures**
- ❑ **Sediment Control BMPs**
- ❑ **Good Housekeeping BMPs**
- ❑ **Non-Stormwater BMPs**

Specific Training Objective:_____

_____

Attendee Roster: *(attach additional pages as necessary)*

No.	Name of Attendee	Company
1		
2		
3		
4		
5		
6		
7		
8		
9		
10		

Appendix K – Delegation of Authority Form

Delegation of Authority

I, _____ (name), hereby designate the person or specifically described position below to be a duly authorized representative for the purpose of overseeing compliance with environmental requirements, including the Construction General Permit, at the _____ construction site. The designee is authorized to sign any reports, stormwater pollution prevention plans and all other documents required by the permit.

_____ (name of person or position)
_____ (company)
_____ (address)
_____ (city, state, zip)
_____ (phone)

By signing this authorization, I confirm that I meet the requirements to make such a designation as set forth in _____ (Reference State Permit), and that the designee above meets the definition of a "duly authorized representative" as set forth in _____ (Reference State Permit).

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gathered and evaluated the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Name: _____

Company: _____

Title: _____

Signature: _____

Date: _____

Appendix L – Notice of Termination

TENNESSEE DEPARTMENT OF ENVIRONMENT AND CONSERVATION (TDEC)
DIVISION OF WATER RESOURCES (DWR)
William R. Snodgrass Tennessee Tower, 312 Rosa L. Parks Avenue, 11th Floor
Nashville, Tennessee 37243
1-888-891-TDEC (8332)

NOTICE OF TERMINATION (NOT) FOR
GENERAL NPDES PERMIT FOR STORMWATER DISCHARGES FROM CONSTRUCTION ACTIVITIES (CGP)

This form is required to be submitted when requesting termination of coverage from the CGP. The purpose of this form is to notify the TDEC that either all stormwater discharges associated with construction activity from the portion of the identified facility where you, as an operator, have ceased or have been eliminated; or you are no longer an operator at the construction site. Specifically, this means that all disturbed soils at the portion of the construction site where the operator had control have been permanently stabilized, the temporary erosion and sediment control measures have been removed, and/or subsequent operators have obtained permit coverage for the site or portions of the site where the operator had control. Submission of this form shall in no way relieve the permittee of permit obligations required prior to submission of this form.

Submit this form to the local DWR Environmental Field Office (EFO) address (see table below) or using MyTDEC Forms electronic submittal process. For more information, contact your local EFO at the toll-free number 1-888-891-8332 (TDEC).

Site or Project Name:	**NPDES Tracking Number: TNR**
Street Address or Location:	County(ies):

Name of Permittee Requesting Termination of Coverage:			
Permittee Contact Name:	Title or Position:		
Mailing Address:	City:	State:	Zip:
Phone:	E-mail:		

Check the reason(s) for termination of permit coverage: (check only one)

☐	Primary permittee termination: all requirements for termination under Permit Part 9.1.1. a) through c) have been met. This includes, but is not limited to, for areas the primary permittee has control all earth-disturbing activities at the site are complete and permanent stabilization as defined in Part 10 of the CGP has been achieved. (attach photo documentation)
	When applicable, and you are a primary permittee seeking termination, list who is responsible for ongoing maintenance of stormwater controls left on the site subject for long-term use following termination of coverage:
☐	Secondary permittee termination: all requirements for termination under Permit Part 9.2.1. have been met (no longer an operator at the construction site).

Certification and Signature:

(must be signed by president, vice-president or equivalent ranking elected official)

I certify under penalty of law that either: (a) all stormwater discharges associated with construction activity from the portion of the identified facility where I was an operator have ceased or have been eliminated or (b) I am no longer an operator at the construction site. I understand that by submitting this notice of termination, I am no longer authorized to discharge stormwater associated with construction activity under this general permit, and that discharging pollutants in stormwater associated with construction activity to waters of the state is unlawful under the Tennessee Water Quality Control Act where the discharge is not authorized by a NPDES permit. I also understand that the submittal of this notice of termination does not release an operator from liability for any violations of this permit or the Tennessee Water Quality Control Act. I certify under penalty of law that this document and all attachments were prepared by me, or under my direction or supervision. The submitted information is to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment. As specified in Tennessee Code Annotated Section 39-16-702(a)(4), this declaration is made under penalty of perjury.

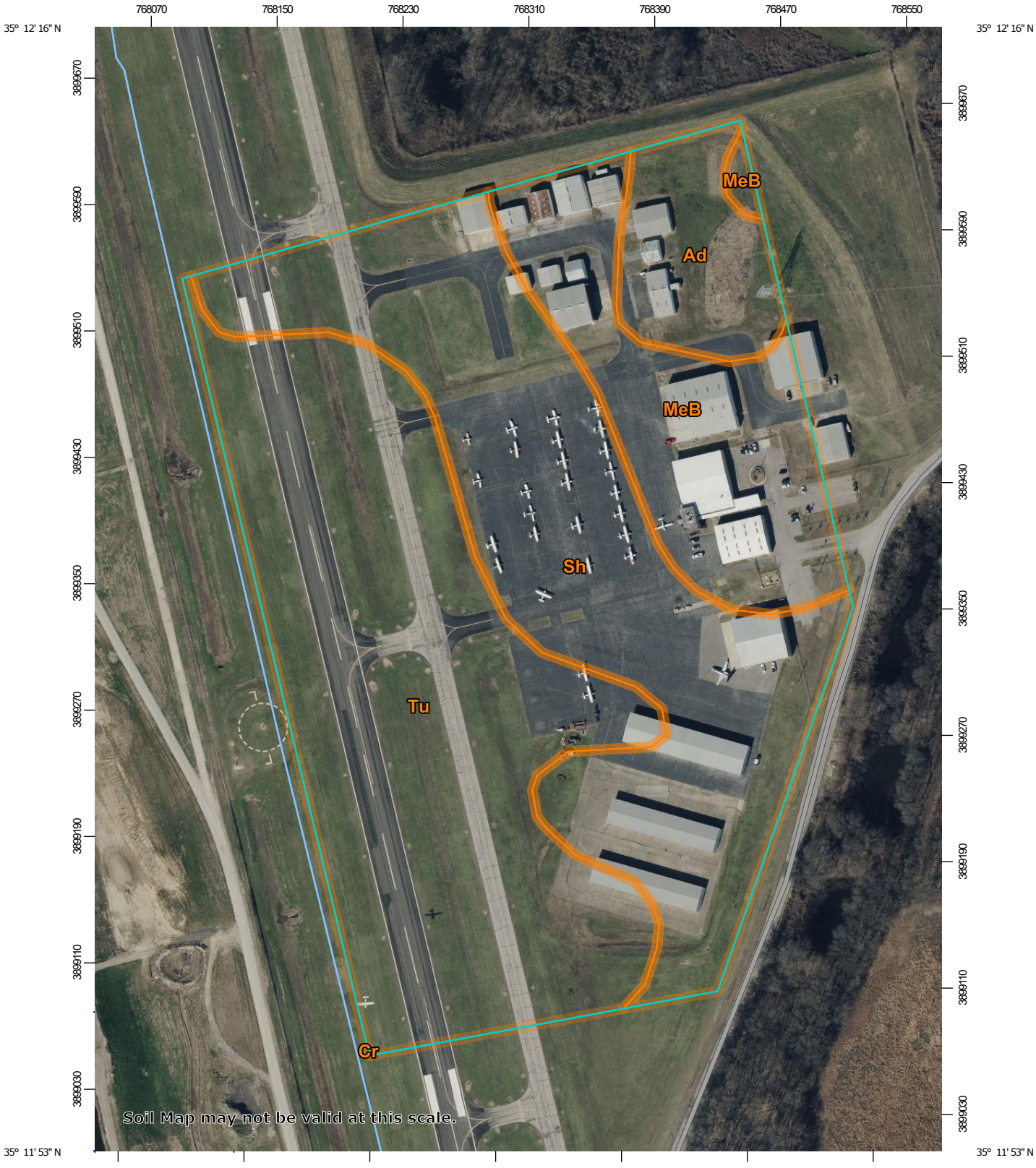
Permittee name (print or type):	Signature:	Date:

EFO	Address	EFO	Street Address
Memphis	8383 Wolf Lake Drive, Bartlett, TN 38133	Cookeville	1221 South Willow Ave., TN 38506
Jackson	1625 Hollywood Drive, TN 38305	Chattanooga	1301 Riverfront Parkway, Ste. 206, TN 37402
Nashville	711 R S Gass Boulevard, TN 37243	Knoxville	3711 Middlebrook Pike, TN 37921
Columbia	1421 Hampshire Pike, TN 38401	Johnson City	2305 Silverdale Road, TN 37601

CN-1175 (Rev. 02-22) RDA 2366

Appendix M – Site Soils Information

Soil Map—Shelby County, Tennessee
(DeWitt Spain Airport)



Map Scale: 1:3,470 if printed on A portrait (8.5" x 11") sheet.

N

Meters: 0 50 100 200 300

Feet: 0 150 300 600 900

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 15N WGS84

MAP LEGEND

Area of Interest (AOI)
- Area of Interest (AOI)

Soils
- Soil Map Unit Polygons
- Soil Map Unit Lines
- Soil Map Unit Points

Special Point Features
- Blowout
- Borrow Pit
- Clay Spot
- Closed Depression
- Gravel Pit
- Gravelly Spot
- Landfill
- Lava Flow
- Marsh or swamp
- Mine or Quarry
- Miscellaneous Water
- Perennial Water
- Rock Outcrop
- Saline Spot
- Sandy Spot
- Severely Eroded Spot
- Sinkhole
- Slide or Slip
- Sodic Spot
- Spoil Area
- Stony Spot
- Very Stony Spot
- Wet Spot
- Other
- Special Line Features

Water Features
- Streams and Canals

Transportation
- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

Background
- Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:15,800.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Shelby County, Tennessee
Survey Area Data: Version 20, Sep 12, 2024

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Jan 27, 2023—Mar 15, 2023

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
Ad	Adler silt loam, 0 to 2 percent slopes, occasionally flooded	2.9	6.7%
Cr	Commerce silt loam	0.0	0.0%
MeB	Memphis silt loam, 2 to 5 percent slopes, northern phase	6.9	15.8%
Sh	Sharkey clay, 0 to 2 percent slopes, occasionally flooded	15.6	35.7%
Tu	Tunica silty clay	18.2	41.8%
Totals for Area of Interest		**43.6**	**100.0%**

Part 1 – General Contract Provisions

Section 10 Definition of Terms

When the following terms are used in these specifications, in the contract, or in any documents or other instruments pertaining to construction where these specifications govern, the intent and meaning shall be defined as follows:

Paragraph Number	Term	Definition
10-01	**AASHTO**	The American Association of State Highway and Transportation Officials.
10-02	**Access Road**	The right-of-way, the roadway and all improvements constructed thereon connecting the airport to a public roadway.
10-03	**Advertisement**	A public announcement, as required by local law, inviting bids for work to be performed and materials to be furnished.
10-04	**Airport**	Airport means an area of land or water which is used or intended to be used for the landing and takeoff of aircraft; an appurtenant area used or intended to be used for airport buildings or other airport facilities or rights of way; airport buildings and facilities located in any of these areas, and a heliport.
10-05	**Airport Improvement Program (AIP)**	A grant-in-aid program, administered by the Federal Aviation Administration (FAA).
10-06	**Air Operations Area (AOA)**	The term air operations area (AOA) shall mean any area of the airport used or intended to be used for the landing, takeoff, or surface maneuvering of aircraft. An air operation area shall include such paved or unpaved areas that are used or intended to be used for the unobstructed movement of aircraft in addition to its associated runway, taxiway, or apron.
10-07	**Apron**	Area where aircraft are parked, unloaded or loaded, fueled and/or serviced.
10-08	**ASTM International (ASTM)**	Formerly known as the American Society for Testing and Materials (ASTM).

Paragraph Number	Term	Definition
10-09	**Award**	The Owner's notice to the successful bidder of the acceptance of the submitted bid.
10-10	**Bidder**	Any individual, partnership, firm, or corporation, acting directly or through a duly authorized representative, who submits a proposal for the work contemplated.
10-11	**Building Area**	An area on the airport to be used, considered, or intended to be used for airport buildings or other airport facilities or rights-of-way together with all airport buildings and facilities located thereon.
10-12	**Calendar Day**	Every day shown on the calendar.
10-13	**Certificate of Analysis (COA)**	The COA is the manufacturer's Certificate of Compliance (COC) including all applicable test results required by the specifications.
10-14	**Certificate of Compliance (COC)**	The manufacturer's certification stating that materials or assemblies furnished fully comply with the requirements of the contract. The certificate shall be signed by the manufacturer's authorized representative.
10-15	**Change Order**	A written order to the Contractor covering changes in the plans, specifications, or proposal quantities and establishing the basis of payment and contract time adjustment, if any, for work within the scope of the contract and necessary to complete the project.
10-16	**Contract**	A written agreement between the Owner and the Contractor that establishes the obligations of the parties including but not limited to performance of work, furnishing of labor, equipment and materials and the basis of payment. The awarded contract includes but may not be limited to: Advertisement, Contract form, Proposal, Performance bond, payment bond, General provisions, certifications and representations, Technical Specifications, Plans, Supplemental Provisions, standards incorporated by reference and issued addenda.
10-17	**Contract Item (Pay Item)**	A specific unit of work for which a price is provided in the contract.
10-18	**Contract Time**	The number of calendar days or working days, stated in the proposal, allowed for completion of the contract, including

Paragraph Number	Term	Definition
		authorized time extensions. If a calendar date of completion is stated in the proposal, in lieu of a number of calendar or working days, the contract shall be completed by that date.
10-19	**Contractor**	The individual, partnership, firm, or corporation primarily liable for the acceptable performance of the work contracted and for the payment of all legal debts pertaining to the work who acts directly or through lawful agents or employees to complete the contract work.
10-20	**Contractors Quality Control (QC) Facilities**	The Contractor's QC facilities in accordance with the Contractor Quality Control Program (CQCP).
10-21	**Contractor Quality Control Program (CQCP)**	Details the methods and procedures that will be taken to assure that all materials and completed construction required by the contract conform to contract plans, technical specifications and other requirements, whether manufactured by the Contractor, or procured from subcontractors or vendors.
10-22	**Control Strip**	A demonstration by the Contractor that the materials, equipment, and construction processes results in a product meeting the requirements of the specification.
10-23	**Construction Safety and Phasing Plan (CSPP)**	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.
10-24	**Drainage System**	The system of pipes, ditches, and structures by which surface or subsurface waters are collected and conducted from the airport area.
10-25	**Engineer**	The individual, partnership, firm, or corporation duly authorized by the Owner to be responsible for engineering, inspection, and/or observation of the contract work and acting directly or through an authorized representative.
10-26	**Equipment**	All machinery, together with the necessary supplies for upkeep and maintenance; and all tools and apparatus necessary for the proper construction and acceptable completion of the work.
10-27	**Extra Work**	An item of work not provided for in the awarded contract as previously modified by change order or supplemental

Paragraph Number	Term	Definition
		agreement, but which is found by the Owner's Engineer or Resident Project Representative (RPR) to be necessary to complete the work within the intended scope of the contract as previously modified.
10-28	**FAA**	The Federal Aviation Administration. When used to designate a person, FAA shall mean the Administrator or their duly authorized representative.
10-29	**Federal Specifications**	The federal specifications and standards, commercial item descriptions, and supplements, amendments, and indices prepared and issued by the General Services Administration.
10-30	**Force Account**	**a.** Contract Force Account - A method of payment that addresses extra work performed by the Contractor on a time and material basis. **b.** Owner Force Account - Work performed for the project by the Owner's employees.
10-31	**Intention of Terms**	Whenever, in these specifications or on the plans, the words "directed," "required," "permitted," "ordered," "designated," "prescribed," or words of like import are used, it shall be understood that the direction, requirement, permission, order, designation, or prescription of the Engineer and/or Resident Project Representative (RPR) is intended; and similarly, the words "approved," "acceptable," "satisfactory," or words of like import, shall mean approved by, or acceptable to, or satisfactory to the Engineer and/or RPR, subject in each case to the final determination of the Owner. Any reference to a specific requirement of a numbered paragraph of the contract specifications or a cited standard shall be interpreted to include all general requirements of the entire section, specification item, or cited standard that may be pertinent to such specific reference.
10-32	**Lighting**	A system of fixtures providing or controlling the light sources used on or near the airport or within the airport buildings. The field lighting includes all luminous signals, markers, floodlights, and illuminating devices used on or near the airport or to aid in the operation of aircraft landing at, taking off from, or taxiing on the airport surface.

Paragraph Number	Term	Definition
10-33	**Major and Minor Contract Items**	A major contract item shall be any item that is listed in the proposal, the total cost of which is equal to or greater than 20% of the total amount of the award contract. All other items shall be considered minor contract items.
10-34	**Materials**	Any substance specified for use in the construction of the contract work.
10-35	**Modification of Standards (MOS)**	Any deviation from standard specifications applicable to material and construction methods in accordance with FAA Order 5300.1.
10-36	**Notice to Proceed (NTP)**	A written notice to the Contractor to begin the actual contract work on a previously agreed to date. If applicable, the Notice to Proceed shall state the date on which the contract time begins.
10-37	**Owner**	The term "Owner" shall mean the party of the first part or the contracting agency signatory to the contract. Where the term "Owner" is capitalized in this document, it shall mean airport Sponsor only. The Owner for this project is **Memphis-Shelby County Airport Authority**.
10-38	Passenger Facility Charge (PFC)	Per 14 Code of Federal Regulations (CFR) Part 158 and 49 United States Code (USC) § 40117, a PFC is a charge imposed by a public agency on passengers enplaned at a commercial service airport it controls.
10-39	**Pavement Structure**	The combined surface course, base course(s), and subbase course(s), if any, considered as a single unit.
10-40	**Payment bond**	The approved form of security furnished by the Contractor and their own surety as a guaranty that the Contractor will pay in full all bills and accounts for materials and labor used in the construction of the work.
10-41	**Performance bond**	The approved form of security furnished by the Contractor and their own surety as a guaranty that the Contractor will complete the work in accordance with the terms of the contract.
10-42	**Plans**	The official drawings or exact reproductions which show the location, character, dimensions and details of the airport and the work to be done and which are to be considered as a part of the contract, supplementary to the

Paragraph Number	Term	Definition
		specifications. Plans may also be referred to as 'contract drawings.'
10-43	**Project**	The agreed scope of work for accomplishing specific airport development with respect to a particular airport.
10-44	**Proposal**	The written offer of the bidder (when submitted on the approved proposal form) to perform the contemplated work and furnish the necessary materials in accordance with the provisions of the plans and specifications.
10-45	**Proposal guaranty**	The security furnished with a proposal to guarantee that the bidder will enter into a contract if their own proposal is accepted by the Owner.
10-46	**Quality Assurance (QA)**	Owner's responsibility to assure that construction work completed complies with specifications for payment.
10-47	**Quality Control (QC)**	Contractor's responsibility to control material(s) and construction processes to complete construction in accordance with project specifications.
10-48	**Quality Assurance (QA) Inspector**	An authorized representative of the Engineer and/or Resident Project Representative (RPR) assigned to make all necessary inspections, observations, tests, and/or observation of tests of the work performed or being performed, or of the materials furnished or being furnished by the Contractor.
10-49	**Quality Assurance (QA) Laboratory**	The official quality assurance testing laboratories of the Owner or such other laboratories as may be designated by the Engineer or RPR. May also be referred to as Engineer's, Owner's, or QA Laboratory.
10-50	**Resident Project Representative (RPR) / Program Manager**	The individual, partnership, firm, or corporation duly authorized by the Owner to be responsible for all necessary inspections, observations, tests, and/or observations of tests of the contract work performed or being performed, or of the materials furnished or being furnished by the Contractor, and acting directly or through an authorized representative. **RPR and Program Manager are used interchangeably.**
10-51	**Runway**	The area on the airport prepared for the landing and takeoff of aircraft.

Paragraph Number	Term	Definition
10-52	**Runway Safety Area (RSA)**	A defined surface surrounding the runway prepared or suitable for reducing the risk of damage to aircraft. See the construction safety and phasing plan (CSPP) for limits of the RSA.
10-53	**Safety Plan Compliance Document (SPCD)**	Details how the Contractor will comply with the CSPP.
10-54	**Specifications**	A part of the contract containing the written directions and requirements for completing the contract work. Standards for specifying materials or testing which are cited in the contract specifications by reference shall have the same force and effect as if included in the contract physically.
10-55	**Sponsor**	A Sponsor is defined in 49 USC § 47102(24) as a public agency that submits to the FAA for an AIP grant; or a private Owner of a public-use airport that submits to the FAA an application for an AIP grant for the airport.
10-56	**Structures**	Airport facilities such as bridges; culverts; catch basins, inlets, retaining walls, cribbing; storm and sanitary sewer lines; water lines; underdrains; electrical ducts, manholes, handholes, lighting fixtures and bases; transformers; navigational aids; buildings; vaults; and, other manmade features of the airport that may be encountered in the work and not otherwise classified herein.
10-57	**Subgrade**	The soil that forms the pavement foundation.
10-58	**Superintendent**	The Contractor's executive representative who is present on the work during progress, authorized to receive and fulfill instructions from the RPR, and who shall supervise and direct the construction.
10-59	**Supplemental Agreement**	A written agreement between the Contractor and the Owner that establishes the basis of payment and contract time adjustment, if any, for the work affected by the supplemental agreement. A supplemental agreement is required if: (1) in scope work would increase or decrease the total amount of the awarded contract by more than 25%: (2) in scope work would increase or decrease the total of any major contract item by more than 25%; (3) work that is not within the scope of the originally awarded contract; or (4) adding or deleting of a major contract item.

Paragraph Number	Term	Definition
10-60	**Surety**	The corporation, partnership, or individual, other than the Contractor, executing payment or performance bonds that are furnished to the Owner by the Contractor.
10-61	**Taxilane**	A taxiway designed for low speed movement of aircraft between aircraft parking areas and terminal areas.
10-62	**Taxiway**	The portion of the air operations area of an airport that has been designated by competent airport authority for movement of aircraft to and from the airport's runways, aircraft parking areas, and terminal areas.
10-63	**Taxiway/Taxilane Safety Area (TSA)**	A defined surface alongside the taxiway prepared or suitable for reducing the risk of damage to an aircraft. See the construction safety and phasing plan (CSPP) for limits of the TSA.
10-64	**Work**	The furnishing of all labor, materials, tools, equipment, and incidentals necessary or convenient to the Contractor's performance of all duties and obligations imposed by the contract, plans, and specifications.
10-65	**Working day**	A working day shall be any day other than a legal holiday, Saturday, or Sunday on which the normal working forces of the Contractor may proceed with regular work for at least six (6) hours toward completion of the contract. When work is suspended for causes beyond the Contractor's control, it will not be counted as a working day. Saturdays, Sundays and holidays on which the Contractor's forces engage in regular work will be considered as working days.
10-66	**Owner Defined terms**	See Section 150 General Provisions Addendum for additional terms.

END OF SECTION 10

Section 20 Proposal Requirements and Conditions

20-01 Advertisement (Notice to Bidders). See specification section 00100, Legal Notice to Bidders.

20-02 Qualification of bidders. Each bidder shall submit evidence of competency and evidence of financial responsibility to perform the work to the Owner at the time of bid opening.

Evidence of competency, unless otherwise specified, shall consist of statements covering the bidder's past experience on similar work, and a list of equipment and a list of key personnel that would be available for the work.

Each bidder shall furnish the Owner satisfactory evidence of their financial responsibility. Evidence of financial responsibility, unless otherwise specified, shall consist of a confidential statement or report of the bidder's financial resources and liabilities as of the last calendar year or the bidder's last fiscal year. Such statements or reports shall be certified by a public accountant. At the time of submitting such financial statements or reports, the bidder shall further certify whether their financial responsibility is approximately the same as stated or reported by the public accountant. If the bidder's financial responsibility has changed, the bidder shall qualify the public accountant's statement or report to reflect the bidder's true financial condition at the time such qualified statement or report is submitted to the Owner.

Unless otherwise specified, a bidder may submit evidence that they are prequalified with the State Highway Division and are on the current "bidder's list" of the state in which the proposed work is located. Evidence of State Highway Division prequalification may be submitted as evidence of financial responsibility in lieu of the certified statements or reports specified above.

20-03 Contents of proposal forms. The Owner's proposal forms state the location and description of the proposed construction; the place, date, and time of opening of the proposals; and the estimated quantities of the various items of work to be performed and materials to be furnished for which unit bid prices are asked. The proposal form states the time in which the work must be completed, and the amount of the proposal guaranty that must accompany the proposal. The Owner will accept only those Proposals properly executed on physical forms or electronic forms provided by the Owner. Bidder actions that may cause the Owner to deem a proposal irregular are given in paragraph 20-09 *Irregular proposals*.

See sections C-105, 00405, and 01100 for information on Mobilization.

A Virtual Pre-Bid Meeting will be held Wednesday, February 21, 2024 at 2:30 p.m. local time via phone/video conferencing (link: https://teams.microsoft.com/l/meetup-join/19%3ameeting_NjQxYWUxY2EtYzMyMy00NWQ0LWExNDMtYmY2MGY1NGZkY2Ri%40thread.v2/0?context=%7b%22Tid%22%3a%227d15b138-6f30-4477-b779-756687956003%22%2c%22Oid%22%3a%22c3c4eee2-eefd-4dbe-994e-fa56f2028f8a%22%7d); meeting ID: 259 550 086 559; passcode: ob8aci; local phone #: (872) 242-8851; conference ID: 330 303 152#. Instructions on Pre-Bid Meeting and Site Visit request can be found at https://www.flymemphis.com/rfps-rfqs. Attendance at the Pre-Bid Meeting is strongly recommended.

20-04 Issuance of proposal forms. The Owner reserves the right to refuse to issue a proposal form to a prospective bidder if the bidder is in default for any of the following reasons:

a. Failure to comply with any prequalification regulations of the Owner, if such regulations are cited, or otherwise included, in the proposal as a requirement for bidding.

b. Failure to pay, or satisfactorily settle, all bills due for labor and materials on former contracts in force with the Owner at the time the Owner issues the proposal to a prospective bidder.

c. Documented record of Contractor default under previous contracts with the Owner.

d. Documented record of unsatisfactory work on previous contracts with the Owner.

20-05 Interpretation of estimated proposal quantities. An estimate of quantities of work to be done and materials to be furnished under these specifications is given in the proposal. It is the result of careful calculations and is believed to be correct. It is given only as a basis for comparison of proposals and the award of the contract. The Owner does not expressly, or by implication, agree that the actual quantities involved will correspond exactly therewith; nor shall the bidder plead misunderstanding or deception because of such estimates of quantities, or of the character, location, or other conditions pertaining to the work. Payment to the Contractor will be made only for the actual quantities of work performed or materials furnished in accordance with the plans and specifications. It is understood that the quantities may be increased or decreased as provided in the Section 40, paragraph 40-02, Alteration of Work and Quantities, without in any way invalidating the unit bid prices.

20-06 Examination of plans, specifications, and site. The bidder is expected to carefully examine the site of the proposed work, the proposal, plans, specifications, and contract forms. Bidders shall satisfy themselves to the character, quality, and quantities of work to be performed, materials to be furnished, and to the requirements of the proposed contract. The submission of a proposal shall be prima facie evidence that the bidder has made such examination and is satisfied to the conditions to be encountered in performing the work and the requirements of the proposed contract, plans, and specifications.

20-07 Preparation of proposal. The bidder shall submit their proposal on the forms furnished by the Owner. All blank spaces in the proposal forms, unless explicitly stated otherwise, must be correctly filled in where indicated for each and every item for which a quantity is given. The bidder shall state the price (written in ink or typed) both in words and numerals which they propose for each pay item furnished in the proposal. In case of conflict between words and numerals, the words, unless obviously incorrect, shall govern.

The bidder shall correctly sign the proposal in ink. If the proposal is made by an individual, their name and post office address must be shown. If made by a partnership, the name and post office address of each member of the partnership must be shown. If made by a corporation, the person signing the proposal shall give the name of the state where the corporation was chartered and the name, titles, and business address of the president, secretary, and the treasurer. Anyone signing a proposal as an agent shall file evidence of their authority to do so and that the signature is binding upon the firm or corporation.

20-08 Responsive and responsible bidder. A responsive bid conforms to all significant terms and conditions contained in the Owner's invitation for bid. It is the Owner's responsibility to decide if the exceptions taken by a bidder to the solicitation are material or not and the extent of deviation it is willing to accept.

A responsible bidder has the ability to perform successfully under the terms and conditions of a proposed procurement, as defined in 2 CFR § 200.318(h). This includes such matters as Contractor integrity, compliance with public policy, record of past performance, and financial and technical resources.

20-09 Irregular proposals. Proposals shall be considered irregular for the following reasons:

a. If the proposal is on a form other than that furnished by the Owner, or if the Owner's form is altered, or if any part of the proposal form is detached.

b. If there are unauthorized additions, conditional or alternate pay items, or irregularities of any kind that make the proposal incomplete, indefinite, or otherwise ambiguous.

c. If the proposal does not contain a unit price for each pay item listed in the proposal, except in the case of authorized alternate pay items, for which the bidder is not required to furnish a unit price.

d. If the proposal contains unit prices that are obviously unbalanced.

e. If the proposal is not accompanied by the proposal guaranty specified by the Owner.

f. If the applicable Disadvantaged Business Enterprise information is incomplete.

The Owner reserves the right to reject any irregular proposal and the right to waive technicalities if such waiver is in the best interest of the Owner and conforms to local laws and ordinances pertaining to the letting of construction contracts.

20-10 Bid guarantee. Each separate proposal shall be accompanied by a bid bond, certified check, or other specified acceptable collateral, in the amount specified in the proposal form. Such bond, check, or collateral, shall be made payable to the Owner.

20-11 Delivery of proposal. Each proposal submitted shall be placed in a sealed envelope plainly marked with the project number, location of airport, and name and business address of the bidder on the outside. When sent by mail, preferably registered, the sealed proposal, marked as indicated above, should be enclosed in an additional envelope. No proposal will be considered unless received at the place specified in the advertisement or as modified by Addendum before the time specified for opening all bids. Proposals received after the bid opening time shall be returned to the bidder unopened.

20-12 Withdrawal or revision of proposals. A bidder may withdraw or revise (by withdrawal of one proposal and submission of another) a proposal provided that the bidder's request for withdrawal is received by the Owner in writing or by fax or email before the time specified for opening bids. Revised proposals must be received at the place specified in the advertisement before the time specified for opening all bids.

20-13 Public opening of proposals. Proposals shall be opened, and read, publicly at the time and place specified in the advertisement. Bidders, their authorized agents, and other interested persons are invited to attend. Proposals that have been withdrawn (by written or telegraphic request) or received after the time specified for opening bids shall be returned to the bidder unopened.

20-14 Disqualification of bidders. A bidder shall be considered disqualified for any of the following reasons:

a. Submitting more than one proposal from the same partnership, firm, or corporation under the same or different name.

b. Evidence of collusion among bidders. Bidders participating in such collusion shall be disqualified as bidders for any future work of the Owner until any such participating bidder has been reinstated by the Owner as a qualified bidder.

c. If the bidder is considered to be in "default" for any reason specified in paragraph 20-04, *Issuance of Proposal Forms,* of this section.

20-15 Discrepancies and Omissions. A Bidder who discovers discrepancies or omissions with the project bid documents shall immediately notify the Owner's Engineer of the matter. A bidder that has doubt as to the true meaning of a project requirement may submit to the Owner's Engineer a written request for interpretation no later than seven (7) days prior to bid opening.

Any interpretation of the project bid documents by the Owner's Engineer will be by written addendum issued by the Owner. The Owner will not consider any instructions, clarifications or interpretations of the bidding documents in any manner other than written addendum.

END OF SECTION 20

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Section 30 Award and Execution of Contract

30-01 Consideration of proposals. After the proposals are publicly opened and read, they will be compared on the basis of the summation of the products obtained by multiplying the estimated quantities shown in the proposal by the unit bid prices. If a bidder's proposal contains a discrepancy between unit bid prices written in words and unit bid prices written in numbers, the unit bid price written in words shall govern.

Until the award of a contract is made, the Owner reserves the right to reject a bidder's proposal for any of the following reasons:

a. If the proposal is irregular as specified in Section 20, paragraph 20-09, *Irregular Proposals*.

b. If the bidder is disqualified for any of the reasons specified Section 20, paragraph 20-14, *Disqualification of Bidders*.

In addition, until the award of a contract is made, the Owner reserves the right to reject any or all proposals, waive technicalities, if such waiver is in the best interest of the Owner and is in conformance with applicable state and local laws or regulations pertaining to the letting of construction contracts; advertise for new proposals; or proceed with the work otherwise. All such actions shall promote the Owner's best interests.

30-02 Award of contract. The award of a contract, if it is to be awarded, shall be made within ninety (90) calendar days of the date specified for publicly opening proposals, unless otherwise specified herein.

If the Owner elects to proceed with an award of contract, the Owner will make award to the responsible bidder whose bid, conforming with all the material terms and conditions of the bid documents, is the lowest in price.

30-03 Cancellation of award. The Owner reserves the right to cancel the award without liability to the bidder, except return of proposal guaranty, at any time before a contract has been fully executed by all parties and is approved by the Owner in accordance with paragraph 30-07 *Approval of Contract*.

30-04 Return of proposal guaranty. All proposal guaranties, except those of the two lowest bidders, will be returned immediately after the Owner has made a comparison of bids as specified in the paragraph 30-01, *Consideration of Proposals.* Proposal guaranties of the two lowest bidders will be retained by the Owner until such time as an award is made, at which time, the unsuccessful bidder's proposal guaranty will be returned. The successful bidder's proposal guaranty will be returned as soon as the Owner receives the contract bonds as specified in paragraph 30-05, *Requirements of Contract Bonds.*

30-05 Requirements of contract bonds. At the time of the execution of the contract, the successful bidder shall furnish the Owner a surety bond or bonds that have been fully executed by the bidder and the surety guaranteeing the performance of the work and the payment of all legal debts that may be incurred by reason of the Contractor's performance of the work. The surety and the form of the bond or bonds shall be acceptable to the Owner. Unless otherwise specified in this subsection, the surety bond or bonds shall be in a sum equal to the full amount of the contract.

30-06 Execution of contract. The successful bidder shall sign (execute) the necessary agreements for entering into the contract and return the signed contract to the Owner, along with the fully executed surety

bond or bonds specified in paragraph 30-05, *Requirements of Contract Bonds,* of this section, within fifteen (15) calendar days from the date mailed or otherwise delivered to the successful bidder.

30-07 Approval of contract. Upon receipt of the contract and contract bond or bonds that have been executed by the successful bidder, the Owner shall complete the execution of the contract in accordance with local laws or ordinances, and return the fully executed contract to the Contractor. Delivery of the fully executed contract to the Contractor shall constitute the Owner's approval to be bound by the successful bidder's proposal and the terms of the contract.

30-08 Failure to execute contract. Failure of the successful bidder to execute the contract and furnish an acceptable surety bond or bonds within the period specified in paragraph 30-06, *Execution of Contract,* of this section shall be just cause for cancellation of the award and forfeiture of the proposal guaranty, not as a penalty, but as liquidated damages to the Owner.

END OF SECTION 30

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Section 40 Scope of Work

40-01 Intent of contract. The intent of the contract is to provide for construction and completion, in every detail, of the work described. It is further intended that the Contractor shall furnish all labor, materials, equipment, tools, transportation, and supplies required to complete the work in accordance with the plans, specifications, and terms of the contract.

40-02 Alteration of work and quantities. The Owner reserves the right to make such changes in quantities and work as may be necessary or desirable to complete, in a satisfactory manner, the original intended work. Unless otherwise specified in the Contract, the Owner's Engineer or RPR shall be and is hereby authorized to make, in writing, such in-scope alterations in the work and variation of quantities as may be necessary to complete the work, provided such action does not represent a significant change in the character of the work.

For purpose of this section, a significant change in character of work means: any change that is outside the current contract scope of work; any change (increase or decrease) in the total contract cost by more than 25%; or any change in the total cost of a major contract item by more than 25%.

Work alterations and quantity variances that do not meet the definition of significant change in character of work shall not invalidate the contract nor release the surety. Contractor agrees to accept payment for such work alterations and quantity variances in accordance with Section 90, paragraph 90-03, *Compensation for Altered Quantities*.

Should the value of altered work or quantity variance meet the criteria for significant change in character of work, such altered work and quantity variance shall be covered by a supplemental agreement. Supplemental agreements shall also require consent of the Contractor's surety and separate performance and payment bonds. If the Owner and the Contractor are unable to agree on a unit adjustment for any contract item that requires a supplemental agreement, the Owner reserves the right to terminate the contract with respect to the item and make other arrangements for its completion.

40-03 Omitted items. The Owner, the Owner's Engineer or the RPR may provide written notice to the Contractor to omit from the work any contract item that does not meet the definition of major contract item. Major contract items may be omitted by a supplemental agreement. Such omission of contract items shall not invalidate any other contract provision or requirement.

Should a contract item be omitted or otherwise ordered to be non-performed, the Contractor shall be paid for all work performed toward completion of such item prior to the date of the order to omit such item. Payment for work performed shall be in accordance with Section 90, paragraph 90-04, *Payment for Omitted Items*.

40-04 Extra work. Should acceptable completion of the contract require the Contractor to perform an item of work not provided for in the awarded contract as previously modified by change order or supplemental agreement, Owner may issue a Change Order to cover the necessary extra work. Change orders for extra work shall contain agreed unit prices for performing the change order work in accordance with the requirements specified in the order, and shall contain any adjustment to the contract time that, in the RPR's opinion, is necessary for completion of the extra work.

When determined by the RPR to be in the Owner's best interest, the RPR may order the Contractor to proceed with extra work as provided in Section 90, paragraph 90-05, *Payment for Extra Work*. Extra work

that is necessary for acceptable completion of the project, but is not within the general scope of the work covered by the original contract shall be covered by a supplemental agreement as defined in Section 10, paragraph 10-59, *Supplemental Agreement*.

If extra work is essential to maintaining the project critical path, RPR may order the Contractor to commence the extra work under a Time and Material contract method. Once sufficient detail is available to establish the level of effort necessary for the extra work, the Owner shall initiate a change order or supplemental agreement to cover the extra work.

Any claim for payment of extra work that is not covered by written agreement (change order or supplemental agreement) shall be rejected by the Owner.

40-05 Maintenance of traffic. It is the explicit intention of the contract that the safety of aircraft, as well as the Contractor's equipment and personnel, is the most important consideration. The Contractor shall maintain traffic in the manner detailed in the Construction Safety and Phasing Plan (CSPP).

a. It is understood and agreed that the Contractor shall provide for the free and unobstructed movement of aircraft in the air operations areas (AOAs) of the airport with respect to their own operations and the operations of all subcontractors as specified in Section 80, paragraph 80-04, *Limitation of Operations*. It is further understood and agreed that the Contractor shall provide for the uninterrupted operation of visual and electronic signals (including power supplies thereto) used in the guidance of aircraft while operating to, from, and upon the airport as specified in Section 70, paragraph 70-15, *Contractor's Responsibility for Utility Service and Facilities of Others*.

b. With respect to their own operations and the operations of all subcontractors, the Contractor shall provide marking, lighting, and other acceptable means of identifying personnel, equipment, vehicles, storage areas, and any work area or condition that may be hazardous to the operation of aircraft, fire-rescue equipment, or maintenance vehicles at the airport in accordance with the construction safety and phasing plan (CSPP) and the safety plan compliance document (SPCD).

c. When the contract requires the maintenance of an existing road, street, or highway during the Contractor's performance of work that is otherwise provided for in the contract, plans, and specifications, the Contractor shall keep the road, street, or highway open to all traffic and shall provide maintenance as may be required to accommodate traffic. The Contractor, at their expense, shall be responsible for the repair to equal or better than preconstruction conditions of any damage caused by the Contractor's equipment and personnel. The Contractor shall furnish, erect, and maintain barricades, warning signs, flag person, and other traffic control devices in reasonable conformity with the Manual on Uniform Traffic Control Devices (MUTCD) (http://mutcd.fhwa.dot.gov/), unless otherwise specified. The Contractor shall also construct and maintain in a safe condition any temporary connections necessary for ingress to and egress from abutting property or intersecting roads, streets or highways. Unless otherwise specified herein, the Contractor will not be required to furnish snow removal for such existing road, street, or highway.

40-06 Removal of existing structures. All existing structures encountered within the established lines, grades, or grading sections shall be removed by the Contractor, unless such existing structures are otherwise specified to be relocated, adjusted up or down, salvaged, abandoned in place, reused in the work or to remain in place. The cost of removing such existing structures shall not be measured or paid for directly, but shall be included in the various contract items.

Should the Contractor encounter an existing structure (above or below ground) in the work for which the disposition is not indicated on the plans, the Resident Project Representative (RPR) shall be notified prior to disturbing such structure. The disposition of existing structures so encountered shall be immediately determined by the RPR in accordance with the provisions of the contract.

Except as provided in Section 40, paragraph 40-07, *Rights in and Use of Materials Found in the Work*, it is intended that all existing materials or structures that may be encountered (within the lines, grades, or grading sections established for completion of the work) shall be used in the work as otherwise provided for in the contract and shall remain the property of the Owner when so used in the work.

40-07 Rights in and use of materials found in the work. Should the Contractor encounter any material such as (but not restricted to) sand, stone, gravel, slag, or concrete slabs within the established lines, grades, or grading sections, the use of which is intended by the terms of the contract to be embankment, the Contractor may at their own option either:

a. Use such material in another contract item, providing such use is approved by the RPR and is in conformance with the contract specifications applicable to such use; or,

b. Remove such material from the site, upon written approval of the RPR; or

c. Use such material for the Contractor's own temporary construction on site; or,

d. Use such material as intended by the terms of the contract.

Should the Contractor wish to exercise option a., b., or c., the Contractor shall request the RPR's approval in advance of such use.

Should the RPR approve the Contractor's request to exercise option a., b., or c., the Contractor shall be paid for the excavation or removal of such material at the applicable contract price. The Contractor shall replace, at their expense, such removed or excavated material with an agreed equal volume of material that is acceptable for use in constructing embankment, backfills, or otherwise to the extent that such replacement material is needed to complete the contract work. The Contractor shall not be charged for use of such material used in the work or removed from the site.

Should the RPR approve the Contractor's exercise of option a., the Contractor shall be paid, at the applicable contract price, for furnishing and installing such material in accordance with requirements of the contract item in which the material is used.

It is understood and agreed that the Contractor shall make no claim for delays by reason of their own exercise of option a., b., or c.

The Contractor shall not excavate, remove, or otherwise disturb any material, structure, or part of a structure which is located outside the lines, grades, or grading sections established for the work, except where such excavation or removal is provided for in the contract, plans, or specifications.

40-08 Final cleanup. Upon completion of the work and before acceptance and final payment will be made, the Contractor shall remove from the site all machinery, equipment, surplus and discarded materials, rubbish, temporary structures, and stumps or portions of trees. The Contractor shall cut all brush and woods within the limits indicated and shall leave the site in a neat and presentable condition. Material cleared from the site and deposited on adjacent property will not be considered as having been disposed of satisfactorily, unless the Contractor has obtained the written permission of the property Owner.

END OF SECTION 40

Section 50 Control of Work

50-01 Authority of the Resident Project Representative (RPR). The RPR has final authority regarding the interpretation of project specification requirements. The RPR shall determine acceptability of the quality of materials furnished, method of performance of work performed, and the manner and rate of performance of the work. The RPR does not have the authority to accept work that does not conform to specification requirements.

50-02 Conformity with plans and specifications. All work and all materials furnished shall be in reasonably close conformity with the lines, grades, grading sections, cross-sections, dimensions, material requirements, and testing requirements that are specified (including specified tolerances) in the contract, plans, or specifications.

If the RPR finds the materials furnished, work performed, or the finished product not within reasonably close conformity with the plans and specifications, but that the portion of the work affected will, in their opinion, result in a finished product having a level of safety, economy, durability, and workmanship acceptable to the Owner, the RPR will advise the Owner of their determination that the affected work be accepted and remain in place. The RPR will document the determination and recommend to the Owner a basis of acceptance that will provide for an adjustment in the contract price for the affected portion of the work. Changes in the contract price must be covered by contract change order or supplemental agreement as applicable.

If the RPR finds the materials furnished, work performed, or the finished product are not in reasonably close conformity with the plans and specifications and have resulted in an unacceptable finished product, the affected work or materials shall be removed and replaced or otherwise corrected by and at the expense of the Contractor in accordance with the RPR's written orders.

The term "reasonably close conformity" shall not be construed as waiving the Contractor's responsibility to complete the work in accordance with the contract, plans, and specifications. The term shall not be construed as waiving the RPR's responsibility to insist on strict compliance with the requirements of the contract, plans, and specifications during the Contractor's execution of the work, when, in the RPR's opinion, such compliance is essential to provide an acceptable finished portion of the work.

The term "reasonably close conformity" is also intended to provide the RPR with the authority, after consultation with the Sponsor and FAA, to use sound engineering judgment in their determinations to accept work that is not in strict conformity, but will provide a finished product equal to or better than that required by the requirements of the contract, plans and specifications.

The RPR will not be responsible for the Contractor's means, methods, techniques, sequences, or procedures of construction or the safety precautions incident thereto.

50-03 Coordination of contract, plans, and specifications. The contract, plans, specifications, and all referenced standards cited are essential parts of the contract requirements. If electronic files are provided and used on the project and there is a conflict between the electronic files and hard copy plans, the hard copy plans shall govern. A requirement occurring in one is as binding as though occurring in all. They are intended to be complementary and to describe and provide for a complete work. In case of discrepancy, calculated dimensions will govern over scaled dimensions; contract technical specifications shall govern over contract general provisions, plans, cited standards for materials or testing, and cited advisory circulars (ACs); contract general provisions shall govern over plans, cited standards for materials

or testing, and cited ACs; plans shall govern over cited standards for materials or testing and cited ACs. If any paragraphs contained in the Special Provisions conflict with General Provisions or Technical Specifications, the Special Provisions shall govern.

From time to time, discrepancies within cited testing standards occur due to the timing of the change, edits, and/or replacement of the standards. If the Contractor discovers any apparent discrepancy within standard test methods, the Contractor shall immediately ask the RPR for an interpretation and decision, and such decision shall be final.

The Contractor shall not take advantage of any apparent error or omission on the plans or specifications. In the event the Contractor discovers any apparent error or discrepancy, Contractor shall immediately notify the Owner or the designated representative in writing requesting their written interpretation and decision.

50-04 List of Special Provisions. NOT APPLICABLE

50-05 Cooperation of Contractor. The Contractor shall be supplied with one (1) hard copy or an electronic PDF of the plans and specifications. The Contractor shall have available on the construction site at all times one hardcopy each of the plans and specifications. Additional hard copies of plans and specifications may be obtained by the Contractor for the cost of reproduction.

The Contractor shall give constant attention to the work to facilitate the progress thereof, and shall cooperate with the RPR and their inspectors and with other Contractors in every way possible. The Contractor shall have a competent superintendent on the work at all times who is fully authorized as their agent on the work. The superintendent shall be capable of reading and thoroughly understanding the plans and specifications and shall receive and fulfill instructions from the RPR or their authorized representative.

50-06 Cooperation between Contractors. The Owner reserves the right to contract for and perform other or additional work on or near the work covered by this contract.

When separate contracts are let within the limits of any one project, each Contractor shall conduct the work not to interfere with or hinder the progress of completion of the work being performed by other Contractors. Contractors working on the same project shall cooperate with each other as directed.

Each Contractor involved shall assume all liability, financial or otherwise, in connection with their own contract and shall protect and hold harmless the Owner from any and all damages or claims that may arise because of inconvenience, delays, or loss experienced because of the presence and operations of other Contractors working within the limits of the same project.

The Contractor shall arrange their work and shall place and dispose of the materials being used to not interfere with the operations of the other Contractors within the limits of the same project. The Contractor shall join their work with that of the others in an acceptable manner and shall perform it in proper sequence to that of the others.

50-07 Construction layout and stakes. The Engineer/RPR shall establish necessary horizontal and vertical control. The establishment of Survey Control and/or reestablishment of survey control shall be by a State Licensed Land Surveyor. Contractor is responsible for preserving integrity of horizontal and vertical controls established by Engineer/RPR. In case of negligence on the part of the Contractor or their employees, resulting in the destruction of any horizontal and vertical control, the resulting costs will be deducted as a liquidated damage against the Contractor.

Prior to the start of construction, the Contractor will check all control points for horizontal and vertical accuracy and certify in writing to the RPR that the Contractor concurs with survey control established for the project. All lines, grades and measurements from control points necessary for the proper execution

and control of the work on this project will be provided to the RPR. The Contractor is responsible to establish all layout required for the construction of the project.

Copies of survey notes will be provided to the RPR for each area of construction and for each placement of material as specified to allow the RPR to make periodic checks for conformance with plan grades, alignments and grade tolerances required by the applicable material specifications. Surveys will be provided to the RPR prior to commencing work items that cover or disturb the survey staking. Survey(s) and notes shall be provided.

Laser, GPS, String line, or other automatic control shall be checked with temporary control as necessary. In the case of error, on the part of the Contractor, their surveyor, employees or subcontractors, resulting in established grades, alignment or grade tolerances that do not concur with those specified or shown on the plans, the Contractor is solely responsible for correction, removal, replacement and all associated costs at no additional cost to the Owner.

See Section 01321 for additional surveying requirements.

No direct payment will be made, unless otherwise specified in contract documents, for this labor, materials, or other expenses. The cost shall be included in the price of the bid for the various items of the Contract.

50-08 Authority and duties of Quality Assurance (QA) inspectors. QA inspectors shall be authorized to inspect all work done and all material furnished. Such QA inspection may extend to all or any part of the work and to the preparation, fabrication, or manufacture of the materials to be used. QA inspectors are not authorized to revoke, alter, or waive any provision of the contract. QA inspectors are not authorized to issue instructions contrary to the plans and specifications or to act as foreman for the Contractor.

QA Inspectors are authorized to notify the Contractor or their representatives of any failure of the work or materials to conform to the requirements of the contract, plans, or specifications and to reject such nonconforming materials in question until such issues can be referred to the RPR for a decision.

50-09 Inspection of the work. All materials and each part or detail of the work shall be subject to inspection. The RPR shall be allowed access to all parts of the work and shall be furnished with such information and assistance by the Contractor as is required to make a complete and detailed inspection.

If the RPR requests it, the Contractor, at any time before acceptance of the work, shall remove or uncover such portions of the finished work as may be directed. After examination, the Contractor shall restore said portions of the work to the standard required by the specifications. Should the work thus exposed or examined prove acceptable, the uncovering, or removing, and the replacing of the covering or making good of the parts removed will be paid for as extra work; but should the work so exposed or examined prove unacceptable, the uncovering, or removing, and the replacing of the covering or making good of the parts removed will be at the Contractor’s expense.

Provide advance written notice to the RPR of work the Contractor plans to perform each week and each day. Any work done or materials used without written notice and allowing opportunity for inspection by the RPR may be ordered removed and replaced at the Contractor’s expense.

Should the contract work include relocation, adjustment, or any other modification to existing facilities, not the property of the (contract) 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.

50-10 Removal of unacceptable and unauthorized work. All work that does not conform to the requirements of the contract, plans, and specifications will be considered unacceptable, unless otherwise

determined acceptable by the RPR as provided in paragraph 50-02, *Conformity with Plans and Specifications*.

Unacceptable work, whether the result of poor workmanship, use of defective materials, damage through carelessness, or any other cause found to exist prior to the final acceptance of the work, shall be removed immediately and replaced in an acceptable manner in accordance with the provisions of Section 70, paragraph 70-14, *Contractor's Responsibility for Work*.

No removal work made under provision of this paragraph shall be done without lines and grades having been established by the RPR. Work done contrary to the instructions of the RPR, work done beyond the lines shown on the plans or as established by the RPR, except as herein specified, or any extra work done without authority, will be considered as unauthorized and will not be paid for under the provisions of the contract. Work so done may be ordered removed or replaced at the Contractor's expense.

Upon failure on the part of the Contractor to comply with any order of the RPR made under the provisions of this subsection, the RPR will have authority to cause unacceptable work to be remedied or removed and replaced; and unauthorized work to be removed and recover the resulting costs as a liquidated damage against the Contractor.

50-11 Load restrictions. The Contractor shall comply with all legal load restrictions in the hauling of materials on public roads beyond the limits of the work. A special permit will not relieve the Contractor of liability for damage that may result from the moving of material or equipment.

The operation of equipment of such weight or so loaded as to cause damage to structures or to any other type of construction will not be permitted. Hauling of materials over the base course or surface course under construction shall be limited as directed. No loads will be permitted on a concrete pavement, base, or structure before the expiration of the curing period. The Contractor, at their own expense, shall be responsible for the repair to equal or better than preconstruction conditions of any damage caused by the Contractor's equipment and personnel.

50-12 Maintenance during construction. The Contractor shall maintain the work during construction and until the work is accepted. Maintenance shall constitute continuous and effective work prosecuted day by day, with adequate equipment and forces so that the work is maintained in satisfactory condition at all times.

In the case of a contract for the placing of a course upon a course or subgrade previously constructed, the Contractor shall maintain the previous course or subgrade during all construction operations.

All costs of maintenance work during construction and before the project is accepted shall be included in the unit prices bid on the various contract items, and the Contractor will not be paid an additional amount for such work.

50-13 Failure to maintain the work. Should the Contractor at any time fail to maintain the work as provided in paragraph 50-12, *Maintenance during Construction*, the RPR shall immediately notify the Contractor of such noncompliance. Such notification shall specify a reasonable time within which the Contractor shall be required to remedy such unsatisfactory maintenance condition. The time specified will give due consideration to the exigency that exists.

Should the Contractor fail to respond to the RPR's notification, the Owner may suspend any work necessary for the Owner to correct such unsatisfactory maintenance condition, depending on the exigency that exists. Any maintenance cost incurred by the Owner, shall be recovered as a liquidated damage against the Contractor.

50-14 Partial acceptance. If at any time during the execution of the project the Contractor substantially completes a usable unit or portion of the work, the occupancy of which will benefit the Owner, the

Contractor may request the RPR to make final inspection of that unit. If the RPR finds upon inspection that the unit has been satisfactorily completed in compliance with the contract, the RPR may accept it as being complete, and the Contractor may be relieved of further responsibility for that unit. Such partial acceptance and beneficial occupancy by the Owner shall not void or alter any provision of the contract.

50-15 Final acceptance. Upon due notice from the Contractor of presumptive completion of the entire project, the RPR and Owner will make an inspection. If all construction provided for and contemplated by the contract is found to be complete in accordance with the contract, plans, and specifications, such inspection shall constitute the final inspection. The RPR shall notify the Contractor in writing of final acceptance as of the date of the final inspection.

If, however, the inspection discloses any work, in whole or in part, as being unsatisfactory, the RPR will notify the Contractor and the Contractor shall correct the unsatisfactory work. Upon correction of the work, another inspection will be made which shall constitute the final inspection, provided the work has been satisfactorily completed. In such event, the RPR will make the final acceptance and notify the Contractor in writing of this acceptance as of the date of final inspection.

50-16 Claims for adjustment and disputes. If for any reason the Contractor deems that additional compensation is due for work or materials not clearly provided for in the contract, plans, or specifications or previously authorized as extra work, the Contractor shall notify the RPR in writing of their intention to claim such additional compensation before the Contractor begins the work on which the Contractor bases the claim. If such notification is not given or the RPR is not afforded proper opportunity by the Contractor for keeping strict account of actual cost as required, then the Contractor hereby agrees to waive any claim for such additional compensation. Such notice by the Contractor and the fact that the RPR has kept account of the cost of the work shall not in any way be construed as proving or substantiating the validity of the claim. When the work on which the claim for additional compensation is based has been completed, the Contractor shall, within 10 calendar days, submit a written claim to the RPR who will present it to the Owner for consideration in accordance with local laws or ordinances.

Nothing in this subsection shall be construed as a waiver of the Contractor’s right to dispute final payment based on differences in measurements or computations.

END OF SECTION 50

Section 60 Control of Materials

60-01 Source of supply and quality requirements. The materials used in the work shall conform to the requirements of the contract, plans, and specifications. Unless otherwise specified, such materials that are manufactured or processed shall be new (as compared to used or reprocessed).

In order to expedite the inspection and testing of materials, the Contractor shall furnish documentation to the RPR as to the origin, composition, and manufacture of all materials to be used in the work. Documentation shall be furnished promptly after execution of the contract but, in all cases, prior to delivery of such materials.

At the RPR's option, materials may be approved at the source of supply before delivery. If it is found after trial that sources of supply for previously approved materials do not produce specified products, the Contractor shall furnish materials from other sources.

The Contractor shall furnish airport lighting equipment that meets the requirements of the specifications; and is listed in AC 150/5345-53, *Airport Lighting Equipment Certification Program* and *Addendum*, that is in effect on the date of advertisement.

60-02 Samples, tests, and cited specifications. All materials used in the work shall be inspected, tested, and approved by the RPR before incorporation in the work unless otherwise designated. Any work in which untested materials are used without approval or written permission of the RPR shall be performed at the Contractor's risk. Materials found to be unacceptable and unauthorized will not be paid for and, if directed by the RPR, shall be removed at the Contractor's expense.

Unless otherwise designated, quality assurance tests will be made by and at the expense of the Owner in accordance with the cited standard methods of ASTM, American Association of State Highway and Transportation Officials (AASHTO), federal specifications, Commercial Item Descriptions, and all other cited methods, which are current on the date of advertisement for bids.

The testing organizations performing on-site quality assurance field tests shall have copies of all referenced standards on the construction site for use by all technicians and other personnel. Unless otherwise designated, samples for quality assurance will be taken by a qualified representative of the RPR. All materials being used are subject to inspection, test, or rejection at any time prior to or during incorporation into the work. Copies of all tests will be furnished to the Contractor's representative at their request after review and approval of the RPR.

A copy of all Contractor QC test data shall be provided to the RPR daily, along with printed reports, in an approved format, on a weekly basis. After completion of the project, and prior to final payment, the Contractor shall submit a final report to the RPR showing all test data reports, plus an analysis of all results showing ranges, averages, and corrective action taken on all failing tests.

The Contractor shall employ a Quality Control (QC) testing organization to perform all Contractor required QC tests in accordance with Item C-100 Contractor Quality Control Program (CQCP).

60-03 Certification of compliance/analysis (COC/COA). The RPR may permit the use, prior to sampling and testing, of certain materials or assemblies when accompanied by manufacturer's COC stating that such materials or assemblies fully comply with the requirements of the contract. The certificate shall be signed by the manufacturer. Each lot of such materials or assemblies delivered to the

work must be accompanied by a certificate of compliance in which the lot is clearly identified. The COA is the manufacturer's COC and includes all applicable test results.

Materials or assemblies used on the basis of certificates of compliance may be sampled and tested at any time and if found not to be in conformity with contract requirements will be subject to rejection whether in place or not.

The form and distribution of certificates of compliance shall be as approved by the RPR.

When a material or assembly is specified by "brand name or equal" and the Contractor elects to furnish the specified "or equal," the Contractor shall be required to furnish the manufacturer's certificate of compliance for each lot of such material or assembly delivered to the work. Such certificate of compliance shall clearly identify each lot delivered and shall certify as to:

a. Conformance to the specified performance, testing, quality or dimensional requirements; and,

b. Suitability of the material or assembly for the use intended in the contract work.

The RPR shall be the sole judge as to whether the proposed "or equal" is suitable for use in the work.

The RPR reserves the right to refuse permission for use of materials or assemblies on the basis of certificates of compliance.

60-04 Plant inspection. The RPR or their authorized representative may inspect, at its source, any specified material or assembly to be used in the work. Manufacturing plants may be inspected from time to time for the purpose of determining compliance with specified manufacturing methods or materials to be used in the work and to obtain samples required for acceptance of the material or assembly.

Should the RPR conduct plant inspections, the following conditions shall exist:

a. The RPR shall have the cooperation and assistance of the Contractor and the producer with whom the Contractor has contracted for materials.

b. The RPR shall have full entry at all reasonable times to such parts of the plant that concern the manufacture or production of the materials being furnished.

c. If required by the RPR, the Contractor shall arrange for adequate office or working space that may be reasonably needed for conducting plant inspections. Place office or working space in a convenient location with respect to the plant.

It is understood and agreed that the Owner shall have the right to retest any material that has been tested and approved at the source of supply after it has been delivered to the site. The RPR shall have the right to reject only material which, when retested, does not meet the requirements of the contract, plans, or specifications.

60-05 Engineer/ Resident Project Representative (RPR) field office. NOT REQUIRED

60-06 Storage of materials. Materials shall be stored to assure the preservation of their quality and fitness for the work. Stored materials, even though approved before storage, may again be inspected prior to their use in the work. Stored materials shall be located to facilitate their prompt inspection. The Contractor shall coordinate the storage of all materials with the RPR. Materials to be stored on airport property shall not create an obstruction to air navigation nor shall they interfere with the free and unobstructed movement of aircraft. Unless otherwise shown on the plans and/or CSPP, the storage of materials and the location of the Contractor's plant and parked equipment or vehicles shall be as directed by the RPR. Private property shall not be used for storage purposes without written permission of the Owner or lessee of such property. The Contractor shall make all arrangements and bear all expenses for

the storage of materials on private property. Upon request, the Contractor shall furnish the RPR a copy of the property Owner's permission.

All storage sites on private or airport property shall be restored to their original condition by the Contractor at their expense, except as otherwise agreed to (in writing) by the Owner or lessee of the property.

60-07 Unacceptable materials. Any material or assembly that does not conform to the requirements of the contract, plans, or specifications shall be considered unacceptable and shall be rejected. The Contractor shall remove any rejected material or assembly from the site of the work, unless otherwise instructed by the RPR.

Rejected material or assembly, the defects of which have been corrected by the Contractor, shall not be returned to the site of the work until such time as the RPR has approved its use in the work.

60-08 Owner furnished materials. The Contractor shall furnish all materials required to complete the work, except those specified, if any, to be furnished by the Owner. Owner-furnished materials shall be made available to the Contractor at the location specified.

All costs of handling, transportation from the specified location to the site of work, storage, and installing Owner-furnished materials shall be included in the unit price bid for the contract item in which such Owner-furnished material is used.

After any Owner-furnished material has been delivered to the location specified, the Contractor shall be responsible for any demurrage, damage, loss, or other deficiencies that may occur during the Contractor's handling, storage, or use of such Owner-furnished material. The Owner will deduct from any monies due or to become due the Contractor any cost incurred by the Owner in making good such loss due to the Contractor's handling, storage, or use of Owner-furnished materials.

END OF SECTION 60

Section 70 Legal Regulations and Responsibility to Public

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

70-02 Permits, licenses, and taxes. The Contractor shall procure all permits and licenses, pay all charges, fees, and taxes, and give all notices necessary and incidental to the due and lawful execution of the work.

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

70-04 Restoration of surfaces disturbed by others. The Owner reserves the right to authorize the construction, reconstruction, or maintenance of any public or private utility service, FAA or National Oceanic and Atmospheric Administration (NOAA) facility, or a utility service of another government agency at any time during the progress of the work. To the extent that such construction, reconstruction, or maintenance has been coordinated with the Owner, such authorized work (by others) must be shown on the plans and is indicated as follows: NONE

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

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

70-05 Federal Participation. The United States Government has agreed to reimburse the Owner for some portion of the contract costs. The contract work is subject to the inspection and approval of duly authorized representatives of the FAA Administrator. No requirement of this contract shall be construed as making the United States a party to the contract nor will any such requirement interfere, in any way, with the rights of either party to the contract.

70-06 Sanitary, health, and safety provisions. The Contractor's worksite and facilities shall comply with applicable federal, state, and local requirements for health, safety and sanitary provisions.

70-07 Public convenience and safety. The Contractor shall control their operations and those of their subcontractors and all suppliers, to assure the least inconvenience to the traveling public. Under all circumstances, safety shall be the most important consideration.

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

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

70-08 Construction Safety and Phasing Plan (CSPP). The Contractor shall complete the work in accordance with the approved Construction Safety and Phasing Plan (CSPP) developed in accordance with AC 150/5370-2, Operational Safety on Airports During Construction. The CSPP is on sheets G-PH-01 to G-PH-05 of the project plans.

70-09 Use of explosives. The use of explosives is not permitted on this project.

70-10 Protection and restoration of property and landscape. The Contractor shall be responsible for the preservation of all public and private property, and shall protect carefully from disturbance or damage all land monuments and property markers until the Engineer/RPR has witnessed or otherwise referenced their location and shall not move them until directed.

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

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

70-11 Responsibility for damage claims. The Contractor shall indemnify and hold harmless the Engineer/RPR and the Owner and their officers, agents, and employees from all suits, actions, or claims, of any character, brought because of any injuries or damage received or sustained by any person, persons, or property on account of the operations of the Contractor; or on account of or in consequence of any neglect in safeguarding the work; or through use of unacceptable materials in constructing the work; or because of any act or omission, neglect, or misconduct of said Contractor; or because of any claims or amounts recovered from any infringements of patent, trademark, or copyright; or from any claims or amounts arising or recovered under the "Workmen's Compensation Act," or any other law, ordinance, order, or decree. Money due the Contractor under and by virtue of their own contract considered necessary by the Owner for such purpose may be retained for the use of the Owner or, in case no money is due, their own surety may be held until such suits, actions, or claims for injuries or damages shall have been settled and suitable evidence to that effect furnished to the Owner, except that money due the

Contractor will not be withheld when the Contractor produces satisfactory evidence that he or she is adequately protected by public liability and property damage insurance.

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

70-13 Opening sections of the work to traffic. If it is necessary for the Contractor to complete portions of the contract work for the beneficial occupancy of the Owner prior to completion of the entire contract, such "phasing" of the work must be specified below and indicated on the approved Construction Safety and Phasing Plan (CSPP) and the project plans. When so specified, the Contractor shall complete such portions of the work on or before the date specified or as otherwise specified.

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

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

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

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

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

70-14 Contractor's responsibility for work. Until the RPR's final written acceptance of the entire completed work, excepting only those portions of the work accepted in accordance with Section 50, paragraph 50-14, *Partial Acceptance*, the Contractor shall have the charge and care thereof and shall take every precaution against injury or damage to any part due to the action of the elements or from any other cause, whether arising from the execution or from the non-execution of the work. The Contractor shall rebuild, repair, restore, and make good all injuries or damages to any portion of the work occasioned by any of the above causes before final acceptance and shall bear the expense thereof except damage to the work due to unforeseeable causes beyond the control of and without the fault or negligence of the Contractor, including but not restricted to acts of God such as earthquake, tidal wave, tornado, hurricane or other cataclysmic phenomenon of nature, or acts of the public enemy or of government authorities.

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

70-15 Contractor's responsibility for utility service and facilities of others. As provided in paragraph 70-04, *Restoration of Surfaces Disturbed by Others*, the Contractor shall cooperate with the owner of any public or private utility service, FAA or NOAA, or a utility service of another government agency that may be authorized by the Owner to construct, reconstruct or maintain such utility services or facilities during the progress of the work. In addition, the Contractor shall control their operations to prevent the unscheduled interruption of such utility services and facilities.

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

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

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

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

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

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

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

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

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

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

a. The Contractor shall permit FAA maintenance personnel the right of access to the project work site for purposes of inspecting and maintaining all existing FAA owned facilities.

b. The Contractor shall provide notice to the FAA Air Traffic Organization (ATO)/Technical Operations/System Support Center (SSC) Point-of-Contact through the airport Owner a minimum of seven (7) calendar days prior to commencement of construction activities in order to permit sufficient time to locate and mark existing buried cables and to schedule any required facility outages.

c. If execution of the project work requires a facility outage, the Contractor shall contact the FAA Point-of-Contact a minimum of 72 hours prior to the time of the required outage.

d. Any damage to FAA cables, access roads, or FAA facilities during construction caused by the Contractor's equipment or personnel whether by negligence or accident will require the Contractor to repair or replace the damaged cables, access road, or FAA facilities to FAA requirements. The Contractor shall not bear the cost to repair damage to underground facilities or utilities improperly located by the FAA.

e. If the project work requires the cutting or splicing of FAA owned cables, the FAA Point-of-Contact shall be contacted a minimum of 72 hours prior to the time the cable work commences. The FAA reserves the right to have a FAA representative on site to observe the splicing of the cables as a condition of acceptance. All cable splices are to be accomplished in accordance with FAA specifications and require approval by the FAA Point-of-Contact as a condition of acceptance by the Owner. The Contractor is hereby advised that FAA restricts the location of where splices may be installed. If a cable splice is required in a location that is not permitted by FAA, the Contractor shall furnish and install a sufficient length of new cable that eliminates the need for any splice.

70-16 Furnishing rights-of-way. The Owner will be responsible for furnishing all rights-of-way upon which the work is to be constructed in advance of the Contractor's operations.

70-17 Personal liability of public officials. In carrying out any of the contract provisions or in exercising any power or authority granted by this contract, there shall be no liability upon the Engineer, RPR, their authorized representatives, or any officials of the Owner either personally or as an official of the Owner. It is understood that in such matters they act solely as agents and representatives of the Owner.

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

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

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

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

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

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

70-21 Insurance Requirements. See Article 19 of Section 00500 Construction Contract.

END OF SECTION 70

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Section 80 Execution and Progress

80-01 Subletting of contract. The Owner will not recognize any subcontractor on the work. The Contractor shall at all times when work is in progress be represented either in person, by a qualified superintendent, or by other designated, qualified representative who is duly authorized to receive and execute orders of the Resident Project Representative (RPR).

The Contractor shall perform, with his organization, an amount of work equal to at least twenty-five (25) percent of the total contract cost.

Should the Contractor elect to assign their contract, said assignment shall be concurred in by the surety, shall be presented for the consideration and approval of the Owner, and shall be consummated only on the written approval of the Owner.

The Contractor shall provide copies of all subcontracts to the RPR 14 days prior to being utilized on the project. As a minimum, the information shall include the following:

- Subcontractor's legal company name.
- Subcontractor's legal company address, including County name.
- Principal contact person's name, telephone and fax number.
- Complete narrative description, and dollar value of the work to be performed by the subcontractor.
- Copies of required insurance certificates in accordance with the specifications.
- Minority/ non-minority status.

80-02 Notice to proceed (NTP). The Owners notice to proceed will state the date on which contract time commences. The Contractor is expected to commence project operations within ten (10) days of the NTP date. The Contractor shall notify the RPR at least 24 hours (24) in advance of the time contract operations begins. The Contractor shall not commence any actual operations prior to the date on which the notice to proceed is issued by the Owner.

80-03 Execution and progress. Unless otherwise specified, the Contractor shall submit their coordinated construction schedule showing all work activities for the RPR's review and acceptance at least 10 days prior to the start of work. The Contractor's progress schedule, once accepted by the RPR, will represent the Contractor's baseline plan to accomplish the project in accordance with the terms and conditions of the Contract. The RPR will compare actual Contractor progress against the baseline schedule to determine that status of the Contractor's performance. The Contractor shall provide sufficient materials, equipment, and labor to guarantee the completion of the project in accordance with the plans and specifications within the time set forth in the proposal.

If the Contractor falls significantly behind the submitted schedule, the Contractor shall, upon the RPR's request, submit a revised schedule for completion of the work within the contract time and modify their operations to provide such additional materials, equipment, and labor necessary to meet the revised schedule. Should the execution of the work be discontinued for any reason, the Contractor shall notify the RPR at least 24 hours in advance of resuming operations.

The Contractor shall not commence any actual construction prior to the date on which the NTP is issued by the Owner.

The project schedule shall be prepared as a network diagram in Critical Path Method (CPM), Program Evaluation and Review Technique (PERT), or other format, or as otherwise specified. It shall include information on the sequence of work activities, milestone dates, and activity duration. The schedule shall show all work items identified in the project proposal for each work area and shall include the project start date and end date.

The Contractor shall maintain the work schedule and provide an update and analysis of the progress schedule on a twice monthly basis, or as otherwise specified in the contract. Submission of the work schedule shall not relieve the Contractor of overall responsibility for scheduling, sequencing, and coordinating all work to comply with the requirements of the contract.

80-04 Limitation of operations. The Contractor shall control their operations and the operations of their subcontractors and all suppliers to provide for the free and unobstructed movement of aircraft in the air operations areas (AOA) of the airport.

When the work requires the Contractor to conduct their operations within an AOA of the airport, the work shall be coordinated with airport operations (through the RPR) at least 48 hours prior to commencement of such work. The Contractor shall not close an AOA until so authorized by the RPR and until the necessary temporary marking, signage and associated lighting is in place as provided in Section 70, paragraph 70-08, *Construction Safety and Phasing Plan (CSPP)*.

When the contract work requires the Contractor to work within an AOA of the airport on an intermittent basis (intermittent opening and closing of the AOA), the Contractor shall maintain constant communications as specified; immediately obey all instructions to vacate the AOA; and immediately obey all instructions to resume work in such AOA. Failure to maintain the specified communications or to obey instructions shall be cause for suspension of the Contractor's operations in the AOA until satisfactory conditions are provided. The areas of the AOA identified in the Construction Safety Phasing Plan (CSPP) and as listed below, cannot be closed to operating aircraft to permit the Contractor's operations on a continuous basis and will therefore be closed to aircraft operations intermittently as follows: N/A

The Contractor shall be required to conform to safety standards contained in AC 150/5370-2, Operational Safety on Airports During Construction and the approved CSPP.

80-04.1 Operational safety on airport during construction. All Contractors' operations shall be conducted in accordance with the approved project Construction Safety and Phasing Plan (CSPP) and the Safety Plan Compliance Document (SPCD) and the provisions set forth within the current version of AC 150/5370-2, Operational Safety on Airports During Construction. The CSPP included within the contract documents conveys minimum requirements for operational safety on the airport during construction activities. The Contractor shall prepare and submit a SPCD that details how it proposes to comply with the requirements presented within the CSPP.

The Contractor shall implement all necessary safety plan measures prior to commencement of any work activity. The Contractor shall conduct routine checks to assure compliance with the safety plan measures.

The Contractor is responsible to the Owner for the conduct of all subcontractors it employs on the project. The Contractor shall assure that all subcontractors are made aware of the requirements of the CSPP and SPCD and that they implement and maintain all necessary measures.

No deviation or modifications may be made to the approved CSPP and SPCD unless approved in writing by the Owner. The necessary coordination actions to review Contractor proposed modifications to an approved CSPP or approved SPCD can require a significant amount of time.

80-05 Character of workers, methods, and equipment. The Contractor shall, at all times, employ sufficient labor and equipment for prosecuting the work to full completion in the manner and time required by the contract, plans, and specifications.

All workers shall have sufficient skill and experience to perform properly the work assigned to them. Workers engaged in special work or skilled work shall have sufficient experience in such work and in the operation of the equipment required to perform the work satisfactorily.

Any person employed by the Contractor or by any subcontractor who violates any operational regulations or operational safety requirements and, in the opinion of the RPR, does not perform his work in a proper and skillful manner or is intemperate or disorderly shall, at the written request of the RPR, be removed immediately by the Contractor or subcontractor employing such person, and shall not be employed again in any portion of the work without approval of the RPR.

Should the Contractor fail to remove such person or persons, or fail to furnish suitable and sufficient personnel for the proper execution of the work, the RPR may suspend the work by written notice until compliance with such orders.

All equipment that is proposed to be used on the work shall be of sufficient size and in such mechanical condition as to meet requirements of the work and to produce a satisfactory quality of work. Equipment used on any portion of the work shall not cause injury to previously completed work, adjacent property, or existing airport facilities due to its use.

When the methods and equipment to be used by the Contractor in accomplishing the work are not prescribed in the contract, the Contractor is free to use any methods or equipment that will accomplish the work in conformity with the requirements of the contract, plans, and specifications.

When the contract specifies the use of certain methods and equipment, such methods and equipment shall be used unless otherwise authorized by the RPR. If the Contractor desires to use a method or type of equipment other than specified in the contract, the Contractor may request authority from the RPR to do so. The request shall be in writing and shall include a full description of the methods and equipment proposed and of the reasons for desiring to make the change. If approval is given, it will be on the condition that the Contractor will be fully responsible for producing work in conformity with contract requirements. If, after trial use of the substituted methods or equipment, the RPR determines that the work produced does not meet contract requirements, the Contractor shall discontinue the use of the substitute method or equipment and shall complete the remaining work with the specified methods and equipment. The Contractor shall remove any deficient work and replace it with work of specified quality, or take such other corrective action as the RPR may direct. No change will be made in basis of payment for the contract items involved nor in contract time as a result of authorizing a change in methods or equipment under this paragraph.

80-06 Temporary suspension of the work. The Owner shall have the authority to suspend the work wholly, or in part, for such period or periods the Owner may deem necessary, due to unsuitable weather, or other conditions considered unfavorable for the execution of the work, or for such time necessary due to the failure on the part of the Contractor to carry out orders given or perform any or all provisions of the contract.

In the event that the Contractor is ordered by the Owner, in writing, to suspend work for some unforeseen cause not otherwise provided for in the contract and over which the Contractor has no control, the Contractor may be reimbursed for actual money expended on the work during the period of shutdown. No allowance will be made for anticipated profits. The period of shutdown shall be computed from the effective date of the written order to suspend work to the effective date of the written order to resume the work. Claims for such compensation shall be filed with the RPR within the time period stated in the RPR's order to resume work. The Contractor shall submit with their own claim information substantiating

the amount shown on the claim. The RPR will forward the Contractor's claim to the Owner for consideration in accordance with local laws or ordinances. No provision of this article shall be construed as entitling the Contractor to compensation for delays due to inclement weather or for any other delay provided for in the contract, plans, or specifications.

If it becomes necessary to suspend work for an indefinite period, the Contractor shall store all materials in such manner that they will not become an obstruction nor become damaged in any way. The Contractor shall take every precaution to prevent damage or deterioration of the work performed and provide for normal drainage of the work. The Contractor shall erect temporary structures where necessary to provide for traffic on, to, or from the airport.

80-07 Determination and extension of contract time. The number of calendar days shall be stated in the proposal and contract and shall be known as the Contract Time.

If the contract time requires extension for reasons beyond the Contractor's control, it shall be adjusted as follows:

Contract time based on calendar days. Contract Time based on calendar days shall consist of the number of calendar days stated in the contract counting from the effective date of the Notice to Proceed and including all Saturdays, Sundays, holidays, and non-work days. All calendar days elapsing between the effective dates of the Owner's orders to suspend and resume all work, due to causes not the fault of the Contractor, shall be excluded.

At the time of final payment, the contract time shall be increased in the same proportion as the cost of the actually completed quantities bears to the cost of the originally estimated quantities in the proposal. Such increase in the contract time shall not consider either cost of work or the extension of contract time that has been covered by a change order or supplemental agreement. Charges against the contract time will cease as of the date of final acceptance.

80-08 Failure to complete on time. For each calendar day or working day, as specified in the contract, that any work remains uncompleted after the contract time (including all extensions and adjustments as provided in paragraph 80-07, *Determination and Extension of Contract Time*) the sum specified in the contract and proposal as liquidated damages (LD) will be deducted from any money due or to become due the Contractor or their own surety. Such deducted sums shall not be deducted as a penalty but shall be considered as liquidation of a reasonable portion of damages including but not limited to additional engineering services that will be incurred by the Owner should the Contractor fail to complete the work in the time provided in their contract.

Permitting the Contractor to continue and finish the work or any part of it after the time fixed for its completion, or after the date to which the time for completion may have been extended, will in no way operate as a wavier on the part of the Owner of any of its rights under the contract.

80-09 Default and termination of contract. The Contractor shall be considered in default of their contract and such default will be considered as cause for the Owner to terminate the contract for any of the following reasons, if the Contractor:

a. Fails to begin the work under the contract within the time specified in the Notice to Proceed, or

b. Fails to perform the work or fails to provide sufficient workers, equipment and/or materials to assure completion of work in accordance with the terms of the contract, or

c. 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

d. Discontinues the execution of the work, or

e. Fails to resume work which has been discontinued within a reasonable time after notice to do so, or

f. Becomes insolvent or is declared bankrupt, or commits any act of bankruptcy or insolvency, or

g. Allows any final judgment to stand against the Contractor unsatisfied for a period of 10 days, or

h. Makes an assignment for the benefit of creditors, or

i. For any other cause whatsoever, fails to carry on the work in an acceptable manner.

Should the Owner consider the Contractor in default of the contract for any reason above, the Owner shall immediately give written notice to the Contractor and the Contractor's surety as to the reasons for considering the Contractor in default and the Owner's intentions to terminate the contract.

If the Contractor or surety, within a period of 10 days after such notice, does not proceed in accordance therewith, then the Owner will, upon written notification from the RPR of the facts of such delay, neglect, or default and the Contractor's failure to comply with such notice, have full power and authority without violating the contract, to take the execution of the work out of the hands of the Contractor. The Owner may appropriate or use any or all materials and equipment that have been mobilized for use in the work and are acceptable and may enter into an agreement for the completion of said contract according to the terms and provisions thereof, or use such other methods as in the opinion of the RPR will be required for the completion of said contract in an acceptable manner.

All costs and charges incurred by the Owner, together with the cost of completing the work under contract, will be deducted from any monies due or which may become due the Contractor. If such expense exceeds the sum which would have been payable under the contract, then the Contractor and the surety shall be liable and shall pay to the Owner the amount of such excess.

80-10 Termination for national emergencies. The Owner shall terminate the contract or portion thereof by written notice when the Contractor is prevented from proceeding with the construction contract as a direct result of an Executive Order of the President with respect to the execution of war or in the interest of national defense.

When the contract, or any portion thereof, is terminated before completion of all items of work in the contract, payment will be made for the actual number of units or items of work completed at the contract price or as mutually agreed for items of work partially completed or not started. No claims or loss of anticipated profits shall be considered.

Reimbursement for organization of the work, and 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 and that are not incorporated in the work shall, at the option of the Contractor, 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 RPR.

Termination of the contract or a portion thereof shall neither relieve the Contractor of their responsibilities for the completed work nor shall it relieve their surety of its obligation for and concerning any just claim arising out of the work performed.

80-11 Work area, storage area and sequence of operations. The Contractor shall obtain approval from the RPR prior to beginning any work in all areas of the airport. No operating runway, taxiway, or air operations area (AOA) shall be crossed, entered, or obstructed while it is operational. The Contractor shall plan and coordinate work in accordance with the approved CSPP and SPCD.

END OF SECTION 80

Section 90 Measurement and Payment

90-01 Measurement of quantities. All work completed under the contract will be measured by the RPR, or their authorized representatives, using United States Customary Units of Measurement.

The method of measurement and computations to be used in determination of quantities of material furnished and of work performed under the contract will be those methods generally recognized as conforming to good engineering practice.

Unless otherwise specified, longitudinal measurements for area computations will be made horizontally, and no deductions will be made for individual fixtures (or leave-outs) having an area of 9 square feet (0.8 square meters) or less. Unless otherwise specified, transverse measurements for area computations will be the neat dimensions shown on the plans or ordered in writing by the RPR.

Unless otherwise specified, all contract items which are measured by the linear foot such as electrical ducts, conduits, pipe culverts, underdrains, and similar items shall be measured parallel to the base or foundation upon which such items are placed.

The term “lump sum” when used as an item of payment will mean complete payment for the work described in the contract. When a complete structure or structural unit (in effect, “lump sum” work) is specified as the unit of measurement, the unit will be construed to include all necessary fittings and accessories.

When requested by the Contractor and approved by the RPR in writing, material specified to be measured by the cubic yard (cubic meter) may be weighed, and such weights will be converted to cubic yards (cubic meters) for payment purposes. Factors for conversion from weight measurement to volume measurement will be determined by the RPR and shall be agreed to by the Contractor before such method of measurement of pay quantities is used.

Measurement and Payment Terms

Term	Description
Excavation and Embankment Volume	In computing volumes of excavation, the average end area method will be used unless otherwise specified.
Measurement and Proportion by Weight	The term “ton” will mean the short ton consisting of 2,000 pounds (907 km) avoirdupois. All materials that are measured or proportioned by weights shall be weighed on accurate, independently certified scales by competent, qualified personnel at locations designated by the RPR. If material is shipped by rail, the car weight may be accepted provided that only the actual weight of material is paid for. However, car weights will not be acceptable for material to be passed through mixing plants. Trucks used to haul material being paid for by weight shall be weighed empty daily at such times as the RPR directs, and each truck shall bear a plainly legible identification mark.

Term	Description
Measurement by Volume	Materials to be measured by volume in the hauling vehicle shall be hauled in approved vehicles and measured therein at the point of delivery. Vehicles for this purpose may be of any size or type acceptable for the materials hauled, provided that the body is of such shape that the actual contents may be readily and accurately determined. All vehicles shall be loaded to at least their water level capacity, and all loads shall be leveled when the vehicles arrive at the point of delivery.
Asphalt Material	Asphalt materials will be measured by the gallon (liter) or ton (kg). When measured by volume, such volumes will be measured at 60°F (16°C) or will be corrected to the volume at 60°F (16°C) using ASTM D1250 for asphalts. Net certified scale weights or weights based on certified volumes in the case of rail shipments will be used as a basis of measurement, subject to correction when asphalt material has been lost from the car or the distributor, wasted, or otherwise not incorporated in the work. When asphalt materials are shipped by truck or transport, net certified weights by volume, subject to correction for loss or foaming, will be used for computing quantities.
Cement	Cement will be measured by the ton (kg) or hundredweight (km).
Structure	Structures will be measured according to neat lines shown on the plans or as altered to fit field conditions.
Timber	Timber will be measured by the thousand feet board measure (MFBM) actually incorporated in the structure. Measurement will be based on nominal widths and thicknesses and the extreme length of each piece.
Plates and Sheets	The thickness of plates and galvanized sheet used in the manufacture of corrugated metal pipe, metal plate pipe culverts and arches, and metal cribbing will be specified and measured in decimal fraction of inch.
Miscellaneous Items	When standard manufactured items are specified such as fence, wire, plates, rolled shapes, pipe conduit, etc., and these items are identified by gauge, unit weight, section dimensions, etc., such identification will be considered to be nominal weights or dimensions. Unless more stringently controlled by tolerances in cited specifications, manufacturing tolerances established by the industries involved will be accepted.
Scales	Scales must be tested for accuracy and serviced before use. Scales for weighing materials which are required to be proportioned or measured and paid for by weight shall be furnished, erected, and maintained by the Contractor, or be certified permanently installed commercial scales. Platform scales shall be installed and maintained with the platform level and rigid bulkheads at each end. Scales shall be accurate within 0.5% of the correct weight throughout the range of use. The Contractor shall have the scales checked under the observation of the RPR before beginning work and at such other times as requested. The intervals shall be uniform in spacing throughout the graduated or marked length of the beam or dial and shall not exceed 0.1% of the nominal rated capacity of the

Term	Description
	scale, but not less than one pound (454 grams). The use of spring balances will not be permitted. In the event inspection reveals the scales have been "overweighing" (indicating more than correct weight) they will be immediately adjusted. All materials received subsequent to the last previous correct weighting-accuracy test will be reduced by the percentage of error in excess of 0.5%. In the event inspection reveals the scales have been under-weighing (indicating less than correct weight), they shall be immediately adjusted. No additional payment to the Contractor will be allowed for materials previously weighed and recorded. Beams, dials, platforms, and other scale equipment shall be so arranged that the operator and the RPR can safely and conveniently view them. Scale installations shall have available ten standard 50-pound (2.3 km) weights for testing the weighing equipment or suitable weights and devices for other approved equipment. All costs in connection with furnishing, installing, certifying, testing, and maintaining scales; for furnishing check weights and scale house; and for all other items specified in this subsection, for the weighing of materials for proportioning or payment, shall be included in the unit contract prices for the various items of the project.
Rental Equipment	Rental of equipment will be measured by time in hours of actual working time and necessary traveling time of the equipment within the limits of the work. Special equipment ordered in connection with extra work will be measured as agreed in the change order or supplemental agreement authorizing such work as provided in paragraph 90-05 *Payment for Extra Work*.
Pay Quantities	When the estimated quantities for a specific portion of the work are designated as the pay quantities in the contract, they shall be the final quantities for which payment for such specific portion of the work will be made, unless the dimensions of said portions of the work shown on the plans are revised by the RPR. If revised dimensions result in an increase or decrease in the quantities of such work, the final quantities for payment will be revised in the amount represented by the authorized changes in the dimensions.

90-02 Scope of payment. The Contractor shall receive and accept compensation provided for in the contract as full payment for furnishing all materials, for performing all work under the contract in a complete and acceptable manner, and for all risk, loss, damage, or expense of whatever character arising out of the nature of the work or the execution thereof, subject to the provisions of Section 70, paragraph 70-18, *No Waiver of Legal Rights*.

When the "basis of payment" subsection of a technical specification requires that the contract price (price bid) include compensation for certain work or material essential to the item, this same work or material will not also be measured for payment under any other contract item which may appear elsewhere in the contract, plans, or specifications.

90-03 Compensation for altered quantities. When the accepted quantities of work vary from the quantities in the proposal, the Contractor shall accept as payment in full, so far as contract items are concerned, payment at the original contract price for the accepted quantities of work actually completed and accepted. No allowance, except as provided for in Section 40, paragraph 40-02, *Alteration of Work and Quantities,* will be made for any increased expense, loss of expected reimbursement, or loss of anticipated profits suffered or claimed by the Contractor which results directly from such alterations or indirectly from their own unbalanced allocation of overhead and profit among the contract items, or from any other cause.

90-04 Payment for omitted items. As specified in Section 40, paragraph 40-03, *Omitted Items,* the RPR shall have the right to omit from the work (order nonperformance) any contract item, except major contract items, in the best interest of the Owner.

Should the RPR omit or order nonperformance of a contract item or portion of such item from the work, the Contractor shall accept payment in full at the contract prices for any work actually completed and acceptable prior to the RPR's order to omit or non-perform such contract item.

Acceptable materials ordered by the Contractor or delivered on the work prior to the date of the RPR's order will be paid for at the actual cost to the Contractor and shall thereupon become the property of the Owner.

In addition to the reimbursement hereinbefore provided, the Contractor shall be reimbursed for all actual costs incurred for the purpose of performing the omitted contract item prior to the date of the RPR's order. Such additional costs incurred by the Contractor must be directly related to the deleted contract item and shall be supported by certified statements by the Contractor as to the nature the amount of such costs.

90-05 Payment for extra work. Extra work, performed in accordance with Section 40, paragraph 40-04, *Extra Work*, will be paid for at the contract prices or agreed prices specified in the change order or supplemental agreement authorizing the extra work.

90-06 Partial payments. Partial payments will be made to the Contractor at least once each month as the work progresses. Said payments will be based upon estimates, prepared by the RPR, of the value of the work performed and materials complete and in place, in accordance with the contract, plans, and specifications. Such partial payments may also include the delivered actual cost of those materials stockpiled and stored in accordance with paragraph 90-07, *Payment for Materials on Hand*. No partial payment will be made when the amount due to the Contractor since the last estimate amounts to less than five hundred dollars.

a. Retainage will not be withheld on this project. No retainage will be withheld by the Owner from progress payments due the prime Contractor. Retainage by the prime or subcontractors is prohibited, and no retainage will be held by the prime from progress due subcontractors.

b. The Contractor is required to pay all subcontractors for satisfactory performance of their contracts no later than 30 days after the Contractor has received a partial payment. A subcontractor's work is satisfactorily completed when all the tasks called for in the subcontract have been accomplished and documented as required by the Owner. When the Owner has made an incremental acceptance of a portion of a prime contract, the work of a subcontractor covered by that acceptance is deemed to be satisfactorily completed.

c. When at least 95% of the project work has been completed to the satisfaction of the RPR, the RPR shall, at the Owner's discretion and with the consent of the surety, prepare estimates of both the contract value and the cost of the remaining work to be done.

It is understood and agreed that the Contractor shall not be entitled to demand or receive partial payment based on quantities of work in excess of those provided in the proposal or covered by approved change orders or supplemental agreements, except when such excess quantities have been determined by the RPR to be a part of the final quantity for the item of work in question.

No partial payment shall bind the Owner to the acceptance of any materials or work in place as to quality or quantity. All partial payments are subject to correction at the time of final payment as provided in paragraph 90-09, *Acceptance and Final Payment*.

The Contractor shall deliver to the Owner a complete release of all claims for labor and material arising out of this contract before the final payment is made. If any subcontractor or supplier fails to furnish such a release in full, the Contractor may furnish a bond or other collateral satisfactory to the Owner to indemnify the Owner against any potential lien or other such claim. The bond or collateral shall include all costs, expenses, and attorney fees the Owner may be compelled to pay in discharging any such lien or claim.

90-07 Payment for materials on hand. Partial payments may be made to the extent of the delivered cost of materials to be incorporated in the work, provided that such materials meet the requirements of the contract, plans, and specifications and are delivered to acceptable sites on the airport property or at other sites in the vicinity that are acceptable to the Owner. Such delivered costs of stored or stockpiled materials may be included in the next partial payment after the following conditions are met:

a. The material has been stored or stockpiled in a manner acceptable to the RPR at or on an approved site.

b. The Contractor has furnished the RPR with acceptable evidence of the quantity and quality of such stored or stockpiled materials.

c. The Contractor has furnished the RPR with satisfactory evidence that the material and transportation costs have been paid.

d. The Contractor has furnished the Owner legal title (free of liens or encumbrances of any kind) to the material stored or stockpiled.

e. The Contractor has furnished the Owner evidence that the material stored or stockpiled is insured against loss by damage to or disappearance of such materials at any time prior to use in the work.

It is understood and agreed that the transfer of title and the Owner's payment for such stored or stockpiled materials shall in no way relieve the Contractor of their responsibility for furnishing and placing such materials in accordance with the requirements of the contract, plans, and specifications.

In no case will the amount of partial payments for materials on hand exceed the contract price for such materials or the contract price for the contract item in which the material is intended to be used.

No partial payment will be made for stored or stockpiled living or perishable plant materials.

The Contractor shall bear all costs associated with the partial payment of stored or stockpiled materials in accordance with the provisions of this paragraph.

90-08 Payment of withheld funds. At the Contractor's option, if an Owner withholds retainage in accordance with the methods described in paragraph 90-06 *Partial Payments*, the Contractor may request that the Owner deposit the retainage into an escrow account. The Owner's deposit of retainage into an escrow account is subject to the following conditions:

a. The Contractor shall bear all expenses of establishing and maintaining an escrow account and escrow agreement acceptable to the Owner.

b. The Contractor shall deposit to and maintain in such escrow only those securities or bank certificates of deposit as are acceptable to the Owner and having a value not less than the retainage that would otherwise be withheld from partial payment.

c. The Contractor shall enter into an escrow agreement satisfactory to the Owner.

d. The Contractor shall obtain the written consent of the surety to such agreement.

90-09 Acceptance and final payment. When the contract work has been accepted in accordance with the requirements of Section 50, paragraph 50-15, *Final Acceptance*, the RPR will prepare the final estimate of the items of work actually performed. The Contractor shall approve the RPR's final estimate or advise the RPR of the Contractor's objections to the final estimate which are based on disputes in measurements or computations of the final quantities to be paid under the contract as amended by change order or supplemental agreement. The Contractor and the RPR shall resolve all disputes (if any) in the measurement and computation of final quantities to be paid within 30 calendar days of the Contractor's receipt of the RPR's final estimate. If, after such 30-day period, a dispute still exists, the Contractor may approve the RPR's estimate under protest of the quantities in dispute, and such disputed quantities shall be considered by the Owner as a claim in accordance with Section 50, paragraph 50-16, *Claims for Adjustment and Disputes*.

After the Contractor has approved, or approved under protest, the RPR's final estimate, and after the RPR's receipt of the project closeout documentation required in paragraph 90-11, *Contractor Final Project Documentation*, final payment will be processed based on the entire sum, or the undisputed sum in case of approval under protest, determined to be due the Contractor less all previous payments and all amounts to be deducted under the provisions of the contract. All prior partial estimates and payments shall be subject to correction in the final estimate and payment.

If the Contractor has filed a claim for additional compensation under the provisions of Section 50, paragraph 50-16, *Claims for Adjustments and Disputes,* or under the provisions of this paragraph, such claims will be considered by the Owner in accordance with local laws or ordinances. Upon final adjudication of such claims, any additional payment determined to be due the Contractor will be paid pursuant to a supplemental final estimate.

90-10 Construction warranty.

a. In addition to any other warranties in this contract, the Contractor warrants that work performed under this contract conforms to the contract requirements and is free of any defect in equipment, material, workmanship, or design furnished, or performed by the Contractor or any subcontractor or supplier at any tier.

b. This warranty shall continue for a period of one year from the date of final acceptance of the work, except as noted. If the Owner takes possession of any part of the work before final acceptance, this warranty shall continue for a period of one year from the date the Owner takes possession. However, this will not relieve the Contractor from corrective items required by the final acceptance of the project work. Light Emitting Diode emitting diode (LED) light fixtures with the exception of obstruction lighting, must be warranted by the manufacturer for a minimum of four (4) years after date of installation inclusive of all electronics.

See technical specifications for additional equipment with extended warranties.

c. The Contractor shall remedy at the Contractor's expense any failure to conform, or any defect. In addition, the Contractor shall remedy at the Contractor's expense any damage to Owner real or personal property, when that damage is the result of the Contractor's failure to conform to contract requirements; or any defect of equipment, material, workmanship, or design furnished by the Contractor.

d. The Contractor shall restore any work damaged in fulfilling the terms and conditions of this clause. The Contractor's warranty with respect to work repaired or replaced will run for one year from the date of repair or replacement.

e. The Owner will notify the Contractor, in writing, within seven (7) days after the discovery of any failure, defect, or damage.

f. If the Contractor fails to remedy any failure, defect, or damage within fourteen 14 days after receipt of notice, the Owner shall have the right to replace, repair, or otherwise remedy the failure, defect, or damage at the Contractor's expense.

g. With respect to all warranties, express or implied, from subcontractors, manufacturers, or suppliers for work performed and materials furnished under this contract, the Contractor shall: (1) Obtain all warranties that would be given in normal commercial practice; (2) Require all warranties to be executed, in writing, for the benefit of the Owner, as directed by the Owner, and (3) Enforce all warranties for the benefit of the Owner.

h. This warranty shall not limit the Owner's rights with respect to latent defects, gross mistakes, or fraud.

90-11 Contractor Final Project Documentation. Approval of final payment to the Contractor is contingent upon completion and submittal of the items listed below. The final payment will not be approved until the RPR approves the Contractor's final submittal. The Contractor shall:

a. Provide two (2) copies of all manufacturers warranties specified for materials, equipment, and installations.

b. Provide weekly payroll records (not previously received) from the general Contractor and all subcontractors.

c. Complete final cleanup in accordance with Section 40, paragraph 40-08, *Final Cleanup*.

d. Complete all punch list items identified during the Final Inspection.

e. Provide complete release of all claims for labor and material arising out of the Contract.

f. Provide a certified statement signed by the subcontractors, indicating actual amounts paid to the Disadvantaged Business Enterprise (DBE) subcontractors and/or suppliers associated with the project.

g. When applicable per state requirements, return copies of sales tax completion forms.

h. Manufacturer's certifications for all items incorporated in the work.

i. All required record drawings, as-built drawings or as-constructed drawings.

j. Project Operation and Maintenance (O&M) Manual(s).

k. Security for Construction Warranty.

l. Equipment commissioning documentation submitted, if required.

See Section 01770 for additional closeout procedures.

END OF SECTION 90

Section 150 General Provisions Addendum

150-10 GENERAL PROVISIONS ADDENDUM - Section 10 Definition of Terms

Whenever the following terms are used in these specifications, in the contract, in any documents or other instruments pertaining to construction of the project where these specifications govern, the intent and meaning shall be interpreted as follows; and whenever one of the following capitalized words, terms or phrases is used herein, it shall be interpreted or construed first as defined in Specification Section GP-10, second as defined below, third according to its generally accepted meaning in the construction industry, and fourth according to its common and customary usage.

150-10-101 ACCESS ROAD

As defined in GP-10 and shall further be defined to include "or an internal roadway for construction or maintenance."

150-10-102 ADDENDA

Written or graphic instructions issued prior to the opening of Proposals, which clarify, correct or change the bidding documents or the Contract Documents.

150-10-103 AIRPORT OPERATIONS or OPERATIONS

Depending on use, airport operations may refer to a department of the Airport Authority or the movement of aircraft on, or approaching the airfield.

150-10-104 BID ITEMS

The proposal provides for quotation of a price, for one or more bid items, which may be lump sum bid prices, alternate bid prices, unit bid prices, or a combination thereof. No payment will be made for items not set up in the proposal, unless otherwise provided by contract amendment. Bidders are cautioned that they should include in the prices quoted for various bid items all necessary allowances for the performance of all work required for the satisfactory completion of the project.

150-10-105 BUILDER

A term to be used interchangeably with "Contractor."

150-10-106 CONTRACT AMENDMENT

A term to be used interchangeably with "Change order."

150-10-107 CONTRACT FOR PROFESSIONAL SERVICES

A written agreement between the Owner and a Professional for provision of services and related items required to design, engineer or program manage all or part of a Project.

150-10-108 DEFECTIVE

An adjective which when modifying the word Work refers to Work that is unsatisfactory, faulty or deficient, or does not conform to the Contract Documents, or does not meet the requirements of any Inspection, reference standard, test or approval referred to in the Contract Documents, or has been damaged prior to the Program Manager's recommendation of final payment.

150-10-109 DRAWINGS

A term to be used interchangeably with “Plans.”

150-10-110 ENGINEER or PROFESSIONAL

As defined in GP-10 and shall further be defined to include “Engineer will not supervise, direct, control, or have authority over or be responsible for Contractors means, methods, techniques, sequences or procedures of construction, or the safety precautions and programs incident thereto, or for any failure of Contractor to comply with laws and regulations applicable to performance of the Work. **Garver is the Engineer for this Project.**

150-10-111 FINAL COMPLETION

The stage of construction when the Work has been 100% completed including all punch list items, record drawings, O&M manuals, lien waivers, maintenance training, warranties, consent of surety to final payment, and all other required closeout documentation.

150-10-112 GP

Abbreviation for General Provision.

150-10-113 HAZARDOUS SUBSTANCES

The term "Hazardous Substance" shall have the same meaning and definition as set forth in the Comprehensive Environmental Response Compensation and Liability Act as amended, 42 U.S.C. § 6901 *et seq*, and regulations promulgated thereunder (collectively "CERCLA") and any corresponding state or local law or regulation, and shall also include: (a) any Pollutant or Contaminant as those terms are defined in CERCLA; (b) any Solid Waste or Hazardous Constituent as those terms are defined by, or are otherwise identified by, the Resource Conservation and Recovery Act as amended, 42 U.S.C. § 6901 *et seq*, and regulations promulgated thereunder (collectively "RCRA") and any corresponding state or local law or regulation; (c) crude oil, petroleum and fractions of distillates thereof; (d) any other material, substance or chemical defined, characterized or regulated as toxic or hazardous under any applicable law, regulation, ordinance, directive or ruling; and (e) any infectious or medical waste as defined by any applicable federal or state laws or regulations.

150-10-114 INTENTION OF TERMS

As defined in GP-10 and shall further be defined to include “The use of any such term shall not be effective to assign to Program Manager any duty or authority to supervise or direct the furnishing or performance of the work. Wherever in the specifications or on the drawings the words "install," "furnish," "provide," or words of like import are used, they mean the Contractor shall install, furnish, or provide, as the case may be complete and ready for Owner's use.”

150-10-115 LUMP SUM PRICE

The dollar amount for which a Contractor agrees to perform the Work or a specific component of the Work as set forth in a Contract for construction.

150-10-116 MAJOR SUBCONTRACTOR

A major subcontractor shall be any subcontractor who is responsible for 15 percent or more of the full amount of the contract.

150-10-117 OWNER or SPONSOR

As defined in GP-10 and shall further be defined to include “The Owner shall mean the Memphis-Shelby County Airport Authority.”

150-10-118 PARTIAL COMPLETION

The stage in the progress of the Work when the Work or designated portion thereof is sufficiently complete in accordance with the Contract Documents when the Owner can satisfactorily occupy or beneficially use a finite portion of completed Work for its intended purpose. Partial completion and acceptance of a finite portion of the work will in no way imply the overall project is substantially complete or start of the project warranty.

150-10-119 PROGRAM MANAGER

The individual, partnership, firm, or corporation duly authorized by the Owner (sponsor) to be responsible for engineering supervision during construction and acting directly or through an authorized representative. The term Program Manager means the person, person or organization named by the Owner to act as their representative. Program Manager will not supervise, direct, control, or have authority over or be responsible for Contractors means, methods, techniques, sequences or procedures of construction, or the safety precautions and programs incident thereto, or for any failure of Contractor to comply with laws and regulations applicable to performance of the Work. All authority granted to the Engineer by these construction documents shall also be available to the Program Manager, at the discretion of the Owner. **Parsons is the Program Manager for this Project.**

150-10-120 PUNCHLIST ITEM

Any item of work, in whole or in part, which the Program Manager has identified as being unsatisfactory after an inspection of the project. A punch-list item may be further classified as being either "major" or "minor". A "major" punch-list item is defined as any punch-list item the correction of which is, in the Program Manager's determination, necessary for the Owner to use the completed project for its intended purpose. A "minor" punch-list item is defined as any punch-list item not classified as "major" by the Program Manager.

150-10-121 SHOP DRAWINGS

All drawings, diagrams, illustrations, schedules and other data which are specifically prepared by or for the Contractor to illustrate some portion of the Work and all illustrations, brochures, standard schedules, performance charts, instructions, diagrams and other information prepared by a supplier, manufacturer, subcontractor or fabricator and submitted by the Contractor to illustrate material or equipment for some portion of the Work.

150-10-122 SITE

The geographical location of a Project, usually defined by legal boundary lines, and the location characteristics including, but not limited to, grades and lines of streets, alleys, pavements and adjoining structures, rights-of-way, restrictions, easements, encroachments, zoning, deed restrictions, existing buildings and improvements, and service and utility lines.

150-10-123 SUBSTANTIAL COMPLETION

The stage in the progress of the Work when the Work is substantially complete in accordance with the Contract Documents and the Owner can occupy or beneficially use satisfactorily completed Work for its intended purpose.

150-20 GENERAL PROVISIONS ADDENDUM - PROPOSAL REQUIREMENTS AND CONDITIONS

150-20-01 ADVERTISEMENT (NOTICE TO BIDDERS)

General Provisions 20-01 shall include: "See Section LEGAL NOTICE TO BIDDERS for the ADVERTISEMENT notifying prospective Bidders of this project."

150-20-05 INTERPRETATION OF ESTIMATED PROPOSAL QUANTITIES

General Provisions 20-05 shall include: "The proposal provides for quotation of a price, for one or more bid items, which may be lump sum bid prices, alternate bid prices, unit bid prices, or a combination thereof. No payment will be made for items not set up in the proposal, unless otherwise provided by contract amendment. Bidders are cautioned that they should include in the prices quoted for various bid items all necessary allowances for the performance of all work required for the satisfactory completion of the project."

150-20-07 PREPARATION OF PROPOSAL.

General Provisions 20-07 shall include "The bidder shall state the unit price and extension, written in ink or typed, for which he proposes to do each pay item furnished in the proposal. In case of conflict between the unit price and extension, the unit price, unless obviously incorrect, shall govern."

150-20-09 IRREGULAR PROPOSALS

General Provisions 20-09 item f) shall include:

f. If the proposal does not meet the DBE participation requirement specified in Section DBE REQ.

150-20-10 BID GUARANTEE.

General Provisions 20-10 shall include

"Each proposal shall be accompanied by either a cashier's check or a certified check drawn on a solvent bank, or a Bidder's bond executed by the Bidder and a surety company acceptable to the Memphis-Shelby County Airport Authority, in the amount of not less than five (5) percent of the total bid price, made payable without conditions to the Memphis-Shelby County Airport Authority, as a guarantee that if the proposal is accepted, the Bidder will enter into a contract and execute a Performance and Payment Bond with legally responsible surety within ten (10) days after contract award is made by the Memphis-Shelby County Airport Authority. Bidder's Bond (if used) shall be executed on the form prescribed within these documents.

"In the event that the Bidder's proposal is accepted and the contract is awarded by the Memphis-Shelby County Airport Authority, and the Bidder fails or refuses to execute the contract and furnish the required Performance and Payment Bond within ten (10) days after such award is made by the Memphis-Shelby County Airport Authority, unless given a written extension of time by the Memphis-Shelby County Airport Authority, then the Bidder will be considered as having abandoned his proposal, and his proposal guarantee will be retained by the Memphis-Shelby County Airport Authority as liquidated damages and not as a penalty, IT NOW BEING AGREED that the amount of the proposal guarantee is a fair estimate of the amount of damages that the Memphis-Shelby County Airport Authority will sustain in case the Bidder fails to enter into the contract and furnish the required Performance and Payment Bond within ten (10) days after receiving notice of such award."

150-20-14 DISQUALIFICATION OF BIDDERS.

General Provisions 20-14 item d) shall include:

d. Failure to show evidence of possessing a valid state of Tennessee Contractor's License, as required by law.

150-20-15 EXPLANATIONS AND INTERPRETATIONS OF CONTRACT DOCUMENTS

All explanations desired by Bidders regarding the meaning or interpretation of the drawings and specifications must be requested with sufficient time allowed for a written reply to reach them before the submission of their bids. Oral explanation or instructions will not be given. All necessary explanations or interpretations will be made in the form of written addenda to the specifications or drawings, and will be furnished to all Bidders, and the receipt thereof shall be acknowledged by each Bidder on his proposal.

150-20-16 DBE REQUIREMENTS

All Bidders shall submit with his/her proposal the DBE's Assurance Statement/Letter of Intent for each DBE subcontractor (subcontractors' signatures not required) Subcontractors' bids to the Prime Contractor with items included in the bid either circled and/or highlighted, DBE's Current Certification for each DBE Subcontractor, Respondent DBE Goals Accomplishment Statement, and Information on All Firms that Provide Bids or Quotes, which have been provided in the bid envelope. There must be one DBE's Assurance Statement/Letter of Intent for each proposed DBE subcontractor properly completed and signed by the Bidder.

Within 24 hours of the proposal submittal deadline, all Bidders shall submit the DBE's Assurance Statement/Letter of Intent for each DBE subcontractor (subcontractors' signatures required). There must be one DBE's Assurance Statement/Letter of Intent for each proposed DBE subcontractor properly completed and signed by the DBE subcontractor, and if applicable the 2nd/3rd Tier Subcontractor's, and the Bidder.

See specification section DISADVANTAGED BUSINESS ENTERPRISE (DBE) REQUIREMENTS for additional proposal requirements and conditions.

150-40 GENERAL PROVISIONS ADDENDUM - SCOPE OF WORK

150-40-04 EXTRA WORK.

General Provisions 40-04 shall include “When determined by the Program Manager to be in the Owner's best interest, the Owner may order the Contractor to proceed with extra work by time and materials as provided in Section GP-150-90.”

150-50 GENERAL PROVISIONS ADDENDUM - CONTROL OF WORK

150-50-04 COOPERATION OF CONTRACTOR.

General Provisions 50-04 shall include “The Owner shall allocate the work and designate the sequence of construction in case of controversy between contractors.”

150-70 GENERAL PROVISIONS ADDENDUM - LEGAL REGULATIONS AND RESPONSIBILITY TO PUBLIC

150-70-01 LAWS TO BE OBSERVED.

General Provisions 70-01 shall include “Applicable laws, ordinances, regulations, orders, and decrees shall be considered as MINIMUM requirements, and everything shown or specified in excess of these minimum requirements shall be installed in excess thereof, as shown or specified. No instructions given in the contract documents shall be construed as an authorization to violate any law, ordinance, regulation, order, or decree.

“If the Contractor observes that the drawings or specifications are at variance with any applicable law, ordinance, regulation, order, or decree, he shall immediately notify the Program Manager in writing, and obtain the Program Manager's decision before proceeding with the portion of the work involved.

“The Contract shall be governed by the law of the State of Tennessee. Any action brought which involves the Contract, the Work or the Project shall be brought and determined in accordance with the Laws of the State of Tennessee.”

150-70-14 CONTRACTOR'S RESPONSIBILITY FOR WORK

General Provisions 70-14 shall include “The Program Manager shall not be responsible for the methods and means employed by the Contractor in the performance of the Contractor's work. The Program Manager shall have no responsibility for the safety of workmen and others who may be injured during the course of the Contractor's work.”

150-70-21 CONTINUANCE OF WORK NOTWITHSTANDING DISPUTES, ETC.

Unless otherwise agreed in writing, the Contractor shall, notwithstanding any dispute, proceeding, or litigation, proceed forthwith in accordance with the Program Manager's written decision and/or direction and shall continue the Work and maintain its progress. The Owner shall continue to make payments to the Contractor to the extent that the sums due and owing the Contractor are not in dispute, in accordance with the Contract Documents.

150-70-22 SCOPE OF PROGRAM MANAGER’S RESPONSIBILITES TO CONTRACTOR AND OWNER

The Program Manager is to act as Owner’s representative, and shall have the duties and responsibilities and the rights and authority assigned to Program Manager in the Contract in connection with completion of the Work in accordance with the Contract. Neither the Program Manager’s authority to act under the Contract, nor any decision made by him in good faith either to exercise or not to exercise authority under the Contract, shall give rise to any duty or responsibility of the Program Manager to the Contractor, any Subcontractor, any of their agents or employees. However, nothing contained herein shall exculpate in any manner nor relieve the Program Manager of his duties and responsibilities to the Owner in accordance with the Contract and in accordance with any other agreements between the Program Manager and Owner establishing the Program Manager’s duties and responsibilities to properly administer the Contract and to correctly apply the requirements of the Contract to the Work.

150-80 GENERAL PROVISIONS ADDENDUM - PROSECUTION AND PROGRESS

150-80-01 SUBLETTING OF CONTRACT

General Provisions 80-01 shall include "The Contractor shall obtain prior approval from the Owner before subcontracting any portion of this contract. Only those subcontractors who are known for doing quality, first class airport work of the type required of the subcontract will be approved by the Owner. For each proposed subcontract, the Contractor shall supply the Program Manager with the subcontractor's name, the amount of the subcontract, their previous, related experience, their available appropriate equipment both owned and leased, and their available personnel. The Contractor shall also submit to the Program Manager those items of the contract to be performed directly by his own organization. The amounts of these items and the amounts of all items awarded to all subcontractors shall correspond to the contract price for the entire project. The Owner reserves the right to withhold approval of any subcontractor who, in the Owner's opinion, is not qualified to perform the work. If the Owner withholds approval of a subcontractor the Contractor shall be required to find an alternate subcontractor that meets the approval of the Owner or he shall perform the work himself. In either event, contract pay items shall not be adjusted. The contract will not be signed until all major subcontractors have been approved by the Owner. In case of approval, the Contractor shall file copies of all subcontracts with the Program Manager."

150-80-07 DETERMINATION AND EXTENSION OF CONTRACT TIME

General Provisions 80-07 shall include "Time extension for delays caused by the effects of inclement weather are justified only when rains or other excessive inclement weather conditions or related adverse soil conditions prevent the Contractor from productively performing critical activities of work resulting in:

1. The Contractor being unable to work at least 50% of the normal work day on pre-determined critical path items due to adverse weather conditions or;

2. The Contractor being required to make major repairs to the work damaged by excessive weather, provided that the damage was not attributable to the Contractor's negligence or failure to perform, and provided that the Contractor was unable to work an available day as defined under GP-10.

"The Contractor will be granted a time extension based on weather days in excess of the anticipated days during the original contract completion. After the new contract completion date has been established by the Program Manager, additional anticipated days as identified by SC-120 Section 3.05 paragraph E for the months covered within the contract extension period will be granted. Once the Contractor reaches the revised completion date and has not completed the project due to additional weather delays, the Contractor will be granted, only the verified lost weather days leading to the revised contract completion. No other weather days will be granted beyond the established final completion date.

"If the Contractor finds it impossible for reasons beyond his/her control to complete the work within the contract time as specified or as extended he may, within ten (10) days after commencement of the cause of delay make a written request to the Program Manager for an extension of time setting forth the reasons which he believes will justify the granting of his/her request; otherwise, such claim will be waived. The Contractor's plea that insufficient time was specified is not a valid reason for extension of time. If the Program Manager finds that the work was delayed because of conditions beyond the control and without the fault of the Contractor, he may recommend the Owner extend the time for completion in such amount as the conditions justify. The extended time for completion shall then be in full force and effect, the same as though it were the original time for completion. Should the contract time require extension it shall be by change order or supplemental agreement"

150-80-09 DEFAULT AND TERMINATION OF CONTRACT

General Provisions 80-09 shall include "The Owner may, at any time, terminate the Contract for the Owner's convenience and without cause. Upon receipt of written notice from the Owner of such termination for the Owner's convenience, the Contractor shall:

a. Cease operations as directed by the Owner in the notice;

b. Take actions necessary, or that the Owner may direct, for the protection and preservation of the Work; and

c. Except for the Work directed to be performed prior to the effective date of termination stated in the notice, terminate all existing Subcontractors and purchase orders and enter into no further Subcontracts and purchase orders.

“In case of such termination for the Owner's convenience, the Contractor shall be entitled to receive payment from the Owner for Work executed and for proven loss with respect to materials, equipment, tools and construction equipment and machinery, including reasonable overhead, profit and damages.”

150-90 GENERAL PROVISIONS ADDENDUM - MEASUREMENT AND PAYMENT

150-90-05 PAYMENT FOR EXTRA WORK OR TIME AND MATERIALS WORK

General Provisions 90-05 shall include:

"EXTRA Work and TIME and MATERIALS Work will be paid in accordance with the paragraphs below and will include documented costs for labor, labor burden, insurance and taxes, materials, equipment, plus a set allowance for combined overhead and profit to be included in the total cost to the Owner. The Contractor is responsible for preparing detailed daily reports documenting all labor, material, and equipment charges incurred and signed by both Contractor and Program Manager for all TIME and MATERIALS work.

When the change order or supplemental agreement authorizing extra work or time and materials work is prepared, compensation will be based on actual expended labor, equipment, and materials costs as follows:

a. Labor. For all labor (skilled and unskilled) and foremen in direct charge of a specific time and materials item, the Contractor shall receive the rate of wage (or scale) for every hour that such labor or foreman is actually engaged in the specified time and materials work. Such wage (or scale) shall be the same U.S. Secretary of Labor wage determination as is included in the originally awarded contract.

The Contractor shall receive the actual costs paid to, or on behalf of workers by reason of subsistence and travel allowances, health and welfare benefits, pension fund benefits or other benefits, when such amounts are required by collective bargaining agreement or other employment contract generally applicable to the classes of labor employed on the work.

The Contractor shall submit an audited labor burden percentage for review and approval which, after approval, will also be paid to the Contractor based upon actual labor costs expended. The Contractor's audited labor burden rate will include any and all insurance costs not paid by OCIP, unemployment insurance contributions, and social security taxes paid on the employees behalf. The Contractor shall furnish satisfactory evidence of the rate or rates paid for such insurance and taxes.

c. Materials. For materials accepted by the Program Manager and used exclusively for the Extra or Time and Materials Work, the Contractor shall receive the actual cost of such materials delivered on the work, including transportation charges paid by him (exclusive of machinery rentals as hereinafter set forth) and applicable sales or use tax.

d. Equipment. For any machinery or special equipment (other than small tools) including fuel, lubricants, and transportation costs, the use of which has been authorized by the Program Manager, the Contractor shall receive the current published "Blue Book" rental rates for the actual time that such equipment is committed to the work.

e. Miscellaneous. No additional allowance will be made for general superintendence, the use of small tools, or other costs for which no specific allowance is herein provided.

The Contractor and the Program Manager shall compare records of the cost of TIME AND MATERIALS WORK at the end of each day. Agreement shall be indicated by signature of the Contractor and the Program Manager or their duly authorized representatives. Failure to obtain the Program Manager's signature shall constitute a waiver on the part of the Contractor of any right to collect reimbursement for such costs.

No payment will be made for work performed on an EXTRA WORK or TIME AND MATERIALS basis until the Contractor has furnished the Program Manager with itemized statements and all required backup documentation of the cost of such extra or time and materials work.

The fixed percentage allowance for combined overhead and profit to be added to the total of the labor, materials, and equipment costs above will be based on the following schedule:

a. For the Contractor, for Work performed by the Contractor's own forces, ten percent (10%) of the cost.

b. For the Contractor, for Work performed by the Contractor's Subcontractor, five percent (5%) of the amount due the Subcontractor.

c. For each Subcontractor or Sub-subcontractor involved, for Work performed by that Subcontractor's or Sub-subcontractor's own forces, fifteen percent (15%) of the cost.

d. For each Subcontractor, the Work performed by the Subcontractor's Subcontractor, five percent (5%) of the amount due the Subcontractor's Subcontractor.

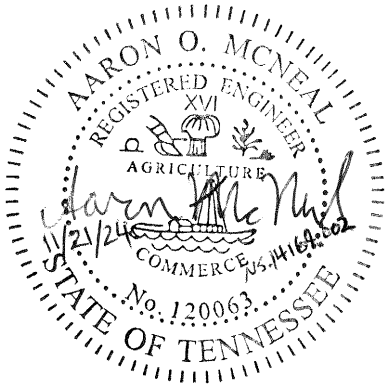
The total payment will be based on the total documented labor, material, and equipment cost plus the fixed percentages for combined overhead and profit specified above. This total payment shall constitute full compensation for all items of expense not specifically provided for the extra work or time and materials work.

150-90-07 PAYMENT FOR MATERIALS ON HAND

General Provisions 90-07 shall include "Request for partial payments must be accompanied by a completed, accurate stored material work sheet. The stored material work sheet will be supplied by the Program Manager upon request by the Contractor."

END OF SECTION GP-150

TABLE OF CONTENTS



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 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 or Contractor as specified in the specifications.

A Quality Control (QC)/Quality Assurance (QA) workshop with the Engineer, Resident Project Representative (RPR), 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 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 RPR prior to the start of any production, construction, or off-site fabrication. The written CQCP shall be submitted to the RPR for review and approval at least 10 calendar days before the CQCP Workshop. The Contractor's CQCP and QC testing laboratory must be approved in writing by the 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 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 paragraph 100-8.

(3) Performance of tests for the 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 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:

- 7 Test Methods and Procedures
- 8 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 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 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 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 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 RPR. All items of material and equipment are subject to inspection and/or observation by the 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 RPR at the site for the same purpose.

Inspection and/or observations by the 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) 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 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

100-13 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% with approval of CQCP and completion of the Quality Control (QC)/Quality Assurance (QA) workshop.

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)

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 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.

All references to TDOT Specifications relate to TENNESSEE DEPARTMENT OF TRANSPORTATION STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION dated January 1, 2021 and any subsequent revisions.

The Contractor shall comply with all requirements and recommendations in the Storm Water Pollution Prevention Plan (SWPPP) for this project and any revisions ordered by the Owner's Representative. The Contractor shall transfer coverage of the Tennessee Construction General Permit (CGP) Notice Of Intent (NOI) with the Tennessee Department of Environment and Conservation (TDEC). The Contractor shall perform twice weekly Construction Stormwater Inspections and record the inspections on the TN Inspection Certification Form. A copy of the SWPPP, NOI, and Inspection Certifications shall be maintained onsite for the life of the Project.

MATERIALS

102-2.1 Installation and Removal of Silt Fence. Materials shall be in accordance with TDOT Specification for Woven Wire Fence Backing, Wood Post, and Geotextile Fabric as required on TDOT Standard Drawing EC-STR-3C and EC-STR-3E.

102-2.2 Inlet Protection. Materials shall be in accordance with TDOT Specification for Catch Basin Filter (Type 1 - 11 as required) on TDOT Standard Drawing EC-STR-41 through EC-STR-51A. Alternatively, provide premanufactured equivalent slip cover inlet protection device as approved by Owner's Representative.

102-2.3 Temporary Construction Entrance. Materials shall be in accordance with TDOT Specification for Machined Rip-Rap (Class A-3) Section 709 and Geotextile Fabric (Type III) Section 740 and as required on TDOT Standard Drawing EC-STR-25. Vendor and Product must be on the TDOT Qualified Products List (QPL) for the Geotextile Fabric.

102-2.4 Other. All other materials shall meet commercial grade standards and shall be approved by the 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 RPR shall be responsible for assuring compliance to the extent that construction practices, construction operations, and construction work are involved.

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 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 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 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 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 RPR, the work shall be performed by the Contractor and the cost shall be incidental to this item.

The 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.

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 RPR.

METHOD OF MEASUREMENT

102-4.1 Temporary erosion and pollution control work required will be performed as scheduled or directed by the RPR. Completed and accepted work will be measured as follows:

a. Installation and Removal of Silt Fence will be measured by the linear foot.

b. Inlet Protection will be measured by the each.

c. Temporary Construction Entrance will be measured by the each.

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 RPR and measured as provided in paragraph 102-4.1 will be paid for under:

Item C-102-5.1	Installation and Removal of Silt Fence - per linear foot
Item C-102-5.2	Inlet Protection - per each
Item C-102-5.3	Temporary Construction Entrance - per each

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 RPR will be paid for in accordance with Section 90, paragraph 90-05 *Payment for Extra Work*.

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. Any bid amount in excess of the noted limitation will not be paid until the final pay application.

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. The Contractor must also post the Tennessee Comptroller of the Treasury sign regarding reporting fraud, waste, or abuse. These notices must remain posted until final acceptance of the work by the Owner.

105-4 Engineer/RPR field office. An Engineer/RPR field office is not required.

METHOD OF MEASUREMENT

105-5 Basis of measurement and payment. Based upon the contract lump sum price for "Mobilization" partial payments will be allowed as follows:

a. If the Contractor's bid exceeds the 10% limit noted in Section 105-2, the amount in excess of the noted limitation will not be paid until the final pay application. In other words, the payment schedule noted in 105-5b, c, d, and e shall be limited to payment of 10% of the total project costs, and the remainder of the pay item will be paid on the final pay application.

b. With first pay request, 25%.

c. When 25% or more of the original contract is earned, an additional 25%.

d. When 50% or more of the original contract is earned, an additional 40%.

e. 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

105-6 Payment will be made under:

Item C-105-1 Mobilization

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

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.

$X = (x_1 + x_2 + x_3 . . . n) / n$

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

$X = 3.57\%$

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

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
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
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

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
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
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 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. Not Used.

b. Asphalt pavement removal for Point repairs. 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, and legally dispose of the material.

The pavement shall be removed so the joint for each layer of pavement replacement is offset 1 foot (30 cm) from the joint in the preceding layer. This does not apply if the removed pavement is to be replaced with concrete or soil.

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 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 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.

Wider cracks (over 1-1/2 inch wide (38 mm)), along with soft or sunken spots, indicate that the pavement or the pavement base should be repaired or replaced as stated below.

Cracks and joints may be filled with a mixture of emulsified asphalt and aggregate. The aggregate shall consist of limestone, volcanic ash, sand, or other material that will cure to form a hard substance. The combined gradation shall be as shown in the following table.

Gradation

Sieve Size	Percent Passing
No. 4 (4.75 mm)	100
No. 8 (2.36 mm)	90-100
No. 16 (1.18 mm)	65-90
No. 30 (600 µm)	40-60
No. 50 (300 µm)	25-42
No. 100 (150 µm)	15-30
No. 200 (75 µm)	10-20

Up to 3% cement can be added to accelerate the set time. The mixture shall not contain more than 20% natural sand without approval in writing from the RPR.

The proportions of asphalt emulsion and aggregate shall be determined in the field and may be varied to facilitate construction requirements. Normally, these proportions will be approximately one part asphalt emulsion to five parts aggregate by volume. The material shall be poured or placed into the joints or cracks and compacted to form a voidless mass. The joint or crack shall be filled to within +0 to -1/8 inches (+0 to -3 mm) of the surface. Any material spilled outside the width of the joint shall be removed from the pavement surface prior to constructing the overlay. Where concrete overlays are to be constructed, only the excess joint material on the pavement surface and vegetation in the joints need to be removed.

101-3.3 Removal of Foreign Substances/contaminates prior to overlay. 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 RPR in the field during construction.

Chemicals, high-pressure water, heater scarifier (asphaltic concrete only), cold milling, rotary grinding, and sandblasting may be used when approved by the Owner's Representative. 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 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 RPR.

Removal of foreign substances shall not proceed until approved by the 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 in areas indicated in this specification or shown on the plans.

101-3.5 Cold milling. Milling shall be performed with a power-operated milling machine or grinder, capable of producing a uniform finished surface with a micro-milling head. 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 in areas designated on the plans. 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 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 in areas designated on the plans.

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 in areas designated on the plans.

101-3.6. Preparation of asphalt pavement surfaces prior to surface treatment. Not used.

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 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. Not used.

101-3.9 Preparation of Cracks in Flexible Pavement prior to sealing. Not used.

101-3.10 Removal of Pipe and Other 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.

b. Abandonment of Tie-Downs. The Contractor shall abandon the aircraft tie-downs as detailed on the Plans.

c. Removal of Tie-Downs. The Contractor shall remove the aircraft tie-downs as detailed on the Plans. The Contractor shall offer the removed tie-downs to the Owner. If the Owner does not want them, the Contractor shall legally dispose of them off airport property.

METHOD OF MEASUREMENT

101-4.1 Cold milling. The unit of measure for cold milling shall be **2** inches of milling per square yard. 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.

101-4.2 Joint and crack repair after milling. The unit of measurement for joint and crack repair shall be the linear foot of joint.

101-4.3 Pavement removal. The unit of measurement for pavement removal shall be the number of square yards removed by the Contractor. 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.

101-4.4a Tie-Down Abandonment. The unit of measurement for Tie-Down Abandonment shall be per each.

101-4.4b Tie-Down Removal. The unit of measurement for Tie-Down Removal shall be per each.

101-4.5 Tie-Down Replacement. The unit of measurement for Tie-Down Replacement shall be per each matching the material and construction details in the Plans.

101-4.6 Removal of Pipe. The unit of measurement for removal of pipe will be per linear foot. 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	Asphalt Milling (2" Depth) - per square yard
Item P 101-5.2	Joint and Crack Repair after Milling – per linear foot
Item P 101-5.3	Full Depth Pavement Removal (Point Repair When Approved By Owner's Representative) – per square yard
Item P-101-5.4a	Tie-Down Abandonment - per each
Item P-101-5.4b	Tie-Down Removal - per each
Item P-101-5.5	Tie-Down Replacement - per each
Item P-101-5.6	Pipe Removal – per linear 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.

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

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. 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 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 RPR. **Unsuitable excavation shall <u>not</u> include the resident overly moist or yielding subgrade materials likely to be encountered under existing turf or pavement areas.**

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 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 RPR.

When the Contractor's excavating operations encounter artifacts of historical or archaeological significance, the operations shall be temporarily discontinued and the RPR notified per Section 70, paragraph 70-20. At the direction of the 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 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 RPR has obtained from the Contractor, the survey notes of the elevations and measurements of the ground surface. The Contractor and 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.

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 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 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 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 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 for Undercut and Related Backfill. No separate payment shall be made for the necessary refilling of unsuitable areas, but shall constitute a part of Undercut and Related Backfill. 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. Undercutting will be paid as Undercut and Related Backfill. **A material that is high in moisture content and which yields under proof rolling does not classify as unsuitable material** (refer to Section 152-1.3). **Undercutting of suitable but wet material does not constitute unsuitable material. The Contractor is required to manipulate and dry the material unless the material is classified as unsuitable in accordance with Section 152-1.3. The Engineer shall have sole authority on what is classified or deemed "Unsuitable Material".** If the resident subgrade material is classified as unsuitable material, then the Contractor shall remove the material to the depth directed by the Engineer but not greater than 3-feet below subgrade. The backfill of such areas shall not begin until the volume of the excavation is determined by cross sections or other means acceptable to the Engineer. The backfill shall be accomplished in the same manner as other embankment called out in this section with regard to the thickness and compaction requirements. The payment for the backfill and recompaction shall be included in the unit price for "Undercut and Related Backfill". The backfill material may consist of borrow excavation, unclassified excavation or select backfill and may be other materials acceptable to the Engineer. All select backfill shall pass 1-1/2-inch sieve. If deemed necessary by the Engineer, Mirafi HP

370 (or approved equal) geotextile fabric may be used to bridge the unsuitable soils or undercut area utilizing a minimum 12 inch overlap where splices are made. Overlap shall not be measured for separate payment and shall be considered incidental to the construction costs. The payment for the installation of geotextile fabric shall be included in the unit price for pay item "Geotextile Fabric for Undercut Areas".

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 RPR. All over-break shall be graded or removed by the Contractor and disposed of as directed by the RPR. The 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 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 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. There are no borrow sources within the boundaries of the airport property. The Contractor shall locate and obtain borrow sources, subject to the approval of the RPR. The Contractor shall notify the RPR at least 15 days prior to beginning the excavation so necessary measurements and tests can be made by the 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.

For off-site borrow areas obtained by the Contractor, the RPR must determine the acceptability of the borrow material before its use on the project. A clean well graded fill dirt will generally be acceptable for the turf area.

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 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.

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 D698. 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 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 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 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 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 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 Contractor will take samples of excavated materials which will be used in embankment for testing and develop a Moisture-Density Relations of Soils Report (Proctor) in accordance with ASTM D698. A new Proctor shall be developed for each soil type based on visual classification.

Density tests will be taken by the Contractor 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 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 D698. Under all areas to be paved, the embankments shall be compacted to a depth of 12" and to a density of not less than 100 percent of the maximum density as determined by ASTM D698. 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 Item T-901.

The in-place field density shall be determined in accordance with ASTM D1556 or 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 RPR's presence and provide the test results upon completion to the RPR for acceptance. If the specified density is not attained, the area represented by the test or as designated by the 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 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 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. Not Used in turf areas with limited fill on this project.

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 D698. 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 methods in ASTM D698, 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 RPR, and density test results shall be furnished upon completion to the RPR for acceptance determination.

The in-place field density shall be determined in accordance with ASTM D1556 or 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.

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 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 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 RPR. The Contractor shall perform all final smoothness and grade checks in the presence of the 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 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 The quantity of Grading Turf Area (Import Borrow As-Needed) shall be measured per square yard of Turf Area actually graded (excluded areas unnecessarily disturbed by the Contractor) as shown in the plans and details. Sod is not included in this item. Imported borrow material or any unclassified material associated with this work will not be measured for separate payment, so the cost should cost should be included in this pay item.

152-3.2 The quantity of Undercut and Related Backfill shall be measured as the number of cubic yards excavated when directed by the Engineer in accordance with Section 152-2.2b as measured by cross sectioning or other means acceptable to the Engineer to include the volume of the entire excavation (removal), refilling with suitable material, recompaction, and regrading as necessary to the original elevation.

152-3.3 Geotextile Fabric for Undercut Areas described in 152-2.2b Undercutting shall be paid for by the number of square yards measured in its final position based upon the necessary area as directed by the Engineer. Any overlap in the geotextile fabric shall not be measured for separate payment; it shall be considered incidental to the construction costs for this pay item.

152-3.5 The quantity of borrow excavation to be paid for shall be the number of cubic yards measured in its final position. Measurement shall not include the quantity of materials placed without authorization beyond normal slope lines, or the quantity of material used for purposes other than those directed.

BASIS OF PAYMENT

152-4.1 Grading Turf Area (Import Borrow As-Needed) shall be made at the contract unit price per square yard for filling, grading, and compacting the turf area to plan grades as described in the plans and details. This price shall be full compensation for furnishing all materials, labor, equipment, tools, and incidentals necessary to complete the item. Imported borrow material or any unclassified material will not be measured for separate payment.

152-4.2 For Undercut and Related Backfill, payment shall be made at the contract unit price per cubic yard. This price shall be full compensation for furnishing, hauling, and disposing of all materials, labor, equipment, tools, and incidentals necessary to complete the item.

152-4.3 For Geotextile Fabric for Undercut Areas, payment shall be made at the contract unit price per square yard for materials and work pertaining to geotextile fabric described in 152-2.2b Undercutting. 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	Grading Turf Area (Import Borrow As-Needed) – per square yard
Item P-152-4.2	Undercut and Related Backfill (When Approved By Owner's Representative) – per cubic yard
Item P-152-4.3	Geotextile Fabric for Undercut Areas (When Approved By Owner's Representative) – 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.

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-207

IN-PLACE FULL DEPTH RECLAMATION (FDR) RECYCLED ASPHALT AGGREGATE BASE COURSE

DESCRIPTION

207-1.1 This item consists of a recycled asphalt aggregate base course resulting from the in-place full depth reclamation (FDR) of the existing pavement section (asphalt wearing surface and aggregate base), plus mechanical stabilization with additional aggregate or chemical stabilization with cement, asphalt emulsion or fly ash when required.

MATERIALS

207-2.1 Aggregate. The FDR shall consist of materials produced by recycling (pulverizing and mixing) the existing asphalt pavement, aggregate base, subgrade, and any additional aggregate as necessary. Material larger than 2 inches in any dimension shall not be permitted in the recycle asphalt aggregate base course.

The FDR shall meet the gradation in the table below.

FDR Gradation

Sieve	Minimum Percentage by weight passing sieves
2 inch (51 mm)	100
No. 4 (4.75 mm)	55
No. 200 (75 µm)	0-15

a. Deleterious substances. Materials for aggregate base shall be kept free from weeds, sticks, grass, roots and other foreign matter.

b. Uniformity. The materials shall be thoroughly recycled (pulverized and mixed) to ensure a uniform gradation.

207-2.2 Stabilization.

a. Mechanical stabilization. Addition of corrective aggregate material to adjust gradation shall be equivalent to P-208 or better.

b. Chemical Stabilization. Stabilizing agent is not required. Materials shall be handled, stored, and applied in accordance with all federal, state, and local requirements.

207-2.3 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.

207-2.4 Quality Control (QC) Sampling and testing. The Contractor shall take at least two FDR samples per day of production in the presence of the Resident Project Representative (RPR) to check the gradation. Sampling shall be per ASTM D75. Material shall meet the requirements in paragraph 207-2.1. Samples shall be taken from the in-place, un-compacted material at random sampling locations per ASTM D3665.

CONSTRUCTION METHODS

207-3.1 Milling. Milling is not required.

207-3.2 Control Strip. The first half-day of construction shall be considered the control strip. The Contractor shall demonstrate, in the presence of the RPR, that the materials, equipment, and construction processes meet the requirements of the specification. The sequence and manner of rolling necessary to obtain specified density requirements shall be determined. 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 RPR. Upon acceptance of the control strip by the 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 RPR.

207-3.3 Recycling (Pulverization and mixing). The asphalt pavement, aggregate base and subgrade shall be recycled (pulverized and mixed) into a uniformly blended mixture with P-208 aggregate base (when required to achieve P-207 gradation) by dry unit weight and water to the depth indicated on the plans. All material over approximately 2 inches (50 mm) shall be removed by the Contractor. The mixture shall be brought to the desired moisture content.

The maximum lift thickness of the recycled aggregate base course material to be compacted shall be 12 inches.

207-3.4 Grading and compaction. Immediately upon completion of recycling (pulverization and mixing), the material shall be shaped and graded in accordance with the project plans. The recycled asphalt aggregate base course shall be compacted within the same day to an in-place density of 100% as determined by ASTM D698. The moisture content of the material during compaction shall be within ±2% of the optimum moisture content as determined by ASTM D2216. The number, type and weight of rollers shall be sufficient to compact the material to the required density. Maximum density refers to maximum dry density at optimum moisture content unless otherwise specified.

207-3.5 Finishing. The surface of the aggregate base course shall be finished by blading or with automated equipment designed for this purpose. If the top layer is 1/2 inch (12 mm) or more below grade, the top layer shall be scarified to a depth of at least 3 inches (75mm), new material added, and the layer blended and re-compacted to bring it to grade. The addition of layers less than 3 inches (75mm) shall not be allowed.

207-3.6 Proof rolling. Compacted asphalt aggregate base course shall be proof rolled with a tandem axle dual wheel dump truck loaded to the legal limit with tires inflated to 80 psi in the presence of the RPR. Soft areas that deflect greater than 0.5 inch (12 mm) or show permanent deformation greater than 0.5 inch (12 mm) shall be removed and reworked at the Contractor's expense.

207-3.7 Weather limitations. When weather conditions detrimentally affect the construction process and/or quality of the materials, the Contractor shall stop construction. Cement or fly ash shall not be applied when wind conditions affect the distribution of the materials. When the aggregates contain frozen materials or when the underlying course is frozen or wet, the construction shall be stopped. Construction shall not be performed unless the atmospheric temperature is above 35°F (2°C) and rising or approved by the RPR. When the temperature falls below 35°F (2°C), protect all completed areas against detrimental effects of freezing by approved methods. Correct completed areas damaged by freezing, rainfall, or other weather conditions to meet specified requirements.

207-3.8 Maintenance. The asphalt aggregate base course shall be maintained in a satisfactory condition until the work is accepted by the RPR. Equipment used in the construction of an adjoining section may be routed over completed sections of asphalt aggregate base course, provided that no damage results and

equipment is routed over the full width of the completed asphalt aggregate base course. Any damage to the recycled asphalt aggregate base course shall be repaired by the Contractor at the Contractor's expense.

207-3.9 Surface tolerances. The finished surface shall be tested for smoothness and accuracy of grade. Any area failing smoothness or grade shall be scarified to a depth of at least 3 inches (75 mm), reshaped and re-compacted by the Contractor at the Contractor's expense.

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. 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 shall be measured on a grid matching the Spot Elevation sheets in the and shall be within +0 and -1/2 inch (12 mm) of the specified grade.

207-3.10 Acceptance sampling and testing for density. FDR base course shall be accepted for density and thickness on an area basis. One (1) test for density and thickness will be made for each 1200 square yds. Sampling locations will be determined on a random basis in accordance with ASTM D3665.

a. Density. The Contractor's laboratory shall perform all density tests in the RPR's presence and provide the test results upon completion to the RPR for acceptance.

Each area will be accepted for density when the field density is at least 100% of the maximum density of the FDR base course in accordance with ASTM D698. The in-place field density shall be determined in accordance with ASTM D1556 or 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. If the specified density is not attained, the area represented by the failed test must be reworked and/or recompacted and two additional random tests made. This procedure shall be followed until the specified density is reached. Maximum density refers to maximum dry density at optimum moisture content unless otherwise specified.

b. Thickness. The thickness of the base course shall be within +0 and -1/2 inch (12 mm) of the specified thickness as determined by depth tests taken by the Contractor in the presence of the RPR for each area. Where the thickness is deficient by more than 1/2-inch (12 mm), the Contractor shall correct such areas at no additional cost by scarifying to a depth of at least 3 inches (75 mm), adding new material, and recompacted to grade. The Contractor shall replace, at his expense, base material where depth tests have been taken.

METHOD OF MEASUREMENT

207-4.1 The quantity of FDR asphalt aggregate base course shall be measured by the number of square yards of material in compliance with the plans and specifications.

BASIS OF PAYMENT

207-5.1 Payment shall be made at the contract unit price per square yard for recycling the existing asphalt pavement, aggregate base course, subgrade and mixing with stabilizing agent, if required, spreading, compacting, and maintaining the recycled material to the compacted thickness as indicated on the drawings. This price shall be full compensation for furnishing all materials, for preparing and placing these materials, and for all labor, equipment tools and incidentals to complete the item.

Payment will be made under:

Item P-207-5.1	In-place Full Depth Recycled (FDR) Asphalt Aggregate Base Course (Mechanically Stabilized) – 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 C29	Unit Weight of Aggregate
ASTM C88	Soundness of Aggregates by Use of Sodium or Magnesium Sulfate
ASTM C117	Materials Finer than 75-µm (No. 200) Sieve in Mineral Aggregate by Washing
ASTM C131	Resistance to abrasion of Small Size Coarse Aggregate by Use of Los Angeles Machine
ASTM C136	Sieve or Screen Analysis of Fine and Coarse Aggregate
ASTM C150	Standard Specification for Portland Cement
ASTM C595	Standard Specification for Blended Hydraulic Cements
ASTM C1602	Standard Specification for Mixing Water Used in the Production of Hydraulic Cement Concrete
ASTM D75	Sampling Aggregate
ASTM D558	ASTM D558 Standard Test Methods for Moisture-Density (Unit Weight) Relations of Soil-Cement Mixtures
ASTM D698	Moisture Density Relations of Soils and Aggregate using 5.5 lb Rammer and 12 in drop
ASTM D977	Standard Specification for Emulsified Asphalt
ASTM D1556	Test Method for Density and Unit Weight of Soil in Place by the Sand Cone Method
ASTM D1557	Test Methods for Laboratory Compaction Characteristics of Soil Using Modified Effort
ASTM D2216	Test Methods for Laboratory Determination of Water (Moisture) Soil and Rock by Mass
ASTM D2419	Test Method for Sand Equivalent Value of Soils and Fine Aggregate
ASTM D2487	Standard Practice for Classification of Soils for Engineering Purposes (Unified Soil Classification System)
ASTM D3665	Standard Practice for Random Sampling of Construction Materials
ASTM D4318	Standard Test Methods for Liquid Limit, Plastic Limit, and Plasticity Index of Soils

ASTM D4491	Standard Test Methods for Water Permeability of Geotextiles by Permittivity
ASTM D4751	Standard Test Methods for Determining Apparent Opening Size of a Geotextile
ASTM D5821	Standard Test Method for Determining the Percentage of Fractured Particles in Coarse Aggregate
ASTM D6938	Standard Test Method for In-Place Density and Water Content of Soil and Soil Aggregate by Nuclear Methods (Shallow Depth)

American Association of State Highway and Transportation Officials (AASHTO)

M288	Standard Specification for Geosynthetic Specification for Highway Applications

END OF ITEM P-207

ITEM P-208

AGGREGATE BASE COURSE

DESCRIPTION

208-1.1 This item shall consist of a base course composed of course aggregate bonded with fine aggregate base. It shall be constructed on a prepared subgrade or subbase course per these specifications and shall conform to the dimensions and typical cross-section shown on the plans.

MATERIALS

208-2.1 Aggregate base. The aggregate base material shall consist of both fine and coarse aggregate. Material shall be clean, sound, durable particles and fragments of stone or gravel, crushed stone, crushed slag, or crushed gravel mixed or blended with sand, screenings, or other materials. Materials shall be handled and stored in accordance with all federal, state, and local requirements. The aggregate shall be free from clay lumps, organic matter, or other deleterious materials or coatings. The method used to produce the crushed gravel shall result in the fractured particles in the finished product as nearly constant and uniform as practicable. The fine aggregate portion, defined as the portion passing the No. 4 (4.75 mm) sieve produced in crushing operations, shall be incorporated in the base material to the extent permitted by the gradation requirements. Aggregate base material requirements are listed in the following table.

Aggregate Base Material Requirements

Material Test	Requirement	Standard
Coarse Aggregate		
Resistance to Degradation	Loss: 50% 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
Percentage of Fractured Particles	Minimum 60% by weight of particles with at least two fractured faces and 75% with at least one fractured face[1]	ASTM D5821
Flat Particles, Elongated Particles, or Flat and Elongated Particles	10% maximum, by weight, of flat, elongated, or flat and elongated particles [2]	ASTM D4791
Bulk density of slag	Weigh not less than 70 pounds per cubic foot (1.12 Mg/cubic meter)	ASTM C29
Clay lumps and friable particles (if using slag)	Less than or equal to 3 percent	ASTM C142
Fine Aggregate		
Liquid limit	Less than or equal to 25	ASTM D4318
Plasticity Index	Not more than five (5)	ASTM D4318

[1] The area of each face shall be equal to at least 75% of the smallest mid-sectional area of the piece. When two fractured faces are contiguous, the angle between the planes of fractures shall be at least 30 degrees to count as two fractured faces.

[2] 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).

208-2.2 Gradation requirements. The gradation of the aggregate base material shall meet the requirements of the gradation given in the following table when tested per ASTM C117 and ASTM C136. The gradation shall be well graded from coarse to fine and shall not vary from the lower limit on one sieve to the high limit on an adjacent sieve or vice versa.

Gradation of Aggregate Base

Sieve Size	Design Range Percentage by Weight passing	Contractor's Final Gradation	Job Control Grading Band Tolerances for Contractor's Final Gradation[1] Percent
2 inch (50 mm)	1″ maximum		±0
1-1/2 inch (37.5 mm)	--		±5
1 inch (25.0 mm)	--		±8
3/4 inch (19.0 mm)	100		±8
No. 4 (4.75 mm)	70-100		±8
No. 40 (425 µm)	35-65		±5
No. 200 (75 µm)	10-25		±3

1 The "Job Control Grading Band Tolerances for Contractor's Final Gradation" in the table shall be applied to "Contractor's Final Gradation" to establish a job control grading band. The full tolerance still applies if application of the tolerances results in a job control grading band outside the design range.

208-2.3 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 208-2.1 and 208-2.2. 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 Resident Project Representative (RPR) to check the final gradation. Sampling shall be per ASTM D75. Material shall meet the requirements in paragraph 208-2.2. The samples shall be taken from the in-place, un-compacted material at sampling points and intervals designated by the RPR.

208-2.4 Separation Geotextile. Not used.

CONSTRUCTION METHODS

208-3.1 Control strip. The first half-day of construction shall be considered the control strip. The Contractor shall demonstrate, in the presence of the RPR, that the materials, equipment, and construction processes meet the requirements of the 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 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 continue until the control strip has been accepted by the 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 by the RPR.

208-3.2 Preparing underlying subgrade and/or subbase. The underlying subgrade and/or subbase shall be checked and accepted by the RPR before base course placing and spreading operations begin. Re-proof rolling of the subgrade or proof rolling of the subbase in accordance with Item P-152, at the

Contractor's expense, may be required by the RPR if the Contractor fails to ensure proper drainage or protect the subgrade and/or subbase. Any ruts or soft, yielding areas due to improper drainage conditions, hauling, or any other cause, shall be corrected before the base course is placed. To ensure proper drainage, the spreading of the base shall begin along the centerline of the pavement on a crowned section or on the high side of the pavement with a one-way slope.

208-3.3 Production. The aggregate shall be uniformly blended and, when at a satisfactory moisture content per paragraph 208-3.5, the approved material may be transported directly to the placement.

208-3.4 Placement. The aggregate shall be placed and spread on the prepared underlying layer by spreader boxes or other devices as approved by the RPR, to a uniform thickness and width. The equipment shall have positive thickness controls to minimize the need for additional manipulation of the material. Dumping from vehicles that require re-handling shall not be permitted. Hauling over the uncompacted base course shall not be permitted.

The aggregate shall meet gradation and moisture requirements prior to compaction. The base course layer shall be constructed in lifts as established in the control strip, but not less than 4 inches (100 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 at the Contractor's expense.

208-3.5 Compaction. Immediately upon completion of the spreading operations, compact each layer of the base course, as specified, with approved compaction equipment. The number, type, and weight of rollers shall be sufficient to compact the material to the required density within the same day that the aggregate is placed on the subgrade.

The field density of each compacted lift of material shall be at least 100% of the maximum density of laboratory specimens prepared from samples of the base material delivered to the jobsite. The laboratory specimens shall be compacted and tested in accordance with ASTM D698. The moisture content of the material during placing operations shall be within ±2 percentage points of the optimum moisture content as determined by ASTM D698. Maximum density refers to maximum dry density at optimum moisture content unless otherwise specified.

208-3.6 Weather limitations. Material shall not be placed unless the ambient air temperature is at least 40°F (4°C) and rising. Work on base course shall not be conducted when the subgrade or subbase is wet or frozen or the base material contains frozen material.

208-3.7 Maintenance. The base course shall be maintained in a condition that will meet all specification requirements. When material has been exposed to excessive rain, snow, or freeze-thaw conditions, prior to placement of additional material, the Contractor shall verify that materials still meet all specification requirements. Equipment may be routed over completed sections of base course, provided that no damage results and the equipment is routed over the full width of the completed base course. Any damage resulting to the base course from routing equipment over the base course shall be repaired by the Contractor at their expense.

208-3.8 Surface tolerances. After the course has been compacted, 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 recompacted to grade until the required smoothness and accuracy are obtained and approved by the RPR. Any deviation in surface tolerances shall be corrected by the Contractor at the Contractor's expense. The smoothness and accuracy requirements specified here apply only to the top layer when base course is constructed in more than one layer.

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. 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 grid matching the Spot Elevation sheets in the plans, and shall be within +0 and -1/2 inch (12 mm) of the specified grade.

208-3.9 Acceptance sampling and testing. Aggregate base course shall be accepted for density and thickness on an area basis. Two tests will be made for density and thickness for each 1200 square yards. Sampling locations will be determined on a random basis per ASTM D3665.

a. **Density.** The Contractor's laboratory shall perform all density tests in the RPR's presence and provide the test results upon completion to the RPR for acceptance**.**

Each area shall be accepted for density when the field density is at least 100% of the maximum density of laboratory specimens compacted and tested per ASTM D698. The in-place field density shall be determined per ASTM D1556 or 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. If the specified density is not attained, the area represented by the failed test must be reworked and/or recompacted and two additional random tests made. This procedure shall be followed until the specified density is reached. Maximum density refers to maximum dry density at optimum moisture content unless otherwise specified.

b. Thickness. Since the grade correction depth is variable, thickness will not be tested by coring. However, the volume of the material required to perform the grade correction shall be determined by survey before and after the P-208 base work as discussed in Technical Supplement TS-130.

METHOD OF MEASUREMENT

208-4.1 The quantity of aggregate base course for point repairs shall be measured by the number of square yards of material actually constructed and accepted by the RPR as complying with the plans and specifications. Base materials shall not be included in any other excavation quantities.

208-4.2 The quantity of aggregate base course for grade correction shall be measured by the number of cubic yards of material actually constructed and accepted by the RPR as complying with the plans and specifications. Base materials shall not be included in any other excavation quantities. Volume quantities will be based on compacted in-place measurements based on pre- and -post survey performed by the contractor. Volume quantities will not be based on loose vehicular measurements.

BASIS OF PAYMENT

208-5.1 Payment shall be made at the contract unit price per square yard for aggregate base course used in point repairs. This price shall be full compensation for furnishing all materials and for all operations, hauling, placing, and compacting of these materials, and for all labor, equipment, tools, and incidentals necessary to complete the item.

208-5.2 Payment shall be made at the contract unit price per cubic yard for aggregate base course used in grade correction. This price shall be full compensation for furnishing all materials and for all operations, hauling, placing, and compacting of these materials, and for all labor, equipment, tools, and incidentals necessary to complete the item.

Payment will be made under:

Item P-208-5.1	Crushed Aggregate Base Course (7" Thickness) (Point Repair When Approved By Owner's Representative) - per square yard
Item P-208-5.2	Crushed Aggregate Base Course (Variable Thickness for Grade Correction) - 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 C29	Standard Test Method for Bulk Density (“Unit Weight”) and Voids in Aggregate
ASTM C88	Standard Test Method for Soundness of Aggregates by Use of Sodium Sulfate or Magnesium Sulfate
ASTM C117	Standard Test Method for Materials Finer than 75-µm (No. 200) Sieve in Mineral Aggregates by Washing
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 C142	Standard Test Method for Clay Lumps and Friable Particles in Aggregates
ASTM D75	Standard Practice for Sampling Aggregates
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 D2167	Standard Test Method for Density and Unit Weight of Soil in Place by the Rubber Balloon Method
ASTM D2487	Standard Practice for Classification of Soils for Engineering Purposes (Unified Soil Classification System)
ASTM D3665	Standard Practice for Random Sampling of Construction Materials
ASTM D4318	Standard Test Methods for Liquid Limit, Plastic Limit, and Plasticity Index of Soils
ASTM D4491	Standard Test Methods for Water Permeability of Geotextiles by Permittivity
ASTM D4643	Standard Test Method for Determination of Water Content of Soil and Rock by Microwave Oven Heating

ASTM D4751	Standard Test Methods for Determining Apparent Opening Size of a Geotextile
ASTM D4791	Standard Test Method for Flat Particles, Elongated Particles, or Flat and Elongated Particles in Coarse Aggregate
ASTM D5821	Standard Test Method for Determining the Percentage of Fractured Particles in Coarse Aggregate
ASTM D6938	Standard Test Method for In-Place Density and Water Content of Soil and Soil-Aggregate by Nuclear Methods (Shallow Depth)
ASTM D7928	Standard Test Method for Particle-Size Distribution (Gradation) of Fine-Grained Soils Using the Sedimentation (Hydrometer) Analysis

American Association of State Highway and Transportation Officials (AASHTO)

M288	Standard Specification for Geosynthetic Specification for Highway Applications

END OF ITEM P-208

ITEM P-401

ASPHALT MIX PAVEMENT

DESCRIPTION

401-1.1 This item shall consist of pavement courses composed of mineral aggregate and asphalt binder mixed in a central mixing plant and placed on a prepared base or stabilized course in accordance with these specifications and shall conform to the lines, grades, thicknesses, and typical cross-sections shown on the plans. Each course shall be constructed to the depth, typical section, and elevation required by the plans and shall be rolled, finished, and approved before the placement of the next course.

MATERIALS

401-2.1 Aggregate. Aggregates shall consist of crushed stone, crushed gravel, crushed slag, screenings, natural sand, and mineral filler, as required. The aggregates should have no known history of detrimental pavement staining due to ferrous sulfides, such as pyrite. Coarse aggregate is the material retained on the No. 4 (4.75 mm) sieve. Fine aggregate is the material passing the No. 4 (4.75 mm) sieve.

a. Coarse aggregate. Coarse aggregate shall consist of sound, tough, durable particles, free from films of matter that would prevent thorough coating and bonding with the asphalt material and free from organic matter and other deleterious substances. Coarse aggregate material requirements are given in the table below.

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
Clay lumps and friable particles	1.0 % maximum	ASTM C142
Percentage of Fractured Particles	For pavements designed for aircraft gross weights of 60,000 pounds (27200 kg) or more: Minimum 75% by weight of particles with at least two fractured faces and 85% with at least one fractured face[1]	ASTM D5821
	For pavements designed for aircraft gross weights less than 60,000 pounds (27200 kg): Minimum 50% by weight of particles with at least two fractured faces and 65% with at least one fractured face[1]	
Flat, Elongated, or Flat and Elongated Particles	8% maximum, by weight, of flat, elongated, or flat and elongated particles at 5:1 [2]	ASTM D4791
Bulk density of slag [3]	Weigh not less than 70 pounds per cubic foot (1.12 Mg/cubic meter)	ASTM C29.

[1] The area of each face shall be equal to at least 75% of the smallest mid-sectional area of the piece. When two fractured faces are contiguous, the angle between the planes of fractures shall be at least 30 degrees to count as two fractured faces.

[2] 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).

[3] Only required if slag is specified.

b. Fine aggregate. Fine aggregate shall consist of clean, sound, tough, durable, angular shaped particles produced by crushing stone, slag, or gravel and shall be free from coatings of clay, silt, or other objectionable matter. Natural (non-manufactured) sand may be used to obtain the gradation of the fine aggregate blend or to improve the workability of the mix. Fine aggregate material requirements are listed in the table below.

Fine Aggregate Material Requirements

Material Test	Requirement	Standard
Liquid limit	25 maximum	ASTM D4318
Plasticity Index	4 maximum	ASTM D4318
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
Clay lumps and friable particles	1.0% maximum	ASTM C142
Sand equivalent	45 minimum	ASTM D2419

c. Sampling. ASTM D75 shall be used in sampling coarse and fine aggregate.

401-2.2 Mineral filler. Mineral filler (baghouse fines) may be added in addition to material naturally present in the aggregate. Mineral filler shall meet the requirements of ASTM D242.

Mineral Filler Requirements

Material Test	Requirement	Standard
Plasticity Index	4 maximum	ASTM D4318

401-2.3 Asphalt binder. Asphalt binder shall conform to ASTM D6373 Performance Grade (PG) 76-22.

401-2.4 Anti-stripping agent. Any anti-stripping agent or additive (anti-strip) shall be heat stable and shall not change the asphalt binder grade beyond specifications. Anti-strip shall be an approved material of the Department of Transportation of the State in which the project is located.

COMPOSITION

401-3.1 Composition of mixture(s). The asphalt mix shall be composed of a mixture of aggregates, filler and anti-strip agent if required, and asphalt binder. The aggregate fractions shall be sized, handled in separate size groups, and combined in such proportions that the resulting mixture meets the grading requirements of the job mix formula (JMF).

401-3.2 Job mix formula (JMF) laboratory. The laboratory used to develop the JMF shall possess a current certificate of accreditation, listing D3666 from a national accrediting authority and all test methods required for developing the JMF; and be listed on the accrediting authority's website. A copy of the laboratory's current accreditation and accredited test methods shall be submitted to the Resident Project Representative (RPR) prior to start of construction.

401-3.3 Job mix formula (JMF). No asphalt mixture shall be placed until an acceptable mix design has been submitted to the RPR for review and accepted in writing. The RPR's review shall not relieve the Contractor of the responsibility to select and proportion the materials to comply with this section.

When the project requires asphalt mixtures of differing aggregate gradations and/or binders, a separate JMF shall be submitted for each mix. Add anti-stripping agent to meet tensile strength requirements.

The JMF shall be prepared by an accredited laboratory that meets the requirements of paragraph 401-3.2. The asphalt mixture shall be designed using procedures contained in Asphalt Institute MS-2 Mix Design

Manual, 7th Edition. Samples shall be prepared and compacted using the gyratory compactor in accordance with ASTM D6925.

Should a change in sources of materials be made, a new JMF must be submitted to the RPR for review and accepted in writing before the new material is used. After the initial production JMF has been approved by the RPR and a new or modified JMF is required for whatever reason, the subsequent cost of the new or modified JMF, including a new control strip when required by the RPR, will be borne by the Contractor.

The 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.

The JMF shall be submitted in writing by the Contractor at least 30 days prior to the start of paving operations. The JMF shall be developed within the same construction season using aggregates proposed for project use.

The JMF shall be dated, and stamped or sealed by the responsible professional Engineer of the laboratory and shall include the following items as a minimum:

- Manufacturer's Certificate of Analysis (COA) for the asphalt binder used in the JMF in accordance with paragraph 401-2.3. Certificate of asphalt performance grade is with modifier already added, if used and must indicate compliance with ASTM D6373. For plant modified asphalt binder, certified test report indicating grade certification of modified asphalt binder.
- Manufacturer's Certificate of Analysis (COA) for the anti-stripping agent if used in the JMF in accordance with paragraph 401-2.4.
- Certified material test reports for the course and fine aggregate and mineral filler in accordance with paragraphs 401-2.1.
- Percent passing each sieve size for individual gradation of each aggregate cold feed and/or hot bin; percent by weight of each cold feed and/or hot bin used; and the total combined gradation in the JMF.
- Specific Gravity and absorption of each coarse and fine aggregate.
- Percent natural sand.
- Percent fractured faces.
- Percent by weight of flat particles, elongated particles, and flat and elongated particles (and criteria).
- Percent of asphalt.
- Number of blows or gyrations
- Laboratory mixing and compaction temperatures.
- Supplier-recommended field mixing and compaction temperatures.
- Plot of the combined gradation on a 0.45 power gradation curve.
- Graphical plots of air voids, voids in the mineral aggregate (VMA), and unit weight versus asphalt content. To achieve minimum VMA during production, the mix design needs to account for material breakdown during production.
- Tensile Strength Ratio (TSR).
- Type and amount of Anti-strip agent when used.

- Asphalt Pavement Analyzer (APA) results.
- Date the JMF was developed. Mix designs that are not dated or which are from a prior construction season shall not be accepted.

Table 1. Asphalt Design Criteria

Test Property	Value	Test Method
Number of blows or gyrations	50	
Air voids (%)	3.5	ASTM D3203
Percent voids in mineral aggregate (VMA), minimum	See Table 2	ASTM D6995
Tensile Strength Ratio (TSR)[1]	not less than 80 at a saturation of 70-80%	ASTM D4867

[1] Test specimens for TSR shall be compacted at 7 ± 1.0 % air voids. In areas subject to freeze-thaw, use freeze-thaw conditioning in lieu of moisture conditioning per ASTM D4867.

[2] AASHTO T340 at 100 psi hose pressure at 64°C test temperature may be used in the interim. If this method is used the required Value shall be less than 5 mm @ 8000 passes

[3] Where APA not available , use Hamburg Wheel test (AASHTO T-324) 10mm @ 20,000 passes at 50°C.

The mineral aggregate shall be of such size that the percentage composition by weight, as determined by laboratory sieves, will conform to the gradation or gradations specified in Table 2 when tested in accordance with ASTM C136 and ASTM C117.

The gradations in Table 2 represent the limits that shall determine the suitability of aggregate for use from the sources of supply; be well graded from coarse to fine and shall not vary from the low limit on one sieve to the high limit on the adjacent sieve, or vice versa.

Table 2. Aggregate - Asphalt Pavements

Sieve Size	Percentage by Weight Passing Sieves		
	Gradation 1 (Base Course) (Not Used)	Gradation 2 (Surface Course)	Gradation 3 (Leveling Course)
1 inch (25.0 mm)	100	--	--
3/4 inch (19.0 mm)	90-100	100	--
1/2 inch (12.5 mm)	68-88	90-100	100
3/8 inch (9.5 mm)	60-82	72-88	90-100
No. 4 (4.75 mm)	45-67	53-73	58-78
No. 8 (2.36 mm)	32-54	38-60	40-60
No. 16 (1.18 mm)	22-44	26-48	28-48
No. 30 (600 µm)	15-35	18-38	18-38
No. 50 (300 µm)	9-25	11-27	11-27
No. 100 (150 µm)	6-18	6-18	6-18
No. 200 (75 µm)	3-6	3-6	3-6
Minimum Voids in Mineral Aggregate (VMA)[1]	14.0	15.0	16.0
Asphalt percent by total weight of mixture:			
Stone or gravel	4.5-7.0	5.0-7.5	5.5-8.0
Slag	5.0-7.5	6.5-9.5	7.0-10.5
Recommended Minimum Construction Lift Thickness	3 inch	2 inch	1 1/2 inch

[1]To achieve minimum VMA during production, the mix design needs to account for material breakdown during production.

The aggregate gradations shown are based on aggregates of uniform specific gravity. The percentages passing the various sieves shall be corrected when aggregates of varying specific gravities are used, as indicated in the Asphalt Institute MS-2 Mix Design Manual, 7th Edition.

401-3.4 Reclaimed asphalt pavement (RAP). RAP shall not be used.

401-3.5 Control Strip. Full production shall not begin until an acceptable control strip has been constructed and accepted in writing by the RPR**.** The Contractor shall prepare and place a quantity of asphalt according to the JMF. The underlying grade or pavement structure upon which the control strip is to be constructed shall be the same as the remainder of the course represented by the control strip.

The Contractor will not be allowed to place the control strip until the Contractor quality control program (CQCP), showing conformance with the requirements of paragraph 401-5.1, has been accepted, in writing, by the RPR.

The control strip will consist of at least 250 tons (227 metric tons) or 1/2 sublot, whichever is greater. The control strip shall be placed in two lanes of the same width and depth to be used in production with a

longitudinal cold joint. The cold joint must be cut back in accordance with paragraph 401-4.14 using the same procedure that will be used during production. The cold joint for the control strip will be an exposed construction joint at least four (4) hours old or when the mat has cooled to less than 160°F (71°C). The equipment used in construction of the control strip shall be the same type, configuration and weight to be used on the project.

The control strip will be considered acceptable by the RPR if the gradation, asphalt content, and VMA are within the action limits specified in paragraph 401-5.5a; and Mat density greater than or equal to 94.5%, air voids 3.5% +/- 1%, and joint density greater than or equal to 92.5%.

If the control strip is unacceptable, necessary adjustments to the JMF, plant operation, placing procedures, and/or rolling procedures shall be made and another control strip shall be placed. Unacceptable control strips shall be removed at the Contractor's expense.

The control strip will be considered one lot for payment based upon the average of a minimum of 3 samples (no sublots required for control strip). Payment will only be made for an acceptable control strip in accordance with paragraph 401-8.1 using a lot pay factor equal to 100.

CONSTRUCTION METHODS

401-4.1 Weather limitations. The asphalt shall not be placed upon a wet surface or when the surface temperature of the underlying course is less than specified in Table 4. The temperature requirements may be waived by the RPR, if requested; however, all other requirements including compaction shall be met.

Table 4. Surface Temperature Limitations of Underlying Course

Mat Thickness	Base Temperature (Minimum)	
	°F	°C
3 inches (7.5 cm) or greater	40 [1]	4
Greater than 2 inches (50 mm) but less than 3 inches (7.5 cm)	45	7

401-4.2 Asphalt plant. Plants used for the preparation of asphalt shall conform to the requirements of American Association of State Highway and Transportation Officials (AASHTO) M156 including the following items.

a. Inspection of plant. The RPR, or RPR's authorized representative, shall have access, at all times, to all areas of the plant for checking adequacy of equipment; inspecting operation of the plant: verifying weights, proportions, and material properties; and checking the temperatures maintained in the preparation of the mixtures.

b. Storage bins and surge bins. The asphalt mixture stored in storage and/or surge bins shall meet the same requirements as asphalt mixture loaded directly into trucks. Asphalt mixture shall not be stored in storage and/or surge bins for a period greater than twelve (12) hours. If the RPR determines there is an excessive heat loss, segregation, or oxidation of the asphalt mixture due to temporary storage, temporary storage shall not be allowed.

401-4.3 Aggregate stockpile management. Aggregate stockpiles shall be constructed in a manner that prevents segregation and intermixing of deleterious materials. Aggregates from different sources shall be stockpiled, weighed and batched separately at the asphalt batch plant. Aggregates that have become segregated or mixed with earth or foreign material shall not be used.

A continuous supply of materials shall be provided to the work to ensure continuous placement.

401-4.4 Hauling equipment. Trucks used for hauling asphalt shall have tight, clean, and smooth metal beds. To prevent the asphalt from sticking to the truck beds, the truck beds shall be lightly coated with a minimum amount of paraffin oil, lime solution, or other material approved by the RPR. Petroleum products shall not be used for coating truck beds. Each truck shall have a suitable cover to protect the mixture from adverse weather. When necessary, to ensure that the mixture will be delivered to the site at the specified temperature, truck beds shall be insulated or heated and covers shall be securely fastened.

401-4.4.1 Material transfer vehicle (MTV). Material transfer vehicles are not required.

401-4.5 Asphalt pavers. Asphalt pavers shall be self-propelled with an activated heated screed, capable of spreading and finishing courses of asphalt that will meet the specified thickness, smoothness, and grade. The paver shall have sufficient power to propel itself and the hauling equipment without adversely affecting the finished surface. The asphalt paver shall be equipped with a control system capable of automatically maintaining the specified screed grade and elevation.

If the spreading and finishing equipment in use leaves tracks or indented areas, or produces other blemishes in the pavement that are not satisfactorily corrected by the scheduled operations, the use of such equipment shall be discontinued.

The paver shall be capable of paving to a minimum width specified in paragraph 401-4.12.

401-4.6 Rollers. The number, type, and weight of rollers shall be sufficient to compact the asphalt to the required density while it is still in a workable condition without crushing of the aggregate, depressions or other damage to the pavement surface. Rollers shall be in good condition, clean, and capable of operating at slow speeds to avoid displacement of the asphalt. All rollers shall be specifically designed and suitable for compacting asphalt concrete and shall be properly used. Rollers that impair the stability of any layer of a pavement structure or underlying soils shall not be used.

401-4.7 Density device. The Contractor shall have on site a density gauge during all paving operations in order to assist in the determination of the optimum rolling pattern, type of roller and frequencies, as well as to monitor the effect of the rolling operations during production paving. The Contractor shall supply a qualified technician during all paving operations to calibrate the gauge and obtain accurate density readings for all new asphalt. These densities shall be supplied to the RPR upon request at any time during construction. No separate payment will be made for supplying the density gauge and technician.

401-4.8 Preparation of asphalt binder. The asphalt binder shall be heated in a manner that will avoid local overheating and provide a continuous supply of the asphalt binder to the mixer at a uniform temperature. The temperature of unmodified asphalt binder delivered to the mixer shall be sufficient to provide a suitable viscosity for adequate coating of the aggregate particles, but shall not exceed 325°F (160°C) when added to the aggregate. The temperature of modified asphalt binder shall be no more than 350°F (175°C) when added to the aggregate.

401-4.9 Preparation of mineral aggregate. The aggregate for the asphalt shall be heated and dried. The maximum temperature and rate of heating shall be such that no damage occurs to the aggregates. The temperature of the aggregate and mineral filler shall not exceed 350°F (175°C) when the asphalt binder is added. Particular care shall be taken that aggregates high in calcium or magnesium content are not damaged by overheating. The temperature shall not be lower than is required to obtain complete coating and uniform distribution on the aggregate particles and to provide a mixture of satisfactory workability.

401-4.10 Preparation of Asphalt mixture. The aggregates and the asphalt binder shall be weighed or metered and mixed in the amount specified by the JMF. The combined materials shall be mixed until the aggregate obtains a uniform coating of asphalt binder and is thoroughly distributed throughout the mixture. Wet mixing time shall be the shortest time that will produce a satisfactory mixture, but not less than 25 seconds for batch plants. The wet mixing time for all plants shall be established by the Contractor, based on the procedure for determining the percentage of coated particles described in ASTM D2489, for

each individual plant and for each type of aggregate used. The wet mixing time will be set to achieve 95% of coated particles. For continuous mix plants, the minimum mixing time shall be determined by dividing the weight of its contents at operating level by the weight of the mixture delivered per second by the mixer. The moisture content of all asphalt upon discharge shall not exceed 0.5%.

401-4.11 Application of Prime and Tack Coat. Immediately before placing the asphalt mixture, the underlying course shall be cleaned of all dust and debris.

A prime coat in accordance with Item P-602 shall be applied to aggregate base prior to placing the asphalt mixture only when authorized by the Owner's Representative to protect the P-207 and P-208 base course from inclement weather.

A tack coat shall be applied in accordance with Item P-603 to all vertical and horizontal asphalt and concrete surfaces prior to placement of the first and each subsequent lift of asphalt mixture.

401-4.12 Laydown plan, transporting, placing, and finishing. Prior to the placement of the asphalt, the Contractor shall prepare a laydown plan with the sequence of paving lanes and width to minimize the number of cold joints; the location of any temporary ramps; laydown temperature; and estimated time of completion for each portion of the work (milling, paving, rolling, cooling, etc.). The laydown plan and any modifications shall be approved by the RPR.

Deliveries shall be scheduled so that placing and compacting of asphalt is uniform with minimum stopping and starting of the paver. Hauling over freshly placed material shall not be permitted until the material has been compacted, as specified, and allowed to cool to approximately ambient temperature. The Contractor, at their expense, shall be responsible for repair of any damage to the pavement caused by hauling operations.

Contractor shall survey each lift of asphalt surface course and certify to RPR that every lot of each lift meets the grade tolerances of paragraph 401-6.2d before the next lift can be placed.

Edges of existing asphalt pavement abutting the new work shall be saw cut and the cut off material and laitance removed. Apply a tack coat in accordance with P-603 before new asphalt material is placed against it.

The speed of the paver shall be regulated to eliminate pulling and tearing of the asphalt mat. Placement of the asphalt mix shall begin along the centerline of a crowned section or on the high side of areas with a one way slope unless shown otherwise on the laydown plan as accepted by the RPR. The asphalt mix shall be placed in consecutive adjacent lanes having a minimum width of 12 feet except where edge lanes require less width to complete the area. Additional screed sections attached to widen the paver to meet the minimum lane width requirements must include additional auger sections to move the asphalt mixture uniformly along the screed extension.

The longitudinal joint in one course shall offset the longitudinal joint in the course immediately below by at least one foot (30 cm); however, the joint in the surface top course shall be at the centerline of crowned pavements. Transverse joints in one course shall be offset by at least 10 feet (3 m) from transverse joints in the previous course. Transverse joints in adjacent lanes shall be offset a minimum of 10 feet (3 m).On areas where irregularities or unavoidable obstacles make the use of mechanical spreading and finishing equipment impractical, the asphalt may be spread and luted by hand tools.

The RPR may at any time, reject any batch of asphalt, on the truck or placed in the mat, which is rendered unfit for use due to contamination, segregation, incomplete coating of aggregate, or overheated asphalt mixture. Such rejection may be based on only visual inspection or temperature measurements. In the event of such rejection, the Contractor may take a representative sample of the rejected material in the presence of the RPR, and if it can be demonstrated in the laboratory, in the presence of the RPR, that such material was erroneously rejected, payment will be made for the material at the contract unit price.

Areas of segregation in the surface course, as determined by the RPR, shall be removed and replaced at the Contractor's expense. The area shall be removed by saw cutting and milling a minimum of the construction lift thickness as specified in paragraph 401-3.3, Table 2 for the approved mix design. The area to be removed and replaced shall be a minimum width of the paver and a minimum of 10 feet (3 m) long.

401-4.13 Compaction of asphalt mixture. After placing, the asphalt mixture shall be thoroughly and uniformly compacted by self-propelled rollers. The surface shall be compacted as soon as possible when the asphalt has attained sufficient stability so that the rolling does not cause undue displacement, cracking or shoving. The sequence of rolling operations and the type of rollers used shall be at the discretion of the Contractor. The speed of the roller shall, at all times, be sufficiently slow to avoid displacement of the hot mixture and be effective in compaction. Any surface defects and/or displacement occurring as a result of the roller, or from any other cause, shall be corrected at the Contractor's expense.

Sufficient rollers shall be furnished to handle the output of the plant. Rolling shall continue until the surface is of uniform texture, true to grade and cross-section, and the required field density is obtained. To prevent adhesion of the asphalt to the roller, the wheels shall be equipped with a scraper and kept moistened with water as necessary.

In areas not accessible to the roller, the mixture shall be thoroughly compacted with approved power tampers.

Any asphalt that becomes loose and broken, mixed with dirt, contains check-cracking, or in any way defective shall be removed and replaced with fresh hot mixture and immediately compacted to conform to the surrounding area. This work shall be done at the Contractor's expense. Skin patching shall not be allowed.

401-4.14 Joints. The formation of all joints shall be made to ensure a continuous bond between the courses and obtain the required density. All joints shall have the same texture as other sections of the course and meet the requirements for smoothness and grade.

The roller shall not pass over the unprotected end of the freshly laid asphalt except when necessary to form a transverse joint. When necessary to form a transverse joint, it shall be made by means of placing a bulkhead or by tapering the course. The tapered edge shall be cut back to its full depth and width on a straight line to expose a vertical face prior to placing the adjacent lane. In both methods, all contact surfaces shall be coated with an asphalt tack coat before placing any fresh asphalt against the joint.

Longitudinal joints which have been left exposed for more than four (4) hours; the surface temperature has cooled to less than 175°F (80°C); or are irregular, damaged, uncompacted or otherwise defective shall be cut back with a cutting wheel or pavement saw a maximum of 3 inches (75 mm) to expose a clean, sound, uniform vertical surface for the full depth of the course. All cutback material and any laitance produced from cutting joints shall be removed from the project. Asphalt tack coat in accordance with P-603 shall be applied to the clean, dry joint prior to placing any additional fresh asphalt against the joint. The cost of this work shall be considered incidental to the cost of the asphalt.

Cut back of all cold joints is required as specified above.

The Contractor may provide additional joint density QC by use of joint heaters at the Contractor's expense. Electrically powered infrared heating equipment should consist of one or more low-level radiant energy heaters to uniformly heat and soften the pavement joints. The heaters should be configured to uniformly heat an area up to 18 inches (0.5 m) in width and 3 inches (75 mm) in depth. Infrared equipment shall be thermostatically controlled to provide a uniform, consistent temperature increase throughout the layer being heated up to a maximum temperature range of 200 to 300°F (93 to 150°C).

Propane powered infrared heating equipment shall be attached to the paving machine and the output of infrared energy shall be in the one to six-micron range. Converters shall be arranged end to end directly

over the joint to be heated in sufficient numbers to continuously produce, when in operation, a minimum of 240,000 BTU per hour. The joint heater shall be positioned not more than one inch (25 mm) above the pavement to be heated and in front of the paver screed and shall be fully adjustable. Heaters will be required to be in operation at all times.

The heaters shall be operated so they do not produce excessive heat when the units pass over new or previously paved material.

401-4.15 Saw-cut grooving. Saw-cut grooving is not required.

401-4.16 Diamond grinding. Diamond grinding shall be completed prior to pavement grooving. Diamond grinding shall be accomplished by sawing with saw blades impregnated with industrial diamond abrasive.

Diamond grinding shall be performed with a machine designed specifically 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 a sufficient number of blades to 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 actual number of blades will be determined by the Contractor and depend on the hardness of the aggregate. Equipment or grinding procedures that cause ravels, aggregate fractures, spalls or disturbance to the pavement will not be permitted. Contractor shall demonstrate to the 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. The Contractor shall apply a surface treatment per P-608 to all areas that have been subject to grinding.

401-4.17 Nighttime paving requirements. The Contractor shall provide adequate lighting during any nighttime construction. A lighting plan shall be submitted by the Contractor and approved by the RPR prior to the start of any nighttime work. All work shall be in accordance with the approved CSPP and lighting plan.

CONTRACTOR QUALITY CONTROL (CQC)

401-5.1 General. The Contractor shall develop a Contractor Quality Control Program (CQCP) in accordance with Item C-100. No partial payment will be made for materials without an approved CQCP.

401-5.2 Contractor quality control (QC) facilities. The Contractor shall provide or contract for testing facilities in accordance with Item C-100. The RPR shall be permitted unrestricted access to inspect the Contractor's QC facilities and witness QC activities. The 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.

401-5.3 Contractor QC testing. The Contractor shall perform all QC tests necessary to control the production and construction processes applicable to these specifications and as set forth in the approved CQCP. The testing program shall include, but not necessarily be limited to, tests for the control of asphalt content, aggregate gradation, temperatures, aggregate moisture, field compaction, and surface smoothness. A QC Testing Plan shall be developed as part of the CQCP.

a. Asphalt content. A minimum of two tests shall be performed per day in accordance with ASTM D6307 or ASTM D2172 for determination of asphalt content. When using ASTM D6307, the correction factor shall be determined as part of the first test performed at the beginning of plant production; and as part of every tenth test performed thereafter. The asphalt content for the day will be determined by averaging the test results.

b. Gradation. Aggregate gradations shall be determined a minimum of twice per day from mechanical analysis of extracted aggregate in accordance with ASTM D5444, ASTM C136, and ASTM C117.

c. Moisture content of aggregate. The moisture content of aggregate used for production shall be determined a minimum of once per day in accordance with ASTM C566.

d. Moisture content of asphalt. The moisture content shall be determined once per day in accordance with AASHTO T329 or ASTM D1461.

e. Temperatures. Temperatures shall be checked, at least four times per day, at necessary locations to determine the temperatures of the dryer, the asphalt binder in the storage tank, the asphalt at the plant, and the asphalt at the job site.

f. In-place density monitoring. The Contractor shall conduct any necessary testing to ensure that the specified density is being achieved. A nuclear gauge may be used to monitor the pavement density in accordance with ASTM D2950.

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, a rolling inclinometer meeting the requirements of ASTM E2133 or rolling external reference device that can simulate a 12-foot (3.7m) straightedge approved by the RPR. 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 or external reference device is used, the data may be evaluated using either the FAA profile program, ProFAA, or FHWA ProVal, 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 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. When placement abuts previously placed material the first measurement shall start with one half the length of the straight edge on the previously placed material.

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 401-4.16 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 401-6.1d(3). Areas that have been ground shall be sealed with a surface treatment in accordance with Item P-608. To avoid the surface treatment creating any conflict with runway or taxiway markings, it may be necessary to seal a larger area.

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 shall be evaluated daily to allow adjustments to paving operations when grade measurements do not meet specifications. As a minimum, grade shall be evaluated prior to and after the placement of the first lift and after placement of the surface lift.

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 RPR by the end of the following working day.

Areas with humps or depressions that exceed grade or smoothness criteria 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. Grinding shall be in accordance with paragraph 401-4.16.

The Contractor shall repair low areas or areas that cannot be corrected by grinding by removal of deficient areas to the depth of the final course plus ½ inch and replacing with new material. Skin patching is not allowed.

401-5.4 Sampling. When directed by the RPR, the Contractor shall sample and test any material that appears inconsistent with similar material being sampled, unless such material is voluntarily removed and replaced or deficiencies corrected by the Contractor. All sampling shall be in accordance with standard procedures specified.

401-5.5 Control charts. The Contractor shall maintain linear control charts for both individual measurements and range (i.e. difference between highest and lowest measurements) for aggregate gradation, asphalt content, and VMA. The VMA for each day will be calculated and monitored by the QC laboratory.

Control charts shall be posted in a location satisfactory to the RPR and kept current. 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 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 problem and the Contractor is not taking satisfactory corrective action, the RPR may suspend production or acceptance of the material.

a. Individual measurements. Control charts for individual measurements shall be established to maintain process control within tolerance for aggregate gradation, asphalt content, and VMA. The control charts shall use the job mix formula target values as indicators of central tendency for the following test parameters with associated Action and Suspension Limits:

Control Chart Limits for Individual Measurements

Sieve	Action Limit	Suspension Limit
3/4 inch (19.0 mm)	±6%	±9%
1/2 inch (12.5 mm)	±6%	±9%
3/8 inch (9.5 mm)	±6%	±9%
No. 4 (4.75 mm)	±6%	±9%
No. 16 (1.18 mm)	±5%	±7.5%
No. 50 (300 µm)	±3%	±4.5%
No. 200 (75 µm)	±2%	±3%
Asphalt Content	±0.45%	±0.70%
Minimum VMA	-0.5%	-1.0%

b. Range. Control charts shall be established to control gradation process variability. The range shall be plotted as the difference between the two test results for each control parameter. The Suspension Limits specified below are based on a sample size of n = 2. Should the Contractor elect to perform more than two tests per lot, the Suspension Limits shall be adjusted by multiplying the Suspension Limit by 1.18 for n = 3 and by 1.27 for n = 4.

Control Chart Limits Based on Range

Sieve	Suspension Limit
1/2 inch (12.5 mm)	11%
3/8 inch (9.5 mm)	11%
No. 4 (4.75 mm)	11%
No. 16 (1.18 mm)	9%
No. 50 (300 µm)	6%
No. 200 (75 µm)	3.5%
Asphalt Content	0.8%

c. Corrective Action. The CQCP shall indicate that appropriate action shall be taken when the process is believed to be out of tolerance. The Plan shall contain rules to gauge when a process is out of control and detail what action will be taken to bring the process into control. As a minimum, a process shall be deemed out of control and production stopped and corrective action taken, if:

(1) One point falls outside the Suspension Limit line for individual measurements or range; or

(2) Two points in a row fall outside the Action Limit line for individual measurements.

401-5.6 QC reports. The Contractor shall maintain records and shall submit reports of QC activities daily.

MATERIAL ACCEPTANCE

401-6.1 Acceptance sampling and testing. Unless otherwise specified, all acceptance sampling and testing necessary to determine conformance with the requirements specified in this section will be

performed by the RPR at no cost to the Contractor except that coring as required in this section shall be completed and paid for by the Contractor.

a. Quality assurance (QA) testing laboratory. The QA testing laboratory performing these acceptance tests will be accredited in accordance with ASTM D3666. The QA laboratory accreditation will be current and listed on the accrediting authority's website. All test methods required for acceptance sampling and testing will be listed on the lab accreditation.

b. Lot size. A standard lot will be equal to one day's production divided into approximately equal sublots of between 400 to 600 tons. When only one or two sublots are produced in a day's production, the sublots will be combined with the production lot from the previous or next day.

Where more than one plant is simultaneously producing asphalt for the job, the lot sizes will apply separately for each plant.

c. Asphalt air voids. Plant-produced asphalt will be tested for air voids on a sublot basis.

(1) Sampling. Material from each sublot shall be sampled in accordance with ASTM D3665. Samples shall be taken from material deposited into trucks at the plant or at the job site in accordance with ASTM D979. The sample of asphalt may be put in a covered metal tin and placed in an oven for not less than 30 minutes nor more than 60 minutes to maintain the material at or above the compaction temperature as specified in the JMF.

(2) Testing. Air voids will be determined for each sublot in accordance with ASTM D3203 for a set of three compacted specimens prepared in accordance with ASTM D6925.

d. In-place asphalt mat and joint density. Each sublot will be tested for in-place mat and joint density as a percentage of the theoretical maximum density (TMD).

(1) Sampling. The Contractor will cut minimum 5 inch (125 mm) diameter samples in accordance with ASTM D5361. The Contractor shall furnish all tools, labor, and materials for cleaning, and filling the cored pavement. Laitance produced by the coring operation shall be removed immediately after coring, and core holes shall be filled within one day after sampling in a manner acceptable to the RPR.

(2) Bond. Each lift of asphalt shall be bonded to the underlying layer. If cores reveal that the surface is not bonded, additional cores shall be taken as directed by the RPR to determine the extent of unbonded areas. Unbonded areas shall be removed by milling and replaced at no additional cost as directed by the RPR.

(3) Thickness. Thickness of each lift of surface course will be evaluated by the RPR for compliance to the requirements shown on the plans after any necessary corrections for grade. Measurements of thickness will be made using the cores extracted for each sublot for density measurement. The maximum allowable deficiency at any point will not be more than 1/4 inch (6 mm) less than the thickness indicated for the lift. Average thickness of lift, or combined lifts, will not be less than the indicated thickness. Where the thickness tolerances are not met, the lot or sublot shall be corrected by the Contractor at his expense by removing the deficient area and replacing with new pavement. The Contractor, at his expense, may take additional cores as approved by the RPR to circumscribe the deficient area.

(4) Mat density. One core shall be taken from each sublot. Core locations will be determined by the RPR in accordance with ASTM D3665. Cores for mat density shall not be taken closer than one foot (30 cm) from a transverse or longitudinal joint. The bulk specific gravity of each cored sample will be determined in accordance with ASTM D2726. The percent compaction (density) of each sample will be determined by dividing the bulk specific gravity of each sublot sample by the TMD for that sublot.

(5) Joint density. One core centered over the longitudinal joint shall be taken for each sublot that has a longitudinal joint. Core locations will be determined by the RPR in accordance with ASTM D3665.

The bulk specific gravity of each core sample will be determined in accordance with ASTM D2726. The percent compaction (density) of each sample will be determined by dividing the bulk specific gravity of each joint density sample by the average TMD for the lot. The TMD used to determine the joint density at joints formed between lots will be the lower of the average TMD values from the adjacent lots.

401-6.2 Acceptance criteria.

a. General. Acceptance will be based on the implementation of the Contractor Quality Control Program (CQCP) and the following characteristics of the asphalt and completed pavements: air voids, mat density, joint density, and grade**.**

b. Air Voids and Mat density. Acceptance of each lot of plant produced material for mat density and air voids will be based on the percentage of material within specification limits (PWL). If the PWL of the lot equals or exceeds 90%, the lot will be acceptable. Acceptance and payment will be determined in accordance with paragraph 401-8.1.

c. Joint density. Acceptance of each lot of plant produced asphalt for joint density will be based on the PWL. If the PWL of the lot is equal to or exceeds 90%, the lot will be considered acceptable. If the PWL is less than 90%, the Contractor shall evaluate the reason and act accordingly. If the PWL is less than 80%, the Contractor shall cease operations and until the reason for poor compaction has been determined. If the PWL is less than 71%, the pay factor for the lot used to complete the joint will be reduced by five (5) percentage points. This lot pay factor reduction will be incorporated and evaluated in accordance with paragraph 401-8.1.

d. Grade. The final finished surface of the pavement shall be surveyed to verify that the grade elevations and cross-sections shown on the plans do not deviate more than 1/2 inch (12 mm) vertically or 0.1 feet laterally.

Grades of the pavement shall be taken and verified at a minimum 25-foot longitudinal and transverse spacing, and at start and end of each lane placed matching the grid on the Spot Elevation plans.

The survey and documentation shall be stamped and signed by a licensed surveyor. Payment for sublots that do not meet grade for over 25% of the sublot shall not be more than 95%.

e. Profilograph roughness for QA Acceptance. Not used.

401-6.3 Percentage of material within specification limits (PWL). The PWL will be determined in accordance with procedures specified in Item C-110. The specification tolerance limits (L) for lower and (U) for upper are contained in Table 5.

Table 5. Acceptance Limits for Air Voids and Density

Test Property	Pavements Specification Tolerance Limits	
	L	**U**
Air Voids Total Mix (%)	2.0	5.0
Surface Course Mat Density (%)	92.8	-
Base Course Mat Density (%)	92.0	-
Joint density (%)	90.5	--

a. Outliers. All individual tests for mat density and air voids will be checked for outliers (test criterion) in accordance with ASTM E178, at a significance level of 5%. Outliers will be discarded, and the PWL will be determined using the remaining test values. The criteria in Table 5 is based on

production processes which have a variability with the following standard deviations: Surface Course Mat Density (%), 1.30; Base Course Mat Density (%), 1.55; Joint Density (%), 1.55.

The Contractor should note that (1) 90 PWL is achieved when consistently producing a surface course with an average mat density of at least 94.5% with 1.30% or less variability, (2) 90 PWL is achieved when consistently producing a base course with an average mat density of at least 94.0% with 1.55% or less variability, and (3) 90 PWL is achieved when consistently producing joints with an average joint density of at least 92.5% with 1.55% or less variability.

401-6.4 Resampling pavement for mat density.

a. General. Resampling of a lot of pavement will only be allowed for mat density, and then, only if the Contractor requests same, in writing, within 48 hours after receiving the written test results from the RPR. A retest will consist of all the sampling and testing procedures contained in paragraphs 401-6.1d and 401-6.2b. Only one resampling per lot will be permitted.

(1) A redefined PWL will be calculated for the resampled lot. The number of tests used to calculate the redefined PWL will include the initial tests made for that lot plus the retests.

(2) The cost for resampling and retesting shall be borne by the Contractor.

b. Payment for resampled lots. The redefined PWL for a resampled lot will be used to calculate the payment for that lot in accordance with Table 6.

c. Outliers. Check for outliers in accordance with ASTM E178, at a significance level of 5%.

401-6.5 Leveling course. The leveling course is the first variable thickness lift placed to correct surface irregularities prior to placement of subsequent courses. The leveling course shall meet the aggregate gradation in Table 2, paragraph 401-3.3. The leveling course shall meet the requirements of paragraph 401-3.3, 401-6.2b for air voids, but shall not be subject to the density requirements of paragraph 401-6.2b for mat density and 401-6.2c for joint density. The leveling course shall be compacted with the same effort used to achieve density of the control strip. The leveling course shall not exceed the lift thickness associated with each gradation in Table 2, paragraph 401-3.3.

METHOD OF MEASUREMENT

401-7.1 Measurement. Asphalt shall be measured by the number of tons of asphalt used in the accepted work. Batch weights or truck scale weights will be used to determine the basis for the tonnage.

BASIS OF PAYMENT

401-8.1 Payment. Payment for a lot of asphalt meeting all acceptance criteria as specified in paragraph 401-6.2 shall be made based on results of tests for mat density and air voids. Payment for acceptable lots shall be adjusted according to paragraph 401-8.1c for mat density and air voids; and paragraph 401-6.2c for joint density, subject to the limitation that:

a. The total project payment for plant mix asphalt pavement shall not exceed 100 percent of the product of the contract unit price and the total number of tons of asphalt used in the accepted work.

b. The price shall be compensation for furnishing all materials, for all preparation, mixing, and placing of these materials, and for all labor, equipment, tools, and incidentals necessary to complete the item.

c. Basis of adjusted payment. The pay factor for each individual lot shall be calculated in accordance with Table 6. A pay factor shall be calculated for both mat density and air voids. The lot pay factor shall be the higher of the two values when calculations for both mat density and air voids are 100%

or higher. The lot pay factor shall be the product of the two values when only one of the calculations for either mat density or air voids is 100% or higher. The lot pay factor shall be the lower of the two values when calculations for both mat density and air voids are less than 100%. If PWL for joint density is less than 71% then the lot pay factor shall be reduced by 5% but be no higher than 95%.

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 401-8.1a. Payment in excess of 100% for accepted lots of asphalt shall be used to offset payment for accepted lots of asphalt pavement that achieve a lot pay factor less than 100%.

Payment for sublots which do not meet grade in accordance with paragraph 401-6.2d after correction for over 25% of the sublot shall be reduced by 5%.

Table 6. Price adjustment schedule[1]

Percentage of material within specification limits (PWL)	Lot pay factor (percent of contract unit price)
96 – 100	106
90 – 95	PWL + 10
75 – 89	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 above 100% shall be subject to the total project payment limitation specified in paragraph 401-8.1a.

[2] The lot shall be removed and replaced. However, the RPR may decide to allow the rejected lot to remain. In that case, if the RPR and Contractor agree in writing that the lot shall not be removed, it shall be paid for at 50% of the contract unit price and the total project payment shall be reduced by the amount withheld for the rejected lot.

d. Profilograph Roughness. Not used.

401-8.1 Payment.

Payment will be made under:

Item P-401-8.1	Asphalt Surface Course Overlay (2" & Variable Thickness) - per ton
Item P-401-8.2	Asphalt Leveling Course - per ton
Item P-401-8.3	Asphalt for Point Repairs (4" Thickness) (Point Repair When Approved By Owner's Representative) - per ton
Item P-401-8.4	Asphalt Surface Course (4" Thickness, 2 - 2” Lifts) - per ton

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 C29	Standard Test Method for Bulk Density (“Unit Weight”) and Voids in Aggregate

ASTM C88	Standard Test Method for Soundness of Aggregates by Use of Sodium Sulfate or Magnesium Sulfate
ASTM C117	Standard Test Method for Materials Finer than 75-µm (No. 200) Sieve in Mineral Aggregates by Washing
ASTM C127	Standard Test Method for Density, Relative Density (Specific Gravity) and Absorption of Coarse Aggregate
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 C142	Standard Test Method for Clay Lumps and Friable Particles in Aggregates
ASTM C566	Standard Test Method for Total Evaporable Moisture Content of Aggregate by Drying
ASTM D75	Standard Practice for Sampling Aggregates
ASTM D242	Standard Specification for Mineral Filler for Bituminous Paving Mixtures
ASTM D946	Standard Specification for Penetration-Graded Asphalt Cement for Use in Pavement Construction
ASTM D979	Standard Practice for Sampling Asphalt Paving Mixtures
ASTM D1073	Standard Specification for Fine Aggregate for Asphalt Paving Mixtures
ASTM D1188	Standard Test Method for Bulk Specific Gravity and Density of Compacted Bituminous Mixtures Using Coated Samples
ASTM D2172	Standard Test Method for Quantitative Extraction of Bitumen from Asphalt Paving Mixtures
ASTM D1461	Standard Test Method for Moisture or Volatile Distillates in Asphalt Paving Mixtures
ASTM D2041	Standard Test Method for Theoretical Maximum Specific Gravity and Density of Bituminous Paving Mixtures
ASTM D2419	Standard Test Method for Sand Equivalent Value of Soils and Fine Aggregate
ASTM D2489	Standard Practice for Estimating Degree of Particle Coating of Bituminous-Aggregate Mixtures
ASTM D2726	Standard Test Method for Bulk Specific Gravity and Density of Non-Absorptive Compacted Bituminous Mixtures
ASTM D2950	Standard Test Method for Density of Bituminous Concrete in Place by Nuclear Methods
ASTM D3203	Standard Test Method for Percent Air Voids in Compacted Dense and Open Bituminous Paving Mixtures
ASTM D3381	Standard Specification for Viscosity-Graded Asphalt Cement for Use in Pavement Construction

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
ASTM D4318	Standard Test Methods for Liquid Limit, Plastic Limit, and Plasticity Index of Soils
ASTM D4552	Standard Practice for Classifying Hot-Mix Recycling Agents
ASTM D4791	Standard Test Method for Flat Particles, Elongated Particles, or Flat and Elongated Particles in Coarse Aggregate
ASTM D4867	Standard Test Method for Effect of Moisture on Asphalt Concrete Paving Mixtures
ASTM D5361	Standard Practice for Sampling Compacted Asphalt Mixtures for Laboratory Testing
ASTM D5444	Standard Test Method for Mechanical Size Analysis of Extracted Aggregate
ASTM D5821	Standard Test Method for Determining the Percentage of Fractured Particles in Coarse Aggregate
ASTM D6084	Standard Test Method for Elastic Recovery of Bituminous Materials by Ductilometer
ASTM D6307	Standard Test Method for Asphalt Content of Hot Mix Asphalt by Ignition Method
ASTM D6373	Standard Specification for Performance Graded Asphalt Binder
ASTM D6752	Standard Test Method for Bulk Specific Gravity and Density of Compacted Bituminous Mixtures Using Automatic Vacuum Sealing Method
ASTM D6925	Standard Test Method for Preparation and Determination of the Relative Density of Hot Mix Asphalt (HMA) Specimens by Means of the SuperPave Gyratory Compactor.
ASTM D6926	Standard Practice for Preparation of Bituminous Specimens Using Marshall Apparatus
ASTM D6927	Standard Test Method for Marshall Stability and Flow of Bituminous Mixtures
ASTM D6995	Standard Test Method for Determining Field VMA based on the Maximum Specific Gravity of the Mix (Gmm)
ASTM E11	Standard Specification for Woven Wire Test Sieve Cloth and Test Sieves
ASTM E178	Standard Practice for Dealing with Outlying Observations
ASTM E1274	Standard Test Method for Measuring Pavement Roughness Using a Profilograph
ASTM E950	Standard Test Method for Measuring the Longitudinal Profile of Traveled Surfaces with an Accelerometer Established Inertial Profiling Reference

ASTM E2133	Standard Test Method for Using a Rolling Inclinometer to Measure Longitudinal and Transverse Profiles of a Traveled Surface

American Association of State Highway and Transportation Officials (AASHTO)

AASHTO M156	Standard Specification for Requirements for Mixing Plants for Hot-Mixed, Hot-Laid Bituminous Paving Mixtures.
AASHTO T329	Standard Method of Test for Moisture Content of Hot Mix Asphalt (HMA) by Oven Method
AASHTO T324	Standard Method of Test for Hamburg Wheel-Track Testing of Compacted Asphalt Mixtures
AASHTO T 340	Standard Method of Test for Determining the Rutting Susceptibility of Hot Mix Asphalt (APA) Using the Asphalt Pavement Analyzer (APA)

Asphalt Institute (AI)

Asphalt Institute Handbook MS-26, Asphalt Binder

Asphalt Institute MS-2 Mix Design Manual, 7th Edition

AI State Binder Specification Database

Federal Highway Administration (FHWA)

Long Term Pavement Performance Binder Program

Advisory Circulars (AC)

AC 150/5320-6	Airport Pavement Design and Evaluation

FAA Orders

5300.1	Modifications to Agency Airport Design, Construction, and Equipment Standards

Software

FAARFIELD

END OF ITEM P-401

ITEM P-602

EMULSIFIED ASPHALT PRIME COAT

DESCRIPTION

602-1.1 This item shall consist of an application of emulsified asphalt material on the prepared base course in accordance with these specifications and in reasonably close conformity to the lines shown on the plans.

MATERIALS

602-2.1 Emulsified Asphalt material. The emulsified asphalt material shall be as specified in ASTM D3628 for use as a prime coat appropriate to local conditions. The Contractor shall provide a copy of the manufacturer's Certificate of Analysis (COA) for the emulsified asphalt material. The COA shall be provided to and approved by the Resident Project Representative (RPR) before the emulsified asphalt material is applied. The furnishing of the COA for the emulsified asphalt material shall not be interpreted as a basis for final acceptance. The manufacturer's COA may be subject to verification by testing the material delivered for use on the project.

CONSTRUCTION METHODS

602-3.1 Weather limitations. The emulsified asphalt prime coat shall be applied only when the existing surface is dry; the atmospheric temperature is 50°F (10°C) or above, and the temperature has not been below 35°F (2°C) for the 12 hours prior to application; and when the weather is not foggy or rainy. The temperature requirements may be waived when directed by the RPR.

602-3.2 Equipment. The equipment shall include a self-powered pressure asphalt material distributor and equipment for heating asphalt material.

Provide a distributor with pneumatic tires of such size and number that the load produced on the base surface does not exceed 65.0 psi (4.5 kg/sq cm) of tire width to prevent rutting, shoving or otherwise damaging the base, surface or other layers in the pavement structure. Design and equip the distributor to spray the asphalt material in a uniform coverage at the specified temperature, at readily determined and controlled rates from 0.05 to 1.0 gallons per square yard (0.23 to 4.5 L/square meter), with a pressure range of 25 to 75 psi (172.4 to 517.1 kPa) and with an allowable variation from the specified rate of not more than ±5%, and at variable widths. Include with the distributor equipment a separate power unit for the bitumen pump, full-circulation spray bars, tachometer, pressure gauges, volume-measuring devices, adequate heaters for heating of materials to the proper application temperature, a thermometer for reading the temperature of tank contents, and a hand hose attachment suitable for applying asphalt material manually to areas inaccessible to the distributor. Equip the distributor to circulate and agitate the asphalt material during the heating process. If the distributor is not equipped with an operable quick shutoff valve, the prime operations shall be started and stopped on building paper.

A power broom and power blower suitable for cleaning the surfaces to which the asphalt coat is to be applied shall be provided.

Asphalt distributors must be calibrated annually in accordance with ASTM D2995. The Contractor must furnish a current calibration certification for the asphalt distributor truck from any State or other agency as approved by the RPR.

602-3.3 Application of emulsified asphalt material. Immediately before applying the prime coat, the full width of the surface to be primed shall be swept with a power broom to remove all loose dirt and other objectionable material.

The asphalt emulsion material shall be uniformly applied with an asphalt distributor at the rate of 0.15 to 0.30 gallons per square yard (0.68 to 1.36 liters per square meter) depending on the base course surface texture. The type of asphalt material and application rate shall be approved by the RPR prior to application.

Following application of the emulsified asphalt material and prior to application of the succeeding layer of pavement, allow the asphalt coat to cure and to obtain evaporation of any volatiles or moisture. Maintain the coated surface until the succeeding layer of pavement is placed, by protecting the surface against damage and by repairing and recoating deficient areas. Allow the prime coat to cure without being disturbed for a period of at least 48 hours or longer, as may be necessary to attain penetration into the treated course. Furnish and spread sand to effectively blot up and cure excess asphalt material. The Contractor shall remove blotting sand prior to asphalt concrete lay down operations at no additional expense to the Owner. Keep traffic off surfaces freshly treated with asphalt material. Provide sufficient warning signs and barricades so that traffic will not travel over freshly treated surfaces.

602-3.4 Trial application rates. The Contractor shall apply a minimum of three lengths of at least 100 feet (30 m) for the full width of the distributor bar to evaluate the amount of emulsified asphalt material that can be satisfactorily applied with the equipment. Apply three different application rates of emulsified asphalt materials within the application range specified in paragraph 602-3.3. Other trial applications can be made using various amounts of material as directed by the RPR. The trial application is to demonstrate the equipment can uniformly apply the emulsified asphalt material within the rates specified and determine the application rate for the project.

602-3.5 Freight and waybills. The Contractor shall submit waybills and delivery tickets during the progress of the work. Before the final estimate is allowed, file with the RPR certified waybills and certified delivery tickets for all emulsified asphalt materials used in the construction of the pavement covered by the contract. Do not remove emulsified asphalt material from storage until the initial outage and temperature measurements have been taken. The delivery or storage units will not be released until the final outage has been taken.

METHOD OF MEASUREMENT

602-4.1 The emulsified asphalt material for prime coat shall be measured by the gallon. Volume shall be corrected to the volume at 60°F (16°C) in accordance with ASTM D4311. The emulsified asphalt material paid for will be the measured quantities used in the accepted work, provided that the measured quantities are not 10% over the specified application rate. Any amount of emulsified asphalt material more than 10% over the specified application rate for each application will be deducted from the measured quantities, except for irregular areas where hand spraying of the emulsified asphalt material is necessary. Water added to emulsified asphalt will not be measured for payment.

BASIS OF PAYMENT

602-5.1 Payment shall be made at the contract unit price per gallon for emulsified asphalt prime coat. This price shall be full compensation for furnishing all materials and for all preparation, delivering, and applying the materials, and for all labor, equipment, tools, and incidentals necessary to complete this item.

Payment will be made under:

Item P-602-5.1	Emulsified Asphalt Prime Coat (When Approved By Owner's Representative) - per gallon

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 D2995	Standard Practice for Estimating Application Rate and Residual Application Rate of Bituminous Distributors
ASTM D3628	Standard Practice for Selection and Use of Emulsified Asphalts

END OF ITEM P-602

ITEM P-603

EMULSIFIED ASPHALT TACK COAT

DESCRIPTION

603-1.1 This item shall consist of preparing and treating an asphalt or concrete surface with asphalt material in accordance with these specifications and in reasonably close conformity to the lines shown on the plans.

MATERIALS

603-2.1 Asphalt materials. The asphalt material shall be an emulsified asphalt as specified in ASTM D3628 as an asphalt application for tack coat appropriate to local conditions. The emulsified asphalt shall not be diluted. The Contractor shall provide a copy of the manufacturer's Certificate of Analysis (COA) for the asphalt material to the Resident Project Representative (RPR) before the asphalt material is applied for review and acceptance. The furnishing of COA for the asphalt material shall not be interpreted as a basis for final acceptance. The manufacturer's COA may be subject to verification by testing the material delivered for use on the project.

CONSTRUCTION METHODS

603-3.1 Weather limitations. The tack coat shall be applied only when the existing surface is dry and the atmospheric temperature is 50°F (10°C) or above; the temperature has not been below 35°F (2°C) for the 12 hours prior to application; and when the weather is not foggy or rainy. The temperature requirements may be waived when directed by the RPR.

603-3.2 Equipment. The Contractor shall provide equipment for heating and applying the emulsified asphalt material. The emulsion shall be applied with a manufacturer-approved computer rate-controlled asphalt distributor. The equipment shall be in good working order and contain no contaminants or diluents in the tank. Spray bar tips must be clean, free of burrs, and of a size to maintain an even distribution of the emulsion. Any type of tip or pressure source is suitable that will maintain predetermined flow rates and constant pressure during the application process with application speeds under eight (8) miles per hour (13 km per hour) or seven (700) feet per minute (213 m per minute).

The equipment will be tested under pressure for leaks and to ensure proper set-up before use to verify truck set-up (via a test-shot area), including but not limited to, nozzle tip size appropriate for application, spray-bar height and pressure and pump speed, evidence of triple-overlap spray pattern, lack of leaks, and any other factors relevant to ensure the truck is in good working order before use.

The distributor truck shall be equipped with a minimum 12-foot (3.7-m) spreader spray bar with individual nozzle control with computer-controlled application rates. The distributor truck shall have an easily accessible thermometer that constantly monitors the temperature of the emulsion, and have an operable mechanical tank gauge that can be used to cross-check the computer accuracy. If the distributor is not equipped with an operable quick shutoff valve, the prime operations shall be started and stopped on building paper.

The distributor truck shall be equipped to effectively heat and mix the material to the required temperature prior to application as required. Heating and mixing shall be done in accordance with the manufacturer's recommendations. Do not overheat or over mix the material.

The distributor shall be equipped with a hand sprayer.

Asphalt distributors must be calibrated annually in accordance with ASTM D2995. The Contractor must furnish a current calibration certification for the asphalt distributor truck from any State or other agency as approved by the RPR.

A power broom and/or power blower suitable for cleaning the surfaces to which the asphalt tack coat is to be applied shall be provided.

603-3.3 Application of emulsified asphalt material. The emulsified asphalt shall not be diluted. Immediately before applying the emulsified asphalt tack coat, the full width of surface to be treated shall be swept with a power broom and/or power blower to remove all loose dirt and other objectionable material.

The emulsified asphalt material shall be uniformly applied with an asphalt distributor at the rates appropriate for the conditions and surface specified in the table below. The type of asphalt material and application rate shall be approved by the RPR prior to application.

Emulsified Asphalt

Surface Type	Residual Rate, gal/SY (L/square meter)	Emulsion Application Bar Rate, gal/SY (L/square meter)
New asphalt	0.02-0.05 (0.09-0.23)	0.03-0.07 (0.13-0.32)
Existing asphalt	0.04-0.07 (0.18-0.32)	0.06-0.11 (0.27-0.50)
Milled Surface	0.04-0.08 (0.18-0.36)	.0.06-0.12 (0.27-0.54)
Concrete	0.03-0.05 (0.13-0.23)	0.05-0.08 (0.23-0.36)

After application of the tack coat, the surface shall be allowed to cure without being disturbed for the period of time necessary to permit drying and setting of the tack coat. This period shall be determined by the RPR. The Contractor shall protect the tack coat and maintain the surface until the next course has been placed. When the tack coat has been disturbed by the Contractor, tack coat shall be reapplied at the Contractor's expense.

603-3.4 Freight and waybills The Contractor shall submit waybills and delivery tickets, during progress of the work. Before the final statement is allowed, file with the RPR certified waybills and certified delivery tickets for all emulsified asphalt materials used in the construction of the pavement covered by the contract. Do not remove emulsified asphalt material from storage until the initial outage and temperature measurements have been taken. The delivery or storage units will not be released until the final outage has been taken.

METHOD OF MEASUREMENT

603-4.1 The emulsified asphalt material for tack coat shall be measured by the gallon. Volume shall be corrected to the volume at 60°F (16°C) in accordance with ASTM D1250. The emulsified asphalt material paid for will be the measured quantities used in the accepted work, provided that the measured quantities are not 10% over the specified application rate. Any amount of emulsified asphalt material more than 10% over the specified application rate for each application will be deducted from the measured quantities, except for irregular areas where hand spraying of the emulsified asphalt material is necessary. Water added to emulsified asphalt will not be measured for payment.

BASIS OF PAYMENT

603.5-1 Payment shall be made at the contract unit price per gallon of emulsified asphalt material. This price shall be full compensation for furnishing all materials, for all preparation, delivery, and application of these materials, and for all labor, equipment, tools, and incidentals necessary to complete the item.

Payment will be made under:

Item P-603-5.1	Emulsified Asphalt Tack Coat - per gallon

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 D1250	Standard Guide for Use of the Petroleum Measurement Tables
ASTM D2995	Standard Practice for Estimating Application Rate and Residual Application Rate of Bituminous Distributors
ASTM D3628	Standard Practice for Selection and Use of Emulsified Asphalts

END ITEM P-603

ITEM P-610

CONCRETE FOR MISCELLANEOUS STRUCTURES

Item P-610 shall be used for airfield signage bases, NAVAID foundations, drainage structures, and other miscellaneous airfield concrete other than airfield pavements.

Item P-501 shall be used for any pavements on grade including individual slab replacements.

For small projects less than 20 cubic yards, concrete materials and mix designs meeting state department of transportation specifications for structures may be used, but all other aspects of P-610 apply to the concrete work to which it pertains.

DESCRIPTION

610-1.1 This item shall consist of concrete and reinforcement, as shown on the plans, prepared and constructed in accordance with these specifications. This specification shall be used for all concrete other than airfield pavement which are cast-in-place.

MATERIALS

610-2.1 General. Only approved materials, conforming to the requirements of these specifications, shall be used in the work. Materials may be subject to inspection and tests at any time during their preparation or use. The source of all materials shall be approved by the Resident Project Representative (RPR) before delivery or use in the work. Representative preliminary samples of the materials shall be submitted by the Contractor, when required, for examination and test. Materials shall be stored and handled to ensure preservation of their quality and fitness for use and shall be located to facilitate prompt inspection. All equipment for handling and transporting materials and concrete must be clean before any material or concrete is placed in them.

The use of pit-run aggregates shall not be permitted unless the pit-run aggregate has been screened and washed, and all fine and coarse aggregates stored separately and kept clean. The mixing of different aggregates from different sources in one storage stockpile or alternating batches of different aggregates shall not be permitted.

a. Reactivity. Fine aggregate and coarse aggregates to be used in all concrete shall have been tested separately within six months of the project in accordance with ASTM C1260. Test results shall be submitted to the RPR. The aggregate shall be considered innocuous if the expansion of test specimens, tested in accordance with ASTM C1260, does not exceed 0.08% at 14 days (16 days from casting). If the expansion either or both test specimen is greater than 0.08% at 14 days, but less than 0.20%, a minimum of 25% of Type F fly ash, or between 40% and 55% of slag cement shall be used in the concrete mix.

If the expansion is greater than 0.20%, the aggregates shall not be used, and test results for other aggregates must be submitted for evaluation; or aggregates that meet P-501 reactivity test requirements may be utilized.

610-2.2 Coarse aggregate. The coarse aggregate for concrete shall meet the requirements of ASTM C33 and the requirements of Table 4, Class Designation 5S; and the grading requirements shown below, as required for the project.

Coarse Aggregate Grading Requirements

Maximum Aggregate Size	ASTM C33, Table 3 Grading Requirements (Size No.)
1 1/2 inch (37.5 mm)	467 or 4 and 67
1 inch (25 mm)	57
¾ inch (19 mm)	67
½ inch (12.5 mm)	7

610-2.2.1 Coarse Aggregate susceptibility to durability (D) cracking. Not used.

610-2.3 Fine aggregate. The fine aggregate for concrete shall meet all fine aggregate requirements of ASTM C33.

610-2.4 Cement. Cement shall conform to the requirements of ASTM C150 Type I or II, or ASTM C595 Type IL.

610-2.5 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 available alkali content less than 3% per ASTM C311. Fly ash produced in furnace operations using liming materials or soda ash (sodium carbonate) as an additive shall not be acceptable. 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 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.

610-2.6 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.

610-2.7 Admixtures. The Contractor shall submit certificates indicating that the material to be furnished meets all of the requirements indicated below. In addition, the RPR may require the Contractor to submit complete test data from an approved laboratory showing that the material to be furnished meets all of the requirements of the cited specifications. Subsequent tests may be made of samples taken by the RPR from the supply of the material being furnished or proposed for use on the work to determine whether the admixture is uniform in quality with that approved.

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-entrainment 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. ASTM C494, Type F and G high range water reducing admixtures and ASTM C1017 flowable admixtures shall not be used.

c. Other chemical admixtures. The use of set retarding, and set-accelerating admixtures shall be approved by the RPR. Retarding shall meet the requirements of ASTM C494, Type A, B, or D and set-

accelerating shall meet the requirements of ASTM C494, Type C. Calcium chloride and admixtures containing calcium chloride shall not be used.

610-2.8 Premolded joint material. Premolded joint material for expansion joints shall meet the requirements of ASTM D1751 or ASTM D1752**.**

610-2.9 Joint filler. The filler for joints shall meet the requirements of Item P-605, unless otherwise specified.

610-2.10 Steel reinforcement. Reinforcing shall consist of steel reinforcement type shown in the plans conforming to the requirements of the table below.

Steel Reinforcement

Reinforcing Steel	ASTM A615, ASTM A706, ASTM A775, ASTM A934
Welded Steel Wire Fabric	ASTM A1064, ASTM A884
Welded Deformed Steel Fabric	ASTM A1064
Bar Mats	ASTM A184 or ASTM A704

610-2.11 Materials for curing concrete. Curing materials shall conform to the options noted in the table below.

Materials for Curing

Waterproof paper	ASTM C171
Clear or white Polyethylene Sheeting	ASTM C171
White-pigmented Liquid Membrane-Forming Compound, Type 2, Class B	ASTM C309

CONSTRUCTION METHODS

610-3.1 General. The Contractor shall furnish all labor, materials, and services necessary for, and incidental to, the completion of all work as shown on the drawings and specified here. All machinery and equipment used by the Contractor on the work, shall be of sufficient size to meet the requirements of the work. All work shall be subject to the inspection and approval of the RPR.

610-3.2 Concrete Mixture. The concrete shall develop a compressive strength of 3,000 psi in 28 days as determined by test cylinders made in accordance with ASTM C31 and tested in accordance with ASTM C39. The concrete shall contain not less than 470 pounds of cementitious material per cubic yard (280 kg per cubic meter). The water cementitious ratio shall not exceed 0.45 by weight. The air content of the concrete shall be 5% +/- 1.2% as determined by ASTM C231 and shall have a slump of not more than 4 inches (100 mm) as determined by ASTM C143. **If a TDOT concrete mix design is approved by the Owner's Representative for projects having less than 20 cubic yards of concrete, the concrete mix design shall be TDOT Class A and conform to all material and mix design requirements of the TDOT latest construction specifications.**

610-3.3 Mixing. Concrete may be mixed at the construction site, at a central point, or wholly or in part in truck mixers. The concrete shall be mixed and delivered in accordance with the requirements of ASTM C94 or ASTM C685.

The concrete shall be mixed only in quantities required for immediate use. Concrete shall not be mixed while the air temperature is below 40°F (4°C) without the RPRs approval. If approval is granted for mixing under such conditions, aggregates or water, or both, shall be heated and the concrete shall be placed at a temperature not less than 50°F (10°C) nor more than 100°F (38°C). The Contractor shall be held responsible for any defective work, resulting from freezing or injury in any manner during placing and curing, and shall replace such work at his expense.

Retempering of concrete by adding water or any other material is not permitted.

The rate of delivery of concrete to the job shall be sufficient to allow uninterrupted placement of the concrete.

610-3.4 Forms. Concrete shall not be placed until all the forms and reinforcements have been inspected and approved by the RPR. Forms shall be of suitable material and shall be of the type, size, shape, quality, and strength to build the structure as shown on the plans. The forms shall be true to line and grade and shall be mortar-tight and sufficiently rigid to prevent displacement and sagging between supports. The surfaces of forms shall be smooth and free from irregularities, dents, sags, and holes. The Contractor shall be responsible for their adequacy.

The internal form ties shall be arranged so no metal will show in the concrete surface or discolor the surface when exposed to weathering when the forms are removed. All forms shall be wetted with water or with a non-staining mineral oil, which shall be applied immediately before the concrete is placed. Forms shall be constructed so they can be removed without injuring the concrete or concrete surface.

610-3.5 Placing reinforcement. All reinforcement shall be accurately placed, as shown on the plans, and shall be firmly held in position during concrete placement. Bars shall be fastened together at intersections. The reinforcement shall be supported by approved metal chairs. Shop drawings, lists, and bending details shall be supplied by the Contractor when required.

610-3.6 Embedded items. Before placing concrete, all embedded items shall be firmly and securely fastened in place as indicated. All embedded items shall be clean and free from coating, rust, scale, oil, or any foreign matter. The concrete shall be spaded and consolidated around and against embedded items. The embedding of wood shall not be allowed.

610-3.7 Concrete Consistency. The Contractor shall monitor the consistency of the concrete delivered to the project site; collect each batch ticket; check temperature; and perform slump tests on each truck at the project site in accordance with ASTM C143.

610-3.8 Placing concrete. All concrete shall be placed during daylight hours, unless otherwise approved. The concrete shall not be placed until the depth and condition of foundations, the adequacy of forms and falsework, and the placing of the steel reinforcing have been approved by the RPR. Concrete shall be placed as soon as practical after mixing, but in no case later than one (1) hour after water has been added to the mix. The method and manner of placing shall avoid segregation and displacement of the reinforcement. Troughs, pipes, and chutes shall be used as an aid in placing concrete when necessary. The concrete shall not be dropped from a height of more than 5 feet (1.5 m). Concrete shall be deposited as nearly as practical in its final position to avoid segregation due to rehandling or flowing. Do not subject concrete to procedures which cause segregation. Concrete shall be placed on clean, damp surfaces, free from running water, or on a properly consolidated soil foundation.

610-3.9 Vibration. Vibration shall follow the guidelines in American Concrete Institute (ACI) Committee 309R, Guide for Consolidation of Concrete.

610-3.10 Joints. Joints shall be constructed as indicated on the plans.

610-3.11 Finishing. All exposed concrete surfaces shall be true, smooth, and free from open or rough areas, depressions, or projections. All concrete horizontal plane surfaces shall be brought flush to the proper elevation with the finished top surface struck-off with a straightedge and floated.

610-3.12 Curing and protection. All concrete shall be properly cured in accordance with the recommendations in American Concrete Institute (ACI) 308R, Guide to External Curing of Concrete. The concrete shall be protected from damage until project acceptance.

610-3.13 Cold weather placing. When concrete is placed at temperatures below 40°F (4°C), follow the cold weather concreting recommendations found in ACI 306R, Cold Weather Concreting.

610-3.14 Hot weather placing. When concrete is placed in hot weather greater than 85ºF (30 ºC), follow the hot weather concreting recommendations found in ACI 305R, Hot Weather Concreting.

QUALITY ASSURANCE (QA)

610-4.1 Quality Assurance sampling and testing. Concrete for each day's placement will be accepted on the basis of the compressive strength specified in paragraph 610-3.2. The RPR will sample the concrete in accordance with ASTM C172; test the slump in accordance with ASTM C143; make and cure compressive strength specimens in accordance with ASTM C31; and test in accordance with ASTM C39. The QA testing agency will meet the requirements of ASTM C1077.

The Contractor shall provide adequate facilities for the initial curing of cylinders.

610-4.2 Defective work. Any defective work that cannot be satisfactorily repaired as determined by the RPR, shall be removed and replaced at the Contractor's expense. Defective work includes, but is not limited to, uneven dimensions, honeycombing and other voids on the surface or edges of the concrete.

METHOD OF MEASUREMENT

610-5.1 Concrete shall be considered incidental and no separate measurement shall be made of concrete complete in place and accepted.

BASIS OF PAYMENT

610-6.1 Concrete shall be considered incidental and no separate payment shall be made.

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 A1064	Standard Specification for Carbon-Steel Wire and Welded Wire Reinforcement, Plain and Deformed, for Concrete
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 C114	Standard Test Methods for Chemical Analysis of Hydraulic Cement
ASTM C136	Standard Test Method for Sieve Analysis of Fine and Coarse 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 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 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 C618	Standard Specification for Coal Fly Ash and Raw or Calcined Natural Pozzolan for Use in 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 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 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 C1602	Standard Specification for Mixing Water Used in the Production of Hydraulic Cement Concrete
ASTM D1751	Standard Specification for Preformed Expansion Joint Filler for Concrete Paving and Structural Construction (Nonextruding and Resilient Asphalt Types)
ASTM D1752	Standard Specification for Preformed Sponge Rubber Cork and Recycled PVC Expansion Joint Fillers for Concrete Paving and Structural Construction

American Concrete Institute (ACI)

ACI 305R	Hot Weather Concreting
ACI 306R	Cold Weather Concreting
ACI 308R	Guide to External Curing of Concrete
ACI 309R	Guide for Consolidation of Concrete

END OF ITEM P-610

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 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) prior to the initial application of markings. The reports can be used for material acceptance or the RPR may perform verification testing. The reports shall not be interpreted as a basis for payment. The Contractor shall notify the RPR 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.

620-2.2 Marking materials.

Table 1. Marking Materials

Paint[1]					Glass Beads[2]	
Use	**Type**	**Color**	**Fed Std. 595 Number**	**Application Rate Maximum**	**Type**	**Application Rate Minimum**
Temporary	Waterborne Type I or II	Yellow	33538 or 33655	230 ft^2/gal	None	None
Permanent	Waterborne Type I or II	Yellow	33538 or 33655	115 ft^2/gal	Type I, Gradation A*	7 lb/gal
Permanent	Waterborne Type I or II	Black	37038	115 ft^2/gal	None	None

[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. Paint shall meet the requirements of Federal Specification TT-P-1952F, Type I or Type II. 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.

b. Reflective media. Glass beads for white and yellow paint shall meet the requirements for Federal Specification TT-B-1325D 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.

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. 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.

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. 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 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 minimizing 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.

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. 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 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. The locations of markings to receive silica sand shall be shown on the plans.

620-3.5 Application. A period of at least 30 days (or as determined by the Owner's Representative) 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.

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. 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.

620-3.8 Retro-reflectance Testing. Not Used

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. The Contractor shall dispose of these wastes in strict compliance with all applicable state, local, and federal environmental statutes and regulations.

METHOD OF MEASUREMENT

620-4.1 The quantity of markings shall be paid for shall be measured by the number of square feet of painting.

620-4.2 Reflective media and surface preparation will not be measured for separate 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 in accordance with these specifications.

620-5.2 Payment for markings shall be made at the contract price for the number of square feet of painting.

Payment will be made under:

Item P-620-5.1	Initial Coat: Yellow Paint, Non-Reflectorized, Application Rate = 230 sf/gal – per square foot
Item P-620-5.2	Final Coat: Yellow Paint, Reflectorized, Application Rate = 115 sf/gal – per square foot
Item P-620-5.3	Final Coat: Black Paint, Non-Reflectorized, Application Rate = 115 sf/gal – 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

ITEM D-751

MANHOLES, CATCH BASINS, INLETS AND INSPECTION HOLES

DESCRIPTION

751-1.1 This item shall consist of construction of manholes, catch basins, inlets, and inspection holes, in accordance with these specifications, at the specified locations and conforming to the lines, grades, and dimensions shown on the plans or required by the RPR.

MATERIALS

751-2.1 Brick. The brick shall conform to the requirements of ASTM C32, Grade MS.

751-2.2 Mortar. Mortar shall consist of one part Portland cement and two parts sand. The cement shall conform to the requirements of ASTM C150, Type I. The sand shall conform to the requirements of ASTM C144.

751-2.3 Concrete. Plain and reinforced concrete used in structures, connections of pipes with structures, and the support of structures or frames shall conform to the requirements of Item P-610.

751-2.4 Precast concrete pipe manhole rings. Precast concrete pipe manhole rings shall conform to the requirements of ASTM C478. Unless otherwise specified, the risers and offset cone sections shall have an inside diameter of not less than 36 inches (90 cm) nor more than 48 inches (120 cm). There shall be a gasket between individual sections and sections cemented together with mortar on the inside of the manhole. Gaskets shall conform to the requirements of ASTM C443.

751-2.5 Corrugated metal. Corrugated metal shall conform to the requirements of American Association of State Highway and Transportation Officials (AASHTO) M36.

751-2.6 Frames, covers, and grates. The castings shall conform to one of the following requirements:

a. ASTM A48, Class 35B: Gray iron castings

b. ASTM A47: Malleable iron castings

c. ASTM A27: Steel castings

d. ASTM A283, Grade D: Structural steel for grates and frames

e. ASTM A536, Grade 65-45-12: Ductile iron castings

f. ASTM A897: Austempered ductile iron castings

All castings or structural steel units shall conform to the dimensions shown on the plans and shall be designed to support the loadings, aircraft gear configuration and/or direct loading, specified.

Each frame and cover or grate unit shall be provided with fastening members to prevent it from being dislodged by traffic but which will allow easy removal for access to the structure.

All castings shall be thoroughly cleaned. After fabrication, structural steel units shall be galvanized to meet the requirements of ASTM A123.

751-2.7 Steps. The steps or ladder bars shall be gray or malleable cast iron or galvanized steel. The steps shall be the size, length, and shape shown on the plans and those steps that are not galvanized shall be given a coat of asphalt paint, when directed.

751-2.8 Precast inlet structures. Manufactured in accordance with and conforming to ASTM C913.

CONSTRUCTION METHODS

751-3.1 Unclassified excavation.

a. The Contractor shall excavate for structures and footings to the lines and grades or elevations, shown on the plans, or as staked by the RPR. The excavation shall be of sufficient size to permit the placing of the full width and length of the structure or structure footings shown. The elevations of the bottoms of footings, as shown on the plans, shall be considered as approximately only; and the RPR may direct, in writing, changes in dimensions or elevations of footings necessary for a satisfactory foundation.

b. Boulders, logs, or any other objectionable material encountered in excavation shall be removed. All rock or other hard foundation material shall be cleaned of all loose material and cut to a firm surface either level, stepped, or serrated, as directed by the RPR. All seams or crevices shall be cleaned out and grouted. All loose and disintegrated rock and thin strata shall be removed. Where concrete will rest on a surface other than rock, the bottom of the excavation shall not be disturbed and excavation to final grade shall not be made until immediately before the concrete or reinforcing is placed.

c. The Contractor shall do all bracing, sheathing, or shoring necessary to implement and protect the excavation and the structure as required for safety or conformance to governing laws. The cost of bracing, sheathing, or shoring shall be included in the unit price bid for the structure.

d. All bracing, sheathing, or shoring involved in the construction of this item shall be removed by the Contractor after the completion of the structure. Removal shall not disturb or damage finished masonry. The cost of removal shall be included in the unit price bid for the structure.

e. After excavation is completed for each structure, the Contractor shall notify the RPR. No concrete or reinforcing steel shall be placed until the RPR has approved the depth of the excavation and the character of the foundation material.

751-3.2 Brick structures.

a. Foundations. A prepared foundation shall be placed for all brick structures after the foundation excavation is completed and accepted. Unless otherwise specified, the base shall consist of reinforced concrete mixed, prepared, and placed in accordance with the requirements of Item P-610.

b. Laying brick. All brick shall be clean and thoroughly wet before laying so that they will not absorb any appreciable amount of additional water at the time they are laid. All brick shall be laid in freshly made mortar. Mortar not used within 45 minutes after water has been added shall be discarded. Retempering of mortar shall not be permitted. An ample layer of mortar shall be spread on the beds and a shallow furrow shall be made in it that can be readily closed by the laying of the brick. All bed and head joints shall be filled solid with mortar. End joints of stretchers and side or cross joints of headers shall be fully buttered with mortar and a shoved joint made to squeeze out mortar at the top of the joint. Any bricks that may be loosened after the mortar has taken its set, shall be removed, cleaned, and re-laid with fresh mortar. No broken or chipped brick shall be used in the face, and no spalls or bats shall be used except where necessary to shape around irregular openings or edges; in which case, full bricks shall be placed at ends or corners where possible, and the bats shall be used in the interior of the course. In making closures, no piece of brick shorter than the width of a whole brick shall be used; and wherever practicable, whole brick shall be used and laid as headers.

c. Joints. All joints shall be filled with mortar at every course Exterior faces shall be laid up in advance of backing. Exterior faces shall be plastered or parged with a coat of mortar not less than 3/8 inch (9 mm) thick before the backing is laid up. Prior to parging, all joints on the back of face courses shall be cut flush. Unless otherwise noted, joints shall be not less than 1/4 inch (6 mm) nor more than 1/2 inch (12 mm) wide and the selected joint width shall be maintained uniform throughout the work.

d. Pointing. Face joints shall be neatly struck, using the weather-struck joint. All joints shall be finished properly as the laying of the brick progresses. When nails or line pins are used, the holes shall be immediately plugged with mortar and pointed when the nail or pin is removed.

e. Cleaning. Upon completion of the work all exterior surfaces shall be thoroughly cleaned by scrubbing and washing with water. If necessary to produce satisfactory results, cleaning shall be done with a 5% solution of muriatic acid which shall then be rinsed off with liberal quantities of water.

f. Curing and cold weather protection. The brick masonry shall be protected and kept moist for at least 48 hours after laying the brick. Brick masonry work or pointing shall not be done when there is frost on the brick or when the air temperature is below 50°F (10°C) unless the Contractor has, on the project ready to use, suitable covering and artificial heating devices necessary to keep the atmosphere surrounding the masonry at a temperature of not less than 60°F (16°C) for the duration of the curing period.

751-3.3 Concrete structures. Concrete structures which are to be cast-in-place within the project boundaries shall be built on prepared foundations, conforming to the dimensions and shape indicated on the plans. The construction shall conform to the requirements specified in Item P-610. Any reinforcement required shall be placed as indicated on the plans and shall be approved by the RPR before the concrete is placed.

All invert channels shall be constructed and shaped accurately to be smooth, uniform, and cause minimum resistance to flowing water. The interior bottom shall be sloped to the outlet.

751-3.4 Precast concrete structures. Precast concrete structures shall be furnished by a plant meeting National Precast Concrete Association Plant Certification Program or another RPR approved third party certification program.

Precast concrete structures shall conform to ASTM C478. Precast concrete structures shall be constructed on prepared or previously placed slab foundations conforming to the dimensions and locations shown on the plans. All precast concrete sections necessary to build a completed structure shall be furnished. The different sections shall fit together readily. Joints between precast concrete risers and tops shall be full-bedded in cement mortar and shall: (1) be smoothed to a uniform surface on both interior and exterior of the structure or (2) utilize a rubber gasket per ASTM C443. The top of the upper precast concrete section shall be suitably formed and dimensioned to receive the metal frame and cover or grate, or other cap, as required. Provision shall be made for any connections for lateral pipe, including drops and leads that may be installed in the structure. The flow lines shall be smooth, uniform, and cause minimum resistance to flow. The metal or metal encapsulated steps that are embedded or built into the side walls shall be aligned and placed in accordance to ASTM C478. When a metal ladder replaces the steps, it shall be securely fastened into position.

751-3.5 Corrugated metal structures. Corrugated metal structures shall be prefabricated. All standard or special fittings shall be furnished to provide pipe connections or branches with the correct dimensions and of sufficient length to accommodate connecting bands. The fittings shall be welded in place to the metal structures. The top of the metal structure shall be designed so that either a concrete slab or metal collar may be attached to allow the fastening of a standard metal frame and grate or cover. Steps or ladders shall be furnished as shown on the plans. Corrugated metal structures shall be constructed on prepared foundations, conforming to the dimensions and locations as shown on the plans. When indicated, the structures shall be placed on a reinforced concrete base.

751-3.6 Inlet and outlet pipes. Inlet and outlet pipes shall extend through the walls of the structures a sufficient distance beyond the outside surface to allow for connections. They shall be cut off flush with the wall on the inside surface of the structure, unless otherwise directed. For concrete or brick structures, mortar shall be placed around these pipes to form a tight, neat connection.

751-3.7 Placement and treatment of castings, frames, and fittings. All castings, frames, and fittings shall be placed in the positions indicated on the plans or as directed by the RPR, and shall be set true to line and elevation. If frames or fittings are to be set in concrete or cement mortar, all anchors or bolts shall be in place before the concrete or mortar is placed. The unit shall not be disturbed until the mortar or concrete has set.

When frames or fittings are placed on previously constructed masonry, the bearing surface of the masonry shall be brought true to line and grade and shall present an even bearing surface so the entire face or back of the unit will come in contact with the masonry. The unit shall be set in mortar beds and anchored to the masonry as indicated on the plans or as directed by the RPR. All units shall set firm and secure.

After the frames or fittings have been set in final position, the concrete or mortar shall be allowed to harden for seven (7) days before the grates or covers are placed and fastened down.

751-3.8 Installation of steps. The steps shall be installed as indicated on the plans or as directed by the RPR. When the steps are to be set in concrete, they shall be placed and secured in position before the concrete is placed. When the steps are installed in brick masonry, they shall be placed as the masonry is being built. The steps shall not be disturbed or used until the concrete or mortar has hardened for at least seven (7) days. After seven (7) days, the steps shall be cleaned and painted, unless they have been galvanized.

When steps are required with precast concrete structures they shall meet the requirements of ASTM C478. The steps shall be cast into the side of the sections at the time the sections are manufactured or set in place after the structure is erected by drilling holes in the concrete and cementing the steps in place.

When steps are required with corrugated metal structures, they shall be welded into aligned position at a vertical spacing of 12 inches (300 mm).

Instead of steps, prefabricated ladders may be installed. For brick or concrete structures, the ladder shall be held in place by grouting the supports in drilled holes. For metal structures, the ladder shall be secured by welding the top support to the structure and grouting the bottom support into drilled holes in the foundation or as directed by the RPR.

751-3.9 Backfilling.

a. After a structure has been completed, the area around it shall be backfilled with approved material, in horizontal layers not to exceed 8 inches (200 mm) in loose depth, and compacted to the density required in Item P-152. Each layer shall be deposited evenly around the structure to approximately the same elevation. The top of the fill shall meet the elevation shown on the plans or as directed by the RPR.

b. Backfill shall not be placed against any structure until approved by the RPR. For concrete structures, approval shall not be given until the concrete has been in place seven (7) days, or until tests establish that the concrete has attained sufficient strength to withstand any pressure created by the backfill and placing methods.

c. Backfill shall not be measured for direct payment. Performance of this work shall be considered an obligation of the Contractor covered under the contract unit price for the structure involved.

751-3.10 Cleaning and restoration of site. After the backfill is completed, the Contractor shall dispose of all surplus material, dirt, and rubbish from the site. Surplus dirt may be deposited in embankments, shoulders, or as approved by the RPR. The Contractor shall restore all disturbed areas to their original condition. The Contractor shall remove all tools and equipment, leaving the entire site free, clear, and in good condition.

METHOD OF MEASUREMENT

751-4.1 Manholes, catch basins, inlets, and inspection holes shall be measured by the unit.

BASIS OF PAYMENT

751-5.1 The accepted quantities of manholes, catch basins, inlets, and inspection holes will be paid for at the contract unit price per each in place when completed. This price shall be full compensation for furnishing all materials and for all preparation, excavation, backfilling and placing of the materials; furnishing and installation of such specials and connections to pipes and other structures as may be required to complete the item as shown on the plans; and for all labor equipment, tools and incidentals necessary to complete the structure.

Payment will be made under:

Item D-751-5.1	Inlet - per each
Item D-751-5.2	Convert Inlet to At-Grade Junction Box - per each
Item D-751-5.3	Concrete Collar - per each

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 A27	Standard Specification for Steel Castings, Carbon, for General Application
ASTM A47	Standard Specification for Ferritic Malleable Iron Castings
ASTM A48	Standard Specification for Gray Iron Castings
ASTM A123	Standard Specification for Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products
ASTM A283	Standard Specification for Low and Intermediate Tensile Strength Carbon Steel Plates
ASTM A536	Standard Specification for Ductile Iron Castings
ASTM A897	Standard Specification for Austempered Ductile Iron Castings
ASTM C32	Standard Specification for Sewer and Manhole Brick (Made from Clay or Shale)
ASTM C144	Standard Specification for Aggregate for Masonry Mortar
ASTM C150	Standard Specification for Portland Cement
ASTM C443	Standard Specification for Joints for Concrete Pipe and Manholes, Using Rubber Gaskets.
ASTM C478	Standard Specification for Precast Reinforced Concrete Manhole Sections
ASTM C913	Standard Specification for Precast Concrete Water and Wastewater Structures.

American Association of State Highway and Transportation Officials (AASHTO)

AASHTO M36	Standard Specification for Corrugated Steel Pipe, Metallic-Coated, for Sewers and Drains

END OF ITEM D-751

ITEM T-904

SODDING

DESCRIPTION

904-1.1 This item shall consist of furnishing, hauling, and placing approved live sod on prepared areas in accordance with this specification at the locations shown on the plans or as directed by the RPR.

MATERIALS

904-2.1 Sod. Sod furnished by the Contractor shall have a good cover of living or growing grass. This shall be interpreted to include grass that is seasonally dormant during the cold or dry seasons and capable of renewing growth after the dormant period. All sod shall be obtained from areas where the soil is reasonably fertile and contains a high percentage of loamy topsoil. Sod shall be cut or stripped from living, thickly matted turf relatively free of weeds or other undesirable foreign plants, large stones, roots, or other materials that might be detrimental to the development of the sod or to future maintenance. At least 70% of the plants in the cut sod shall be composed of the species stated in the special provisions, and any vegetation more than 6 inches (150 mm) in height shall be mowed to a height of 3 inches (75 mm) or less before sod is lifted. Sod, including the soil containing the roots and the plant growth showing above, shall be cut uniformly to a thickness not less than that stated in the special provisions.

Provide new Bermuda sod consisting of live, dense, well-rooted growth of permanent grasses, free from Johnson grass, nut-grass, and other undesirable grasses or weeds, that is well-suited for the intended purpose and for the soil in which it is to be planted. Bahia, millet, or other bird-attractants shall not be used.

904-2.2 Lime. Not required.

904-2.3 Fertilizer. Not required.

904-2.4 Water. The water shall be sufficiently free from oil, acid, alkali, salt, or other harmful materials that would inhibit the growth of grass.

904-2.5 Soil for repairs. The soil for fill and topsoiling of areas to be repaired shall be at least of equal quality to that which exists in areas adjacent to the area to be repaired. The soil shall be relatively free from large stones, roots, stumps, or other materials that will interfere with subsequent sowing of seed, compacting, and establishing turf, and shall be approved by the RPR before being placed.

CONSTRUCTION METHODS

904-3.1 General. Areas to be solid, strip, or spot sodded shall be shown on the plans. Areas requiring special ground surface preparation such as tilling and those areas in a satisfactory condition that are to remain undisturbed shall also be shown on the plans.

Suitable equipment necessary for proper preparation of the ground surface and for the handling and placing of all required materials shall be on hand, in good condition, and shall be approved by the RPR before the various operations are started. The Contractor shall demonstrate to the RPR before starting the various operations that the application of required materials will be made at the specified rates.

904-3.2 Preparing the ground surface. After grading of areas has been completed and before applying fertilizer and limestone, areas to be sodded shall be raked or otherwise cleared of stones larger than 2 inches (50 mm) in any diameter, sticks, stumps, and other debris which might interfere with sodding,

growth of grasses, or subsequent maintenance of grass-covered areas. If any damage by erosion or other causes occurs after grading of areas and before beginning the application of fertilizer and ground limestone, the Contractor shall repair such damage. This may include filling gullies, smoothing irregularities, and repairing other incidental damage.

904-3.3 Applying fertilizer and ground limestone. Following ground surface preparation, fertilizer shall be uniformly spread at a rate which will provide not less than the minimum quantity of each fertilizer ingredient, as stated in the special provisions. If use of ground limestone is required, it shall then be spread at a rate that will provide not less than the minimum quantity stated in the special provisions. These materials shall be incorporated into the soil to a depth of not less than 2 inches (50 mm) by discing, raking, or other suitable methods. Any stones larger than 2 inches (50 mm) in any diameter, large clods, roots, and other litter brought to the surface by this operation shall be removed.

904-3.4 Obtaining and delivering sod. After inspection and approval of the source of sod by the RPR, the sod shall be cut with approved sod cutters to such a thickness that after it has been transported and placed on the prepared bed, but before it has been compacted, it shall have a uniform thickness of not less than 2 inches (50 mm). Sod sections or strips shall be cut in uniform widths, not less than 10 inches (250 mm), and in lengths of not less than 18 inches (0.5 m), but of such length as may be readily lifted without breaking, tearing, or loss of soil. Where strips are required, the sod must be rolled without damage with the grass folded inside. The Contractor may be required to mow high grass before cutting sod.

The sod shall be transplanted within 24 hours from the time it is stripped, unless circumstances beyond the Contractor's control make storing necessary. In such cases, sod shall be stacked, kept moist, and protected from exposure to the air and sun and shall be kept from freezing. Sod shall be cut and moved only when the soil moisture conditions are such that favorable results can be expected. Where the soil is too dry, approval to cut sod may be granted only after it has been watered sufficiently to moisten the soil to the depth the sod is to be cut.

904-3.5 Laying sod. Sodding shall be performed only during the seasons when satisfactory results can be expected. Frozen sod shall not be used and sod shall not be placed upon frozen soil. Sod may be transplanted during periods of drought with the approval of the RPR, provided the sod bed is watered to moisten the soil to a depth of at least 4 inches (100 mm) immediately prior to laying the sod.

The sod shall be moist and shall be placed on a moist earth bed. Pitch forks shall not be used to handle sod, and dumping from vehicles shall not be permitted. The sod shall be carefully placed by hand, edge to edge and with staggered joints, in rows at right angles to the slopes, commencing at the base of the area to be sodded and working upward. The sod shall immediately be pressed firmly into contact with the sod bed by tamping or rolling with approved equipment to provide a true and even surface, and ensure knitting without displacement of the sod or deformation of the surfaces of sodded areas. Where the sod may be displaced during sodding operations, the workmen, when replacing it, shall work from ladders or treaded planks to prevent further displacement. Screened soil of good quality shall be used to fill all cracks between sods. The quantity of the fill soil shall not cause smothering of the grass. Where the grades are such that the flow of water will be from paved surfaces across sodded areas, the surface of the soil in the sod after compaction shall be set approximately one inch (25 mm) below the pavement edge. Where the flow will be over the sodded areas and onto the paved surfaces around manholes and inlets, the surface of the soil in the sod after compaction shall be placed flush with pavement edges.

On slopes steeper than one (1) vertical to 2-1/2 horizontal and in v-shaped or flat-bottom ditches or gutters, the sod shall be pegged with wooden pegs not less than 12 inches (300 mm) in length and have a cross-sectional area of not less than 3/4 sq inch (18 sq mm). The pegs shall be driven flush with the surface of the sod.

904-3.6 Watering. Adequate water and watering equipment must be on hand before sodding begins, and sod shall be kept moist until it has become established and its continued growth assured. In all cases,

watering shall be done in a manner that will avoid erosion from the application of excessive quantities and will avoid damage to the finished surface.

904-3.7 Establishing turf. The Contractor shall provide general care for the sodded areas as soon as the sod has been laid and shall continue until final inspection and acceptance of the work. All sodded areas shall be protected against traffic or other use by warning signs or barricades approved by the RPR. The Contractor shall mow the sodded areas with approved mowing equipment, depending upon climatic and growth conditions and the needs for mowing specific areas. Weeds or other undesirable vegetation shall be mowed and the clippings raked and removed from the area.

904-3.8 Repairing. When the surface has become gullied or otherwise damaged during the period covered by this contract, the affected areas shall be repaired to re-establish the grade and the condition of the soil, as directed by the RPR, and shall then be sodded as specified in paragraph 904-3.5.

METHOD OF MEASUREMENT

904-4.1 This item shall be measured on the basis of the area in square yards of the surface covered with sod and accepted.

BASIS OF PAYMENT

904-5.1 This item will be paid for on the basis of the contract unit price per square yard for sodding, which price shall be full compensation for all labor, equipment, material, staking, and incidentals necessary to satisfactorily complete the items as specified.

Payment will be made under:

Item T-904-5.1	Sodding - 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 C602	Standard Specification for Agricultural Liming Materials

Advisory Circulars (AC)

AC 150/5200-33	Hazardous Wildlife Attractants on or Near Airports

FAA/United States Department of Agriculture

Wildlife Hazard Management at Airports, A Manual for Airport Personnel

END OF ITEM T-904

ITEM T-905

TOPSOIL

DESCRIPTION

905-1.1 This item shall consist of preparing the ground surface for topsoil application, removing topsoil from designated stockpiles or areas to be stripped on the site or from approved sources off the site, and placing and spreading the topsoil on prepared areas in accordance with this specification at the locations shown on the plans or as directed by the RPR.

MATERIALS

905-2.1 Topsoil. Topsoil shall be the surface layer of soil with no admixture of refuse or any material toxic to plant growth, and it shall be reasonably free from subsoil and stumps, roots, brush, stones (2 inches (50 mm) or more in diameter), and clay lumps or similar objects. Brush and other vegetation that will not be incorporated with the soil during handling operations shall be cut and removed. Ordinary sod and herbaceous growth such as grass and weeds are not to be removed, but shall be thoroughly broken up and intermixed with the soil during handling operations. Heavy sod or other cover, which cannot be incorporated into the topsoil by discing or other means, shall be removed. The topsoil or soil mixture, unless otherwise specified or approved, shall have a pH range of approximately 5.5 pH to 7.6 pH, when tested in accordance with the methods of testing of the Association of Official Agricultural Chemists in effect on the date of invitation of bids. The organic content shall be not less than 3% nor more than 20% as determined by the wet-combustion method (chromic acid reduction). There shall be not less than 20% nor more than 80% of the material passing the 200 mesh (75 μm) sieve as determined by the wash test in accordance with ASTM C117.

Natural topsoil may be amended by the Contractor with approved materials and methods to meet the above specifications.

905-2.2 Inspection and tests. Within 10 days following acceptance of the bid, the RPR shall be notified of the source of topsoil to be furnished by the Contractor. The topsoil shall be inspected to determine if the selected soil meets the requirements specified and to determine the depth to which stripping will be permitted. At this time, the Contractor may be required to take representative soil samples from several locations within the area under consideration and to the proposed stripping depths, for testing purposes as specified in paragraph 905-2.1.

CONSTRUCTION METHODS

905-3.1 General. Areas to be topsoiled shall be shown on the plans. If topsoil is available on the site, the location of the stockpiles or areas to be stripped of topsoil and the stripping depths shall be shown on the plans.

Suitable equipment necessary for proper preparation and treatment of the ground surface, stripping of topsoil, and for the handling and placing of all required materials shall be on hand, in good condition, and approved by the RPR before the various operations are started.

905-3.2 Preparing the ground surface. Immediately prior to dumping and spreading the topsoil on any area, the surface shall be loosened by discs or spike-tooth harrows, or by other means approved by the RPR, to a minimum depth of 2 inches (50 mm) to facilitate bonding of the topsoil to the covered subgrade soil. The surface of the area to be topsoiled shall be cleared of all stones larger than 2 inches (50 mm) in

any diameter and all litter or other material which may be detrimental to proper bonding, the rise of capillary moisture, or the proper growth of the desired planting. Limited areas, as shown on the plans, which are too compact to respond to these operations shall receive special scarification.

Grades on the area to be topsoiled, which have been established by others as shown on the plans, shall be maintained in a true and even condition. Where grades have not been established, the areas shall be smooth-graded and the surface left at the prescribed grades in an even and compacted condition to prevent the formation of low places or pockets where water will stand.

905-3.3 Obtaining topsoil. Prior to the stripping of topsoil from designated areas, any vegetation, briars, stumps and large roots, rubbish or stones found on such areas, which may interfere with subsequent operations, shall be removed using methods approved by the RPR. Heavy sod or other cover, which cannot be incorporated into the topsoil by discing or other means shall be removed.

When suitable topsoil is available on the site, the Contractor shall remove this material from the designated areas and to the depth as directed by the RPR. The topsoil shall be spread on areas already tilled and smooth-graded, or stockpiled in areas approved by the RPR. Any topsoil stockpiled by the Contractor shall be rehandled and placed without additional compensation. Any topsoil that has been stockpiled on the site by others, and is required for topsoil purposes, shall be removed and placed by the Contractor. The sites of all stockpiles and areas adjacent thereto which have been disturbed by the Contractor shall be graded if required and put into a condition acceptable for seeding.

When suitable topsoil is secured off the airport site, the Contractor shall locate and obtain the supply, subject to the approval of the RPR. The Contractor shall notify the RPR sufficiently in advance of operations in order that necessary measurements and tests can be made. The Contractor shall remove the topsoil from approved areas and to the depth as directed. The topsoil shall be hauled to the site of the work and placed for spreading, or spread as required. Any topsoil hauled to the site of the work and stockpiled shall be rehandled and placed without additional compensation.

905-3.4 Placing topsoil. The topsoil shall be evenly spread on the prepared areas to a uniform depth of 2 inches (50 mm) after compaction, unless otherwise shown on the plans or stated in the special provisions. Spreading shall not be done when the ground or topsoil is frozen, excessively wet, or otherwise in a condition detrimental to the work. Spreading shall be carried on so that turfing operations can proceed with a minimum of soil preparation or tilling.

After spreading, any large, stiff clods and hard lumps shall be broken with a pulverizer or by other effective means, and all stones or rocks (2 inches (50 mm) or more in diameter), roots, litter, or any foreign matter shall be raked up and disposed of by the Contractor. after spreading is completed, the topsoil shall be satisfactorily compacted by rolling with a cultipacker or by other means approved by the RPR. The compacted topsoil surface shall conform to the required lines, grades, and cross-sections. Any topsoil or other dirt falling upon pavements as a result of hauling or handling of topsoil shall be promptly removed.

METHOD OF MEASUREMENT

905-4.1 Topsoil obtained on the site or off the site shall be measured by the number of cubic yards of topsoil measured in its original position and stripped or excavated. Topsoil shall be measured by volume in cubic yards computed by the method of end areas.

BASIS OF PAYMENT

905-5.1 Payment will be made at the contract unit price per cubic yard for topsoil (obtained on site or off site). This price shall be full compensation for furnishing all materials and for all preparation, placing,

and spreading of the materials, and for all labor, equipment, tools, and incidentals necessary to complete the item.

Payment will be made under:

Item T-905-5.1	Topsoil - 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 C117	Materials Finer than 75 μm (No. 200) Sieve in Mineral Aggregates by Washing

Advisory Circulars (AC)

AC 150/5200-33	Hazardous Wildlife Attractants on or Near Airports

FAA/United States Department of Agriculture

Wildlife Hazard Management at Airports, A Manual for Airport Personnel

END OF ITEM T-905

ITEM TS-128

VHF TRANSEIVERS

DESCRIPTION

TS-128-1.1 This work consists of the need for the Contractor to provide each superintendent a hand-held radio during the construction process. Contractor will maintain control of the hand-held radio upon completion of the project.

PRODUCTS

TS-128-2.1 PORTABLE VHF TRANSCEIVERS. Portable Battery Powered VHF Transceivers (Unicom Radios) shall be provided for communications between the Contractor, Airport Personnel, and Aircraft. Portable VHF Transceivers shall be ICOM-IC-A14 or approved equal and shall meet the following requirements:

Frequency Coverage	118.000-136.975 MHz
Channel Spacing	25 kHz
No. of Memory Channels	200 (minimum)
Power Supply	7.4V DC (battery)
Output Power	5.0 W (minimum)
Squelch Sensitivity	AM Less Than 0dB FM Less Than -5dB COM -6dB
Approximate Dimensions / Weight	2”W x 5”H x 7”D / 15 oz.

The following accessories shall accompany each Portable VHF Transceiver: 1) BP-232N Battery Pack 7.4V/2000mAh Li-Ion Battery Pack for approximately 18 hours of operating time (one battery pack per radio), 2) BC-179 Battery Charger with BC-174 AC Adapter (one battery charger per radio), and 3) CP-22 Power Supply Cable (i.e., cigarette lighter power supply) (one power supply cable per radio).

GENERAL

TS-128-3.1 The use of the VHF transceivers including discussions of when use is required as well as protocol during transmissions will be discussed during the pre-construction meeting.

METHOD OF MEASUREMENT

TS-128-4.1 No separate measurement will be made for this item.

BASIS OF PAYMENT

TS-128-5.1 No Separate payment will be made for this item.

END OF ITEM TS-128

ITEM TS-129
CONSTRUCTION SAFETY / MAINTENANCE OF TRAFFIC
DESCRIPTION

TS-129-1.1 This work shall consist of implementing the construction safety plan, all temporary constructions measures and items, maintaining ground vehicle traffic during construction, preparing and implementing a traffic control plan for work on or near roadways, preparing, monitoring, and updating a construction progress schedule, preparing and implementing a Safety Plan Compliance Document, flaggers and gate attendants when required, and furnishing, placing, maintaining, and removing all safety and traffic control devices and pavement marking materials in accordance with the contract documents and as directed by the Owner's Representative, including temporary barricades as required for safety of aircraft and contractor's work forces.

TS-129-1.2 REFERENCE SPECIFICATIONS. This item shall conform to applicable portions of the following:

A. FAA Advisory Circular 150/5370-2G
B. Technical Supplement TS-130 Construction Safety and Phasing Plan (CSPP) and the Safety and Phasing Plans in the construction documents.
C. FAA AC 150/5200 18C, Airport Safety Self-Inspection
D. FAA AC 150/5210-5D, Painting, Marking and Lighting of Vehicles Used on an Airport
E. All traffic control items shall conform to the standards described in the latest edition of the Manual of Uniform Traffic Control Devices (MUTCD).

CONTRACTOR SAFETY AND SECURITY OFFICER

TS-129-2.1 CONTRACTOR SAFETY AND SECURITY OFFICER (CSSO). The Contractor shall appoint its on-site Construction Superintendent or other qualified individual(s) as its duly authorized representative to serve as Contractor Safety and Security Officer (CSSO) for the duration of the Contract. The CSSO shall thoroughly understand the safety and security requirements of the Contract, the necessity for them and shall have sufficient authority to implement its provisions without significant deviation. The Contractor shall notify the Engineer in writing of the name of the individual(s) selected for the assignment.

The CSSO shall represent the Contractor on safety and security requirements compliance. The CSSO shall be especially knowledgeable regarding the requirements of FAA AC's 150/5200-18, Airport Self Inspection Guide and 150/5370-2 Operational Safety on Airports During Construction, latest edition.

TS-129-2.2 RESPONSIBILITIES OF THE CONTRACTOR SAFETY AND SECURITY OFFICER. Prior to the desired date for commencement of any work on the project, the CSSO shall accomplish the following:

Develop, submit and implement a Safety Plan Compliance Document (SPCD) to the Owner's Representative describing how the Contractor's SPCD will comply with the requirements of the CSPP and supplying any details that could not be determined before contract award. The SPCD must include a certification statement by the Contractor that indicates it understands the operational safety requirements of the CSPP and it asserts it will not deviate from the approved CSPP and SPCD unless written approval is granted by the airport operator. Any construction practice proposed by the Contractor that does not conform

to the CSPP and SPCD may impact the airport's operational safety and will require a revision to the CSPP and SPCD and re-coordination with the airport operator and the FAA in advance.

The Safety Plan Compliance Document (SPCD) shall 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, but shall address the items outlined in FAA AC 150/5370-2G.

PRODUCTS

TS-129-3.1 ROADWAY TRAFFIC CONTROL & SAFETY DEVICES. Traffic control and safety devices approved for use shall be of the type shown on the Construction Safety Plan Details and MUTCD.

TS-129-3.2 ROADWAY CONSTRUCTION SIGNAGE. The Contractor shall furnish all construction guide signage which shall be in accordance with Section 6 of the MUTCD latest edition.

TS-129-3.3 TYPE I BARRICADES. Installation of Airport Type I Barricades: 8 foot long by 10 inch high, orange and white reflective striping each side, flashing red lights, flags, high impact, UV - resistant polyethylene water ballast multi-barrier, low profile safety barricade. The portable water ballast barricade materials must conform to FAA requirements, and be installed to delineate construction zones on airfield pavements from active Air Operation Areas, in accordance with FAA AC 150/5370-2G.

TS-129-3.4 VEHICLE IDENTIFICATION. All construction equipment and vehicles operating inside the airfield shall be marked/flagged for high daytime visibility and lighted for nighttime operations in accordance with FAA AC 150/5370-2G and 150/5210-5D.

GENERAL

TS-129-4.1 SPCD. The Contractor shall prepare a Safety Plan Compliance Document (SPCD) for this project, and submit to the Engineer for review and acceptance. The Contractor shall install airfield safety devices at the required construction phasing times, and adhere to the Construction Safety and Phasing Plan (CSPP) in the plans and the Contractor's SPCD.

TS-129-4.2 AIRPORT TYPE I BARRICADES.

A. Install at all locations shown on the drawings and where directed by Owner's Representative. Generally, place barricades end to end across pavement. Anchor barricades and markers with sandbags or other methods approved by Engineer.

B. Maintain barricades, and markers, until removal is directed by Owner's Representative. The barricade lights shall be checked daily to insure that flashers are operational. Replace all improperly operating lights as required.

C. Remove barricades and markers as directed by Owner's Representative. Repair any damage to pavement or surrounding area caused by markers or barricades.

TS-129-4.3 TEMPORARY UTILITIES. Contractor shall provide temporary utilities as necessary to fulfill the phasing and construction requirements including but not limited to drainage, water, sanitary sewer, communications, airfield lighting and signage, and power shall be constructed in accordance with the plans and shall be placed in accordance with the phasing plans and phasing notes drawings.

TS-129-4.4 FLAGGERS AND GATE MONITORS. The Contractor shall provide competent employees to perform flagger duties as may be necessary to provide direction men and equipment to within and around the construction site.

The Contractor shall provide competent employees to monitor or guard the construction entrance to the airfield to prevent unauthorized access to the airfield. Gate monitors will only be required when the primary and secondary access gate is in use unless. Otherwise, the airport access gates shall be locked at all times.

METHOD OF MEASUREMENT

TS-129-5.1 The implementation of the safety plan and utilization of safety and traffic control devices will be for the placement and removal of all safety and traffic control devices and providing flagmen or gate monitors as required by this specification.

BASIS OF PAYMENT

TS-129-5.2 Payment for implementation of the safety plans and utilization of safety and traffic control devices shall be considered incidental to Type I Barricades, which price and payment shall be full compensation for placing and removing all material and for all labor, equipment, tools, and incidentals necessary to complete the work in this item including flagmen and gate monitors. Any work required that is not provided for payment in any other section, shall be considered as paid for under this item (i.e., job site security, debris removal, etc.).

Payment will be made under:

Item TS-129-5.1 Implementation of Construction Safety Plan and Maintenance of Traffic - per lump sum

END OF ITEM TS-129

ITEM TS-130
CONSTRUCTION SAFETY AND PHASING PLAN
DESCRIPTION

TS-130-1.1 Construction activities on airports are governed by numerous technical specifications and many other unique requirements established by the federal government. Operational safety on airports during construction (and related aviation safety) is but one of the many topics that has been addressed by the FAA. Also, with recently enacted and very restrictive security requirements in place at airports across the country, the ability to work on a secure airfield is more challenging than ever before.

TS-130-1.2 The Contractor shall download and read the latest FAA advisory circular for safety on airports during construction (FAA Advisory Circular 150/5370-2G) which can be downloaded at www.faa.gov. Within the pages of the circular are outlined specific requirements that a contractor must follow if they plan to work on an active airfield...especially within the secured boundaries of that airport. By reading, understanding, and following the guidance found in this advisory circular and through subsequent meetings at the airport prior to the commencement of work, the restrictions now in place can be satisfactorily addressed and the work performed as planned.

TS-130-1.3 As required by FAA AC 150/5370-2G, the Engineer has prepared a Construction Safety and Phasing Plan (CSPP) which is found in the following pages. The FAA has reviewed and approved the CSPP, and any changes must be resubmitted to FAA. The Contractor shall read and follow the CSPP throughout construction and as directed by the Airport or Owner's Representative.

TS-130-1.4 Reference Technical Supplement TS-129 CONSTRUCTION SAFETY / MAINTENANCE OF TRAFFIC, FAA AC 150/5370-2G, and Plans for additional requirements.

METHOD OF MEASUREMENT & BASIS OF PAYMENT

TS-130-2.1 Unless specifically identified in the proposal form, delivery and installation of all materials necessary to complete the implementation of safety devices and controls, and all labor, equipment, tools, and incidentals necessary to complete the item shall not be measured or paid for separately, but shall be considered incidental to the project and costs for same will be included in other items of work.

TESTING REQUIREMENTS

TS-130-3.1 None**.**

END OF ITEM TS-130

Construction Safety and Phasing Plan

Apron Rehabilitation

General Dewitt Spain Airport

November
2024

Prepared By:

NEEL-SCHAFFER
Solutions you can build upon

Contents

Appendices

Appendix 1: Construction Safety Drawings

Appendix 2: Example Inspection Sheet

Appendix 3: Contractor's Safety Compliance Document

I. Coordination

Stakeholders:

Owner – Memphis Shelby County Airport Authority

Airport – General Dewitt Spain Airport

Airport Manager – Zach Hays

Engineer – Powers Hill Design and Neel-Schaffer, Inc.

Affected Tenants – All

Contractor Progress Meetings:

There will be a preconstruction meeting with the construction Contractor, Engineer, Owner's Representative during Construction, and Owner prior to the start of the project to discuss project safety. Progress meetings will be held weekly or as needed by the Owner's Representative. Prior to the beginning of each phase of the project, the Owner's Representative will conduct a briefing with the Contractor to review airport operational safety requirements.

FAA ADO Coordination:

Coordination with the Federal Aviation Administration's (FAA) Airport District Office (ADO) is critical during construction. The ADO was contacted with a 7460 prior to the start of construction. During construction, the Owner's Representative will coordinate with the ADO when needed. The Contractor will be responsible for contacting the Owner's Representative.

II. Phasing

The general scope of work for the project is to rehabilitate the Terminal Apron. Approximately one-third of the apron work is limited to asphalt milling and overlay with some areas of leveling required. The remaining approximate two-thirds of the apron will be reconstructed using full depth reclamation because the significant grade changes are required (more than one foot in some places) in order to meet FAA apron grading standards. The Base Bid work includes milling, leveling, and overlay of asphalt, full depth reclamation, base work to raise apron grades, asphalt paving, installation of aircraft tie-downs, and installation of pavement markings.

Detailed restrictions including phasing requirements, concurrent phasing limitations, and air operations area closures are specified in the Safety and Phasing Plan Sheets in the Construction Drawings and/or the contract documents. Critical information will be conveyed to the Contractor in the bid documents and during the preconstruction meeting, including requirements for coordination procedures with Airport Operations prior to air operation area closures, FOD warnings, personnel and equipment restrictions in

runway and taxiway safety areas without ATC coordination, and grading requirements within the taxilane safety area (no drop offs over 3 inches deep and no slopes steeper than 5% when the taxilane is active).

A 7460-Notice of Construction Form has been submitted to the FAA for this project and Airport Operations will issue NOTAMs as necessary before and during construction of the project.

Phase Elements

The construction phasing will generally occur as outlined below:

a) PHASE 0 – MOBILIZATION AND PRECONSTRUCTION ACTIVITIES

Phase 0 includes mobilization and performing administrative requirements of the contract in advance of construction operations. The work includes preparation of submittals including materials, asphalt mix design, concrete mix design, Safety Plan Compliance Document (SPCD), Contractor Quality Control Program (CQCP), Construction Schedule, as well as attending the pre-construction conference. No construction operations will commence during this phase. The expected duration of this phase is 30 consecutive Calendar Days. Phase 0 will not require closure of any airfield pavement surfaces.

b) PHASE 1 – TERMINAL RAMP; TAXIWAY A3; NW CONNECTOR TAXIWAY

Phase 1 construction will be completed within 7 consecutive calendar days and will include all work in the Phase 1 area. This work includes abandonment of aircraft tie-downs, milling, spreading millings, and installation of temporary non-reflectorized pavement markings. The work area will be available 24 hours per day 7 days per week. It will require the Terminal Ramp to be closed from Taxiway A3 to the north end of the apron excluding the northeast portion for hangar access. Taxiway A3 and the NW Connector Taxiway will also be closed. Contractor shall provide a 2-day notice prior to any closure.

The phasing of the paving plan in this area requires micromilling for smooth pavement for aircraft to operate on as well as temporary transition ramps from milled to unmilled surfaces subject to maximum slopes. The transition ramps will be constructed following the guidance in FAA AC 150/5370-13A Off-Peak Construction of Airport Pavements Using Hot-Mix Asphalt. The Construction Drawings include notes about the transition ramp requirements. Construction cleanup will be vital to prevent a FOD hazard when opening the area back up to air operations.

c) PHASE 2 – TERMINAL RAMP; NW CONNECTOR TAXIWAY

Phase 2 construction will be completed within 45 consecutive calendar days and will include all work in the Phase 2 area. This work includes full depth reclamation (12” pulverization, removal of some cuttings as required, and compaction to grade), base work to raise apron grades, asphalt paving, installation of aircraft tie-downs, and installation of pavement markings. Transitional mill and overlay will occur at the

connecting taxiways as well. The work area will be available 24 hours per day 7 days per week. It will require the Terminal Ramp to be closed north of Taxiway A3 to the north end of the apron excluding the southeast portion for Terminal building access. The NW Connector Taxiway will be closed as well as a portion of the Hangar Taxiway. Contractor shall provide a 2-day notice prior to any closure.

d) PHASE 3 – TERMINAL RAMP; TAXIWAY A3

Phase 3 construction will be completed within 5 consecutive calendar days. This work includes milling to remove feathered transition joints, asphalt overlay, installation of aircraft tie-downs, and installation of pavement markings in the Phase 3 area. The work area will be available 24 hours per day 7 days per week. It will require the central portion of the Terminal Ramp to be closed as well as Taxiway A3. Contractor shall provide a 2-day notice prior to any closure.

e) PHASE 4 – FINAL PAVEMENT MARKINGS (ALL WORK AREAS)

Phase 4 construction will be completed within 1 day and the work will be placement of final reflectorized yellow pavement markings and non-reflectorized black pavement markings. The work in Phase 4 includes the installation of markings on the Terminal Ramp, Taxiway A3, NW Connector Taxiway, and the Hangar Taxiway. The phase 4 work area will be available 24 hours per day any day of the week. Since the pavement markings dry quickly, a rolling construction zone will be permissible as long as the work area is separated from the active Air Operations Area (AOA) by approved barricades or lighted cones shown in the drawings. The Airport will coordinate with FAA to file the appropriate NOTAMs. Contractor shall provide a 2-day notice prior to any closure.

Table 1 Phasing Summary					
Phase	**Duration (Calendar Days)**	**Work Hours**	**General Work Description**	**Closed Areas**	**Special Conditions/ NOTAMS**
0	30	24 HOURS PER DAY / 7 DAYS PER WEEK	SHOP DRAWINGS, SUBMITTALS, MIX DESIGNS, SPCD, AIRFIELD SAFETY TRAINING, MOBILIZATION, STAGING AREA CONSTRUCTION, ETC.	PORTION OF VEHICLE PARKING LOT FOR STAGING AREA	NONE
1	7	24 HOURS PER DAY / 7 DAYS PER WEEK	MILLING AND TEMPORARY PAVEMENT MARKING	TERM RAMP; TWY A3; NW CON. TWY	TERM RAMP CLSD; TWY A3 CLSD; NW CON. TWY CLSD; NO FUEL ACCESS;
2	45	24 HOURS PER DAY / 7 DAYS PER WEEK	ALL WORK EXCEPT FINAL PAVEMENT MARKINGS	TERM RAMP; NW CON. TWY; PORTION OF HANGAR TWY	TERM RAMP CLSD; NW CON. TWY CLSD; HANGAR TWY FROM TERM RAMP CLSD; TERM RAMP AND FUEL ACCESS LIMITED TO AIRCRAFT 49 FT WINGSPAN OR LESS;
3	5	24 HOURS PER DAY / 7 DAYS PER WEEK	ALL WORK EXCEPT FINAL PAVEMENT MARKINGS	CENTRAL PORTION TERM RAMP; TWY A3	CENTRAL PORTION TERM RAMP CLSD; TWY A3 CLSD; NO FUEL ACCESS;
4	1	24 HOURS PER DAY / 1 DAY	FINAL PAVEMENT MARKINGS	TERM RAMP; TWY A3; NW CON. TWY; PORTION OF HANGAR TWY	TERM RAMP CLSD; TWY A3 CLSD; NW CON. TWY CLSD; HANGAR TWY FROM TERM RAMP CLSD; NO FUEL ACCESS; ROLLING PAVEMENT MARKING OPERATIONS

Construction Safety Drawings

Construction Safety drawings are included in Appendix 1 of this document and include sheet G0.3 Safety & Phasing Notes, G0.4 Safety & Phasing Details, C1.00 - C1.03 Phasing Plans, and C3.00 Overall Civil Site Plan.

III. Areas and Operations Affected by Construction

As described in the previous section, Phase 0 through 4 will affect operations at General Dewitt Spain Airport. The phasing has been sequenced to minimize operational impacts as much as practical to the airport.

Identification of Affected Areas

During Phases 0 through 4 of construction, temporary closures will be necessary. The phasing plans on sheets C1.00 through C1.03 show the required locations of temporary low-profile barricades.

Mitigation of Effects

The Contractor shall communicate with the Owner's Representative to try to mitigate the effects of construction on the daily operations of the Airport, as well as coordinating the schedule with the other Contractors on the airfield. The Owner's Representative will coordinate with the Owner to issue necessary NOTAMS to identify affected areas.

IV. NAVAID Protection

No NAVAIDs will be physically impacted during construction.

V. Contractor Access

To minimize impact to the Airport while construction is ongoing, contractor access, security, and lay down areas will be described in detail in the following sections.

a. Location of Stockpiled Construction Materials

Contractor shall not store materials or park equipment in any area not closed to aircraft, unless otherwise directed by the Owner and/or the Owner's Representative. Stockpiled materials must be kept in the area designated by the Owner and/or the Owner's Representative. Material or Equipment in use in areas open to aircraft must be stored or parked in such a manner as will allow immediate removal as needed to accommodate aircraft operations.

b. Vehicle and Pedestrian Operations

The Contractor shall not cross any active Runway, Taxiway or Apron without establishing coordination with the Airport Owner through the Owner's Representative. The Contractor's haul route shall not include any active Runway nor cross into any active Runway Safety Area. The Contractor shall only use the haul route designated by the Airport owner and Owner's Representative. Use and location of the haul routes will be discussed at the preconstruction meeting.

The Contractor's and Subcontractor's vehicles must be marked and lighted in accordance with AC 150/5210-5, Painting, Marking, and Lighting of Vehicles used on an Airport. Personal private vehicles are not allowed within the AOA and shall be parked in areas designated by the Airport.

Contractor and Subcontractor personnel shall remain within the limits open to construction activities at all times, unless emergency conditions warrant otherwise. These areas will be defined by the Owner or the Owner's Representative. The Contractor and the Subcontractors should stress the importance of remaining within the defined work area to its personnel. The Contractor shall mark the defined areas of construction utilizing FAA approved barricades. Contractor shall mark runway and taxiway safety areas and object free areas with pin flags prior to beginning any work in that area.

c. Two-Way Radio Communications

Two-way radio communications with airport operations is required prior to entering into any movement area. The Contractor will monitor a working radio at all times during construction in the AOA. Training by Airport Operations may be required for all Contractor employees who are responsible for monitoring the two-way radios. For handheld airfield radios, it is recommended the highest wattage available be employed. The Contractor shall purchase radios for this project in accordance with Specification TS-128. Ground frequency is 122.7.

d. Airport Security

Contractor must take care to maintain safety during construction at the airport. The Contractor shall comply with all security requirements in the project specifications, TSA regulations and Airport security requirements. The Contractor shall be responsible for briefing all personnel on the security requirements of the contract. The Contractor's access to the site shall be gated. All gates used by the Contractor must be kept closed and locked when not in use, and a gate attendant shall be provided by the Contractor during periods of heavy construction traffic or any time the gate is open.

VI. Wildlife Management

Contractors must carefully control and continuously remove waste or loose materials that might attract wildlife. Contractor personnel must be aware of activities that can create wildlife hazards such as trash, standing water, and grass and seeds that attract birds. Fencing should be maintained as to not allow

wildlife enter airport property. The feeding of any wildlife is prohibited. Trash receptacles utilized must be equipped with a securable lid to prevent wildlife access to the contents and to prevent contents from becoming FOD.

VII. Foreign Object Debris (FOD) Management

Loose materials, referred to as FOD, can cause damage to aircraft. Contractor must not leave or place FOD on or near an active Runway, Taxiway, Apron, or Ramp. The Contractor must keep the work area and adjacent areas clear of debris at all times due to the proximity of open areas of the airport. A mechanized pavement sweeper or vacuum truck must be on the site during all phases of construction.

VIII. Hazardous Materials (HAZMAT) Management

No hazardous materials are expected to be used during the construction phases. However the Contractor should be ready to clean-up any hydraulic fluid, diesel, and gasoline that could leak at the job site.

IX. Notification of Construction Activities

1. Maintain a list of responsible representatives/points of contact.
    a. Contractor shall provide a list of responsible representatives and their phone numbers to the Owner's Representative at the pre-construction meeting.
    b. The list of representatives shall be updated and disseminated as changes occur.
2. Notice to Air Missions (NOTAM's)
    a. The Contractor shall communicate with Airport Operations and the Owner's Representative regarding construction activities that will necessitate the advance issuance of a NOTAM.

X. Inspection Requirements

Daily inspections shall be performed by the Contractor. An example inspection sheet has been included in Appendix 2.

XI. Underground Utilities

The Contractor is to verify all utilities in the project area prior to start of construction. This will involve coordinating with public utilities and Airport Owner. Utilities shown in the plans are to be removed or protected as noted. Contractor should take care as to not damage any unmarked or located utilities in the area.

XII. Penalties

If the Contractor is in noncompliance with any of the Airport rules and regulations or the safety plans, there will be penalties separate from liquidated damages. Reckless operations, disregard for safety, or a serious infraction of these regulations may result in actions, as deemed necessary by the Owner, to rectify or prevent another occurrence. If the Contractor's improper actions causes delay or diversion of a flight, the cost incurred by the Airport due to not being operational will be passed on to the Contractor.

XIII. Special Conditions

The construction phases during this project are not expected to warrant the use of any special procedures. However, construction activity will immediately cease and equipment be parked in the event of the following:

1. Aircraft accident inside of the AOA
2. Notification of an Aircraft in distress
3. Notification of severe weather conditions

XIV. Runway and Taxiway Visual Aids

All active Runway and Taxiway lighting and marking will be kept visible throughout the construction. Those areas to be temporarily closed for construction will have the lights and signs in that area turned off (if not impacting areas that needs the lights and signs on) or will have the lights and signs obscured in a way that prevents light bleed and does not trap heat. Those areas to be temporarily closed for construction will also be clearly marked and distinguished from active pavement through the use of lighted cones, flags, and signage. Contractor is to exercise caution in excavation to protect existing lighting underground utilities as stated in the previous section.

XV. Marking and Signs for Access Routes

The Contractor's haul route is shown on each Safety and Phasing plan sheet. The haul route will not cross the runway. Access to the site will require some travel in the AOA. Directional signing at the access gate and along the delivery route that directs drivers to the storage area or work site shall be approved by the Owner and the Owner's Representative. Flagmen provided by the Contractor with radio communications will be at strategic locations to control and direct traffic.

XVI. Hazard Marking and Lighting

To prevent pilots or other personnel from entering the work site, low profile barricades shall be used. Low profile barricades must conform to the detail in the plans, on Sheet G0.4 in the Construction Drawings section.

XVII. Protection of Runway and Taxiway/Taxilane Safety Areas

Runway and Taxiway/Taxilane Safety Areas, Obstacle Free Zones (OFZ), Object Free Area (OFA), and approach surfaces are described in AC 150/5300-13. Open trenches or excavations are not permitted within the TSA or RSA while the Taxiway or Runway is open.

XVIII. Other Limitations on Construction

Construction equipment height is limited to 25 feet above finished grade or existing grades (whichever is higher). If equipment is required for work that exceeds this height, a 7460 will need to be submitted by the Contractor. The use of open flames, blasting, or burning is not allowed on airport premises.

XIV. The Safety Plan Compliance Document

The Safety Plan Compliance Document (SPCD) shall be prepared by the Contractor. A template can be found in Appendix 3 which details how the Contractor will comply by the Construction Safety and Phasing Plan. The Contractor will also provide specific construction details for the project in the SPCD.

Appendix 1: Construction Safety Drawings

1. GENERAL: THE CONTRACTOR IS CAUTIONED THAT THE CONSTRUCTION WILL IMPACT SAFE OPERATING CONDITIONS AT THE AIRPORT. ALL CONSTRUCTION ACTIVITY MUST BE PROVEN SAFE REGARDING AIRCRAFT WHILE MOORED, WHEN TAXIING, WHEN TAKING OFF, OR WHEN LANDING. MOVING AIRCRAFT WILL ALWAYS HAVE RIGHT-OF-WAY OVER CONSTRUCTION EQUIPMENT OR VEHICLES. THE SAFETY OF AIRCRAFT, PASSENGERS, AND USERS, AS WELL AS ALL AIRPORT PERSONNEL, CONTRACTORS, SUBCONTRACTORS, AND THEIR PERSONNEL IS VITAL FOR THE SATISFACTORY EXECUTION OF THIS CONTRACT.

   DEPARTMENT OF TRANSPORTATION, FEDERAL AVIATION ADMINISTRATION ADVISORY CIRCULAR NO. 150/5370-2G, DATED DECEMBER 13, 2017, ITS REFERENCES, AND CURRENT CHANGES PRESCRIBES THE PROCEDURES, RULES AND AUTHORITIES SHALL BE FOLLOWED BY THE CONTRACTOR DURING CONSTRUCTION OF THIS PROJECT. NOTHING IN THIS SECTION SUPERSEDES OR ALTERS THE CONTENTS OF THE ABOVE ADVISORY CIRCULAR, ITS REFERENCES AND CHANGES AND TO ALL OTHER ADVISORY MATERIAL PERTAINING TO OPERATIONAL SAFETY ON AIRPORTS, ESPECIALLY DURING PERIODS OF CONSTRUCTION ACTIVITY.

   THE CONTRACTOR WILL BE RESPONSIBLE FOR COORDINATING AND CONTROLLING ALL CONSTRUCTION ACTIVITIES IN SUCH A MANNER AS TO:

   A. MAINTAIN SAFETY OF AIRCRAFT OPERATIONS; RESTRICT AIRCRAFT OPERATIONS DURING THE DURATION OF PROJECT ACTIVITIES.
   B. MAINTAIN SAFETY OF CONSTRUCTION ACTIVITIES.
   C. MINIMIZE AIRCRAFT OPERATIONS AND CONSTRUCTION ACTIVITY CONFLICTS, WHILE WORK IS PERFORMED WITHIN THE LIMITS OF THE RUNWAY OR TAXIWAY SAFETY AREAS.
   D. MINIMIZE DELAYS TO CONTRACTOR ACTIVITIES.
   E. KEEP THE AIRPORT OPERATIONAL FOR ALL USER AIRCRAFT, WITH MINIMUM TIME FOR RUNWAY CLOSURE A NECESSITY.

2. PROJECT DESCRIPTION:

   THE WORK UNDER THIS PROJECT CONSISTS OF REHABILITATING THE TERMINAL APRON AT THE DEWITT SPAIN AIRPORT. THIS INCLUDES ALL PAVEMENT REHABILITATION, RECONFIGURING EXISTING DRAINAGE, AND THE INSTALLATION OF APRON TIE-DOWNS AND PAVEMENT MARKINGS.

   CONSTRUCTION SEQUENCE: THIS PROJECT WILL BE LET TO CONSTRUCTION AND PERFORMED IN ONE CONTRACT, AND WILL REQUIRE SPECIAL COORDINATION BETWEEN THE AIRPORT AUTHORITY OFFICES, THE CONTRACTOR, AND THE FAA. THE CONTRACTOR AND ITS SUBCONTRACTORS WILL BE REQUIRED TO COORDINATE THEIR EFFORTS TO MINIMIZE CONFLICTS WITH EACH OTHER WHILE WORKING IN THE CONSTRUCTION AREAS, AND FOR MINIMIZING IMPACTS TO AVIATION RELATED ACTIVITIES OR CONSTRUCTION. WHILE WORKING WITHIN THE AIRPORT OPERATION AREAS (AOA'S) WHILE THE AIRPORT IS OPEN, PARTICULAR CARE WILL BE REQUIRED TO MAINTAIN AN ORDERLY AND PROFESSIONAL LINE OF COMMUNICATION WITH THE AIRPORT AUTHORITY AND SECURITY PERSONNEL, THE ENGINEER, AND THE OTHER USERS OF THE AIRPORT. BEFORE THE CONTRACTOR CAN WORK, A PROPOSED SCHEDULE OF OPERATIONS FOR THE WORK WILL BE SUBMITTED TO THE AIRPORT'S MANAGER AND CONCURRENTLY WITH THE ENGINEER, FOR REVIEW AND COMMENT. IF AGREEABLE TO THOSE PARTIES, THE SCHEDULE WILL BE COORDINATED WITH FAA PERSONNEL. ONLY AFTER THIS SCHEDULE HAS BEEN APPROVED WILL THE CONTRACTOR(S) BE ALLOWED TO COMMENCE OPERATIONS. ALL OF THESE ISSUES WILL BE BE DISCUSSED DURING THE PRE-CONSTRUCTION CONFERENCE IN MORE DETAIL.

3. THE CONSTRUCTION CALENDAR FOR COMPLETION OF THE PROPOSED WORK IS AT BEST, TENTATIVE, BUT WILL BE BASED ON THE FOLLOWING:

   A. THE AWARD OF THE CONTRACT IS ANTICIPATED TO TAKE PLACE IN SPRING OR SUMMER OF 2025.
   B. A "NOTICE TO PROCEED" WILL BE ISSUED AFTER AWARD OF THE CONTRACT AND AFTER A PRE-CONSTRUCTION CONFERENCE.
   C. WORK IS EXPECTED TO TAKE PLACE EACH DAY THAT WEATHER PERMITS... INCLUDING SATURDAYS AND SUNDAYS IF NEEDED. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO SCHEDULE ITS WORK IN SUCH A WAY THAT ANTICIPATED WET WEATHER CONDITIONS DO NOT HINDER THE SUCCESSFUL COMPLETION OF THE PROJECT.
   D. IT IS ANTICIPATED TO ACCOMPLISH SUBSTANTIAL COMPLETION BETWEEN SUMMER OR FALL OF 2025 DEPENDING ON NTP DATE.
   E. WORK SHALL OCCUR EVERY CALENDAR DAY INCLUDING SATURDAY AND SUNDAY UNTIL WORK IS COMPLETE. ONCE THE SCHEDULE IS REVIEWED AND APPROVED BY THE AIRPORT MANAGER AND THE ENGINEER, IT WILL BE USED AS THE BASIS OF SCHEDULING OPERATIONS IN THIS AREA OF THE AIRPORT DURING THE CONSTRUCTION PERIOD.

4. CONSTRUCTION SAFETY REQUIREMENTS:

   A. OBSTRUCTIONS TO NAVIGATION- THE CONTRACTOR SHALL NOTIFY THE AIRPORT MANAGER 2 BUSINESS DAYS IN ADVANCE OF TAXIWAY CLOSURE AND 7 BUSINESS DAYS IN ADVANCE OF RUNWAY CLOSURE PRIOR TO COMMENCING OPERATIONS WITHIN THE AOA'S AND THEIR RESPECTIVE SAFETY AREAS SO THAT IF THE NEED SHOULD EXIST, THE AIRPORT DIRECTOR MIGHT ISSUE A NOTAM (NOTICE TO AIRMEN) PRIOR TO COMMENCING WORK IN THIS AREA OR ANY OTHER AREA WHERE WORK OFF THE PAVEMENT EDGE WITHIN THE IDENTIFIED SAFETY AREAS WILL BE REQUIRED. THE NOTAM SHALL WARN AIRCRAFT USERS OF...
      (1) CLOSING OF THE ANY AOA, ACTIVITIES NEAR THE RUNWAY, TAXIWAYS OR APRONS WHICH MIGHT AFFECT AIRCRAFT OPERATIONS,
      (2) THE DURATION OF THOSE ACTIVITIES, AND
      (3) OTHER PERTINENT INFORMATION RELATING TO THE OVERALL SCOPE OF THE PROJECT AS IT RELATES TO THAT PARTICULAR NOTAM.
   B. VARIOUS WORK ZONES AND PAVEMENT AREAS WILL HAVE TO BE CLOSED DURING THE COURSE OF THIS PROJECT. THOSE CLOSURES SHALL BE ACCOMPLISHED WITH APPROVED MATERIALS AND/OR TECHNIQUES COMMONLY USED BY THE FAA. THE MATERIALS AND TECHNIQUES WILL HAVE TO MEET FAA STANDARDS, AND SHALL NOT BE A HAZARD TO AIRCRAFT TAXIING IN THE IMMEDIATE AREA OF THE CLOSURE. ALL MATERIALS SHALL BE OF THE COLOR REQUIRED BY THE FAA AS CALLED FOR IN FAA ADVISORY CIRCULAR 150/5370-2G.
      (1) LOW PROFILE BARRICADES... WITH WARNING LIGHTS AND FLAGS... SHALL BE USED TO DETER VEHICULAR MOVEMENT ONTO PAVED AREAS THAT ARE CLOSED. THE BARRICADES SHALL BE REFLECTORIZED AND CAPABLE OF BEING SECURED IN PLACE FOR THE DURATION OF THEIR NEED. ALL TYPE LOW PROFILE BARRICADES SHALL BE PLACED INTERLOCKING END TO END, EXCEPT WHERE A SPACE IS REQUIRED TO PERMIT CONSTRUCTION TRAFFIC OR EMERGENCY VEHICLE ACCESS. IN THIS CASE, A SINGLE 15' GAP MAY BE PERMITTED.
      (2) LIGHTED TRAFFIC CONES MAY BE USED FOR SHORT TERM (1 WORKING DAY OR LESS, DAYLIGHT HOURS ONLY) AT THE DISCRETION OF THE OWNER. SEE NOTES ON SAFETY AND PHASING DETAILS.
   C. CONSTRUCTION EQUIPMENT SHALL BE 20' OR LESS UNLESS APPROVED BY ENGINEER.

   D. NAVIGATIONAL AIDS: ANY UNPLANNED, UNAPPROVED OR ACCIDENTAL SHUTDOWN OF ANY AIRPORT NAVIGATIONAL AID REQUIRES IMMEDIATE NOTIFICATION OF SAME TO THE AIRPORT DIRECTOR AND THE ENGINEER BY THE CONTRACTOR.

   E. TRENCHES OR OPEN EXCAVATION: OPEN EXCAVATION IS ANTICIPATED TO BE A REQUIREMENT OF THIS PROJECT, IF IT TAKES PLACE NEXT TO ACTIVE AIRCRAFT OPERATIONS AREAS, THE CONTRACTOR SHALL NOTIFY THE AIRPORT MANAGER 48 HOURS IN ADVANCE OF COMMENCING ANY OPERATIONS IN THOSE AREAS WHICH WILL CREATE A DROP-OFF IN EXCESS OF 3 INCHES ALONG THE ACTIVE EXISTING PAVEMENT'S EDGE. THE AIRPORT MANAGER WILL ISSUE A NOTAM WARNING PILOTS OF THE IMPENDING CONSTRUCTION CONDITIONS AT THIS LOCATION, AND WILL COORDINATE EFFORTS WITH THE CONTRACTOR TO CLOSE THAT PORTION OF THE EXISTING AIRCRAFT OPERATIONS AREA UNTIL THE WORK IS COMPLETE IN THAT AREA. ALL EXCAVATION OR STOCKPILING OF MATERIALS SHALL BE FLAGGED AND LIGHTED DURING HOURS OF DARKNESS BY THE CONTRACTOR. ADVISORY CIRCULAR NO. 150/5370-2G SPELLS OUT CONDITIONS AND METHODS OF MARKING.

   F. DEBRIS, DIRT, ETC. ON RUNWAYS, TAXIWAYS AND/OR APRONS. ACTIVE AIRCRAFT OPERATIONS AREAS (AOA'S) (I.E., RUNWAY, ALL TAXIWAYS AND ALL APRONS) SHALL BE KEPT FREE OF ALL DEBRIS, DIRT, ETC., AT ALL TIMES WHEN THAT PORTION OF THE AIRPORT IS OPEN TO AIR TRAFFIC. ANY ACCIDENTAL SPILLAGE OF EXCAVATION OR OTHER MATERIALS SHALL BE CLEANED UP BY THE CONTRACTOR WITH A MOTOR DRIVEN SWEEPER BEFORE THAT AREA OF THE AIRPORT IS RE-OPENED TO AIR TRAFFIC. REGULAR INSPECTIONS SHALL BE PERFORMED BY THE CONTRACTOR. INSPECTIONS SHALL BE MADE BEFORE THE NORMAL TIME FOR COMMENCEMENT OF DAILY AIRCRAFT OPERATIONS AND MORE FREQUENTLY, IF CONSTRUCTION ACTIVITIES ARE OF A NATURE THAT DEBRIS MAY ACCUMULATE ON THE TAXIWAYS OR APRONS.

   G. STORAGE EQUIPMENT, MATERIALS, OR EXCAVATION. THE CONTRACTOR SHALL NOT STORE MATERIALS OR PARK EQUIPMENT IN AIRCRAFT OPERATIONAL AREAS WHEN THE EQUIPMENT OR MATERIAL IS NOT IN USE OR ABOUT TO BE INSTALLED. MATERIAL OR EQUIPMENT IN USE IN OPERATIONS AREAS MUST BE STORED OR PARKED IN A MANNER THAT THEY MAY BE QUICKLY REMOVED TO ACCOMMODATE AIRCRAFT OPERATIONS. IN NO CASE SHALL SPOILS FROM EXCAVATIONS, MATERIAL STOCKPILES, OR UNATTENDED EQUIPMENT BE LOCATED IN AN ACTIVE RUNWAY OR TAXIWAY OBJECT FREE AREA.

   H. BLASTING: BLASTING IS NOT ANTICIPATED TO BE A NECESSARY PART OF THIS CONTRACT'S CONSTRUCTION ACTIVITIES.

   I. THE CONTRACTOR SHALL CONDUCT AN INSPECTION AT THE END OF EACH DAY'S CONSTRUCTION ACTIVITIES. THE CONTRACTOR SHALL CONDUCT AN ADDITIONAL INSPECTION EACH MORNING, PRIOR TO COMMENCEMENT OF WORK, WHEN CONSTRUCTION ACTIVITIES ARE WITHIN 75' OF AN ACTIVE AIRCRAFT OPERATIONS AREA. ITEMS TO BE INCLUDED ON THE INSPECTION CHECKLIST SHALL INCLUDE, BUT SHALL NOT BE LIMITED TO:
      (1) ARE THE RUNWAYS, TAXIWAYS, AND APRONS WITHIN THE CONSTRUCTION LIMITS AND IMMEDIATELY ADJACENT CLEAR OF DEBRIS AND ACCUMULATIONS OF DUST AND MUD?
      (2) ARE MATERIALS, EQUIPMENT, AND VEHICLES PARKED OR STORED NOT LESS THAN 400' FROM THE CENTERLINE OF ACTIVE RUNWAYS OR TAXIWAYS?
      (3) ARE ALL OPEN TRENCHES OR EXCAVATIONS LESS THAN THREE (3) INCHES DEEP AND HAVE ROUGH GRADES BEEN LEVELED WITHIN THE RUNWAY SAFETY AREA? (WILL APPLY TO RUNWAY EDGES)
      (4) ARE TEMPORARY BARRICADES IN PLACE AND HAVE THEY BEEN PROPERLY STABILIZED? ARE BARRICADE/BARRIER WARNING LIGHTS OPERATIONAL? ARE FLAGS AFFIXED TO THE BARRICADES?
      (5) IS ALL AIRPORT LIGHTING EQUIPMENT IN THE VICINITY OF THE DAY'S CONSTRUCTION ACTIVITIES OPERATIONAL?
      (6) HAS THE OWNER, THROUGH THE ENGINEER, BEEN INFORMED OF THE WORK PLANNED FOR THE NEXT DAY?

      A NEGATIVE RESPONSE TO ANY OF THE ITEMS IN THE CHECKLIST WILL REQUIRE THAT THE CONTRACTOR MAKE THE NECESSARY ADJUSTMENTS TO CAUSE THE RESPONSE TO BE POSITIVE BEFORE IT LEAVES THE SITE FOR THE DAY (EVENING INSPECTION) OR BEFORE WORK IS STARTED (MORNING INSPECTION).

   J. COMMUNICATION REQUIREMENTS: A POSITIVE COMMUNICATION SYSTEM BETWEEN THE FOLLOWING WILL BE REQUIRED:

      THE OWNER, ENGINEER, AND CONTRACTOR SHOULD MEET ON A PERIODIC BASIS TO DISCUSS AND PLAN FUTURE CONSTRUCTION ACTIVITY, THE POTENTIAL IMPACT OF CONSTRUCTION ON AIRCRAFT OPERATIONS, PROCEDURES TO MAINTAIN AIRCRAFT OPERATIONS AND SAFETY, AND TO FACILITATE CONSTRUCTION ACTIVITY. PLANNING SHOULD INVOLVE:

      TDOT / FAA PERSONNEL ⟷ AIRPORT MANAGER
      ENGINEER ⟷ CONTRACTOR/ SUBCONTRACTOR

   K. COMMUNICATIONS PROCEDURES

      MODIFICATIONS OF NORMAL AIRCRAFT OPERATION PROCEDURES SUCH AS:
      - CONSTRUCTION ALONG TAXIWAY AND APRON SHOULDERS
      - NAVIGATIONAL AID OUTAGES
      - REQUIRED DISRUPTION OF CONTRACTOR ACTIVITIES
      - VEHICLES CROSSING RUNWAY
      - CLEANUP OF DIRT OR DEBRIS ON THE RUNWAY
      - NOTICE TO AIRMEN (NOTAMS)
      - LOCAL NOTICES TO ALL AIRCRAFT OPERATORS

5. MISCELLANEOUS CONSIDERATIONS:

   A. THE CONTRACTOR AND SUBCONTRACTOR PERSONNEL SHALL REMAIN WITHIN THE LIMITS OPEN TO CONSTRUCTION ACTIVITIES AT ALL TIMES, UNLESS EMERGENCY CONDITIONS WARRANT OTHERWISE. THESE AREAS WILL BE AS DEFINED BY THE OWNER OR THE ENGINEER. THE CONTRACTOR AND THE SUBCONTRACTOR SHOULD STRESS THE IMPORTANCE OF REMAINING WITHIN THE DEFINED WORK AREA TO ITS PERSONNEL. THE CONTRACTOR MAY WISH TO MARK THE DEFINED AREAS OF CONSTRUCTION USING FAA APPROVED BARRICADES.

   B. THE CONTRACTOR SHALL BE SOLELY AND COMPLETELY RESPONSIBLE FOR INITIATING, SUPERVISING, AND COMPLIANCE WITH ALL SAFETY REQUIREMENTS OF THE CONTRACT.

   C. THE CONTRACTOR SHALL ASSURE THE SAFETY OF AIRCRAFT OPERATIONS AND MOVEMENTS ON ACTIVE APRON AREAS, TAXIWAYS, AND/OR RUNWAYS NEAR THE WORK. CONSTRUCTION AREAS THAT LIE NEAR ADJOINING APRONS, TAXIWAYS, AND/OR RUNWAYS SHALL BE IDENTIFIED WITH LOW-PROFILE BARRICADES EQUIPPED WITH FLASHING LIGHTS AND FLAGS TO WARN PILOTS OF CONSTRUCTION IN PROGRESS. THE AREAS ADJACENT TO THE CONSTRUCTION MUST REMAIN FREE AND CLEAR OF DEBRIS. BARRICADES AND/OR BARRIERS SHALL BE WEIGHTED SUFFICIENTLY TO PROTECT AGAINST PROP WASH, JET BLAST, OR WIND.

   D. UNDER NO CIRCUMSTANCES WILL THE CONTRACTOR BE ALLOWED TO USE, CROSS, TRAVERSE, OR PERFORM ANY CONSTRUCTION TASKS ON THE RUNWAYS, TAXIWAYS, OR ACTIVELY USED AIRCRAFT PARKING APRONS, UNLESS PERMISSION HAS BEEN GRANTED BY THE ATCT AND ACTIVITIES HAVE BEEN COORDINATED WITH THE AIRPORT, ENGINEER, FAA AND THE USER(S) OF THE ACTIVE AREA.

   E. THE CONTRACTOR SHALL PROTECT ALL EXISTING LIGHTING, SIGNAGE, ETC., AS NECESSARY TO PREVENT ACCIDENTAL DESTRUCTION OF OR UNNECESSARY SHUTDOWN OF SUCH EQUIPMENT DURING THE PROJECT.

   F. VISUAL NAVIGATIONAL AIDS, SUCH AS RUNWAY AND TAXIWAY EDGE LIGHTING AND AIRFIELD GUIDANCE SIGNS THAT ARE NOT SERVING THEIR INTENDED PURPOSE DURING A PHASE OF CONSTRUCTION MUST BE TEMPORARILY DISABLED, COVERED, OR MODIFIED AS NECESSARY. THE CONTRACTOR'S SAFETY PLAN COMPLIANCE DOCUMENT SHALL DETAILS THE METHODS PLANNED TO BE USED TO MEET THE FOLLOWING REQUIREMENTS:
      (1) RUNWAY OR TAXIWAY EDGE LIGHTS THAT ARE NOT IN USE DURING CONSTRUCTION SHALL BE COVERED OR DE-ENERGIZED DURING PHASE(S) WHEN THEY ARE NOT IN USE. IF A FULL CIRCUIT IS NOT IN USE, THE CIRCUIT MAY BE DE-ENERGIZED TO SATISFY THIS REQUIREMENT. IF A PARTIAL CIRCUIT IS NOT IN USE, THE THOSE LIGHT FIXTURES NOT IN USE SHALL BE COVERED WITH A MATERIAL THAT WILL FULLY OBSCURE THE LIGHT WITHOUT CAUSING DAMAGE TO THE FIXTURE.
      (2) AIRFIELD GUIDANCE SIGNS THAT INDICATE DIRECTION TO A RUNWAY OR TAXIWAY THAT IS CLOSED DURING A PARTICULAR PHASE MUST BE COVERED WITH A MATERIAL THAT OBSCURES THE FACE OF THE SIGN AND PREVENTS LIGHT FROM THE SIGN BEING VISIBLE TO PILOTS.

   G. APPLICABLE STANDARDS: ADVISORY CIRCULAR NO. 150/5370-2G WILL BE USED AS A GUIDELINE TO ASSIST IN MAINTAINING OPERATIONAL SAFETY DURING CONSTRUCTION ACTIVITIES. THIS DOCUMENT ALSO REFERS TO OTHER APPLICABLE ADVISORY CIRCULARS. FEDERAL AIR REGULATIONS - PART 77, NOT INCLUDED HEREIN, WILL ALSO BE USED TO DEFINE "OBJECTS AFFECTING NAVIGABLE AIRSPACE."

   H. PAYMENT: MEASUREMENT AND PAYMENT FOR BARRICADES, SIGNS, LIGHTING SYSTEMS, FLAGS, GATE ATTENDANTS/FLAGMEN, BROOMEN, TEMPORARY MARKINGS OR ANY OTHER ITEM CALLED FOR BY THIS SECTION OF THE SPECIFICATIONS OR ITS REFERENCES WILL NOT BE PAID FOR SEPARATELY, AS THESE ITEMS ARE CONSIDERED A SUBSIDIARY OBLIGATION OF THE CONTRACT, UNLESS PROVISIONS ARE MADE SPECIFICALLY FOR THOSE ITEMS OF WORK ON THE BID SCHEDULE.

   I. VEHICLES OPERATING WITHIN THE OPERATIONS AREA OF THE AIRPORT (AWAY FROM THE ACTUAL CONSTRUCTION AREA AND WITH REQUIRED APPROVALS) SHALL BE MARKED WITH FLASHING WARNING LIGHTS ATOP VEHICLES AND SIGNS IDENTIFYING THE NAME OF THE CONTRACTOR AS PER FAA REQUIREMENTS. A.C. 150/5210-5D.

   J. THE CONTRACTOR SHALL ASSURE THE SAFETY OF AIRCRAFT OPERATIONS AND MOVEMENTS ON ACTIVE APRON AREAS, TAXIWAYS, AND/OR RUNWAYS NEAR THE WORK. CONSTRUCTION AREAS THAT LIE NEAR ADJOINING APRONS, TAXIWAYS, AND/OR RUNWAYS SHALL BE IDENTIFIED WITH LOW-PROFILE BARRICADES OR BARRIERS EQUIPPED WITH FLASHING LIGHTS TO WARN PILOTS OF CONSTRUCTION IN PROGRESS. THE AREAS ADJACENT TO THE CONSTRUCTION MUST REMAIN FREE AND CLEAR OF DEBRIS. BARRICADES AND/OR BARRIERS SHALL BE WEIGHTED SUFFICIENTLY TO PROTECT AGAINST PROP WASH, JET BLAST, OR WIND.

   K. THE CONTRACTOR SHALL REFER TO THE SAFETY AND PHASING PLAN FOR ADDITIONAL REQUIREMENTS.

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14169.002

REVISIONS

MARK	DATE	DESCRIPTION

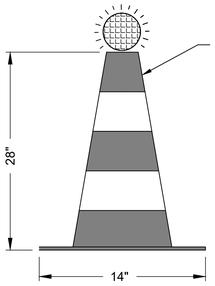
MSCAA PROJ. NO.
20-1440-00

PROJECT:
DEWITT SPAIN AIRPORT APRON REHABILITATION

SHEET TITLE:
SAFETY & PHASING NOTES

DWG. FILE NAME

DATE: NOV. 2024
SCALE: N/A
SHEET NO.: G0.3



NOTES:

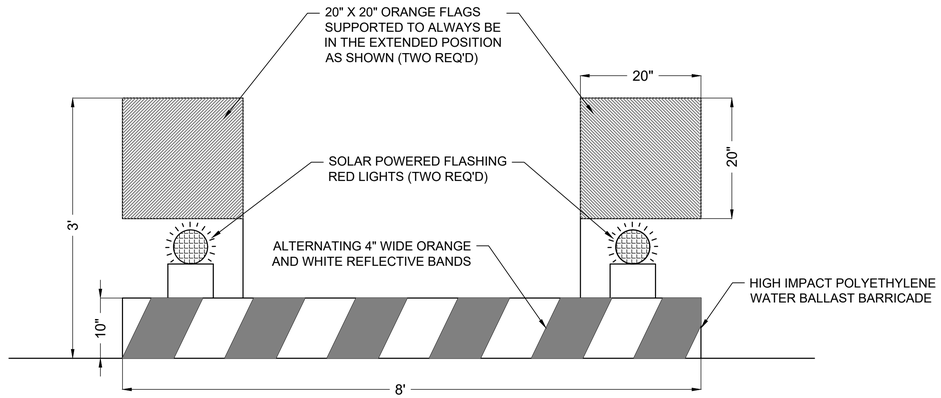
1) CONES SHALL BE LOCATED AT LOCATIONS AS INDICATED ON THE PLAN SHEETS OR AS DIRECTED BY ENGINEER AND SPACED NO FARTHER THAN 6' IN ACCORDANCE WITH AC150/5370-2.

2) ALL CONES SHALL BE LIGHTED WITH SOLAR POWERED LIGHTS.

3) NO SEPERATE PAYEMENT SHALL BE MADE FOR LIGHTED TRAFFIC CONES. THIS ITEM IS INCIDENTAL TO TS-129-5.1.

4) TRAFFIC CONES MAY BE UTILIZED DURING SUNRISE TO SUNSET WITH APPROVAL OF ENGINEER.

LIGHTED TRAFFIC CONE
NOT TO SCALE



LOW PROFILE BARRICADE
NOT TO SCALE

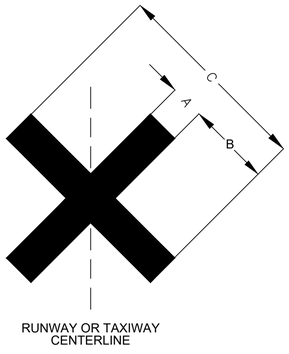
NOTES:

1) BARRICADES SHALL BE PLACED AT LOCATIONS AS INDICATED ON THE PLAN SHEETS OR AS DIRECTED BY ENGINEER.

2) ALL BARRICADES SHALL BE WATER FILLED (BALLASTED) WITH POWER SOLAR LIGHTS (SEE TS-129).

3) NO SEPARATE PAYMENT SHALL BE MADE FOR TYPE 1 BARRICADES. THIS ITEM IS INCIDENTAL TO TS-129-5.1.

4) LIGHTS SHALL BE SPACED AT NO MORE THAN 10 FEET.



RUNWAY OR TAXIWAY CLOSURE MARKER
NOT TO SCALE

		DIMENSIONS		
PATTERN	CLOSURE TYPE	A	B	C
A	CLOSED RUNWAY	10'	25'	60'
B	CLOSED TAXIWAY	5'	12.5'	30'

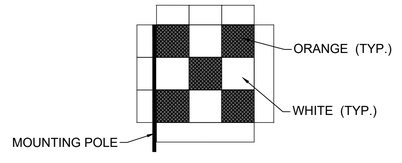
NOTES:

1) CONTRACTOR RESPONSIBLE FOR INSTALLING TEMPORARY OR PERMANENT TAXIWAY CLOSURE MARKERS WHEN NEEDED ON REQUIRED PHASES.

   * TEMPORARY MARKINGS SHALL BE SAFELY SECURED AND CONSIST OF MATERIALS AS TO NOT DAMAGE EXISTING ASPHALT PAVEMENT, SEE AC 150/5340-30.
   * PERMANENT PAVEMENT MARKINGS SHALL BE SURFACE PAINTED.

2) TAXIWAY CLOSURE MARKER SHALL BE INSTALLED 50' FROM RUNWAY EDGE ON TAXIWAY CENTERLINE.

3) OBSCURE EXISTING TAXIWAY LEADOFF CENTERLINE ON TAXIWAYS AS REQUIRED BY AC 150/5370-2G FOR INSTALLATION. (NOT MEASURED FOR SEPARATE PAYMENT)



REQ'D. EQUIPMENT / MACHINERY FLAG DETAIL
NOT TO SCALE

NOTES:

1. ALL CONSTRUCTION EQUIPMENT SHALL BE EQUIPPED WITH MACHINERY FLAGS.

2. NO SEPARATE PAYMENT SHALL BE MADE FOR FLAGGING OF CONSTRUCTION EQUIPMENT. THIS ITEM IS INCIDENTAL TO TS-129-5.1.

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REVISIONS

MARK	DATE	DESCRIPTION

MSCAA PROJ. NO. 20-1440-00

PROJECT:
DEWITT SPAIN AIRPORT APRON REHABILITATION

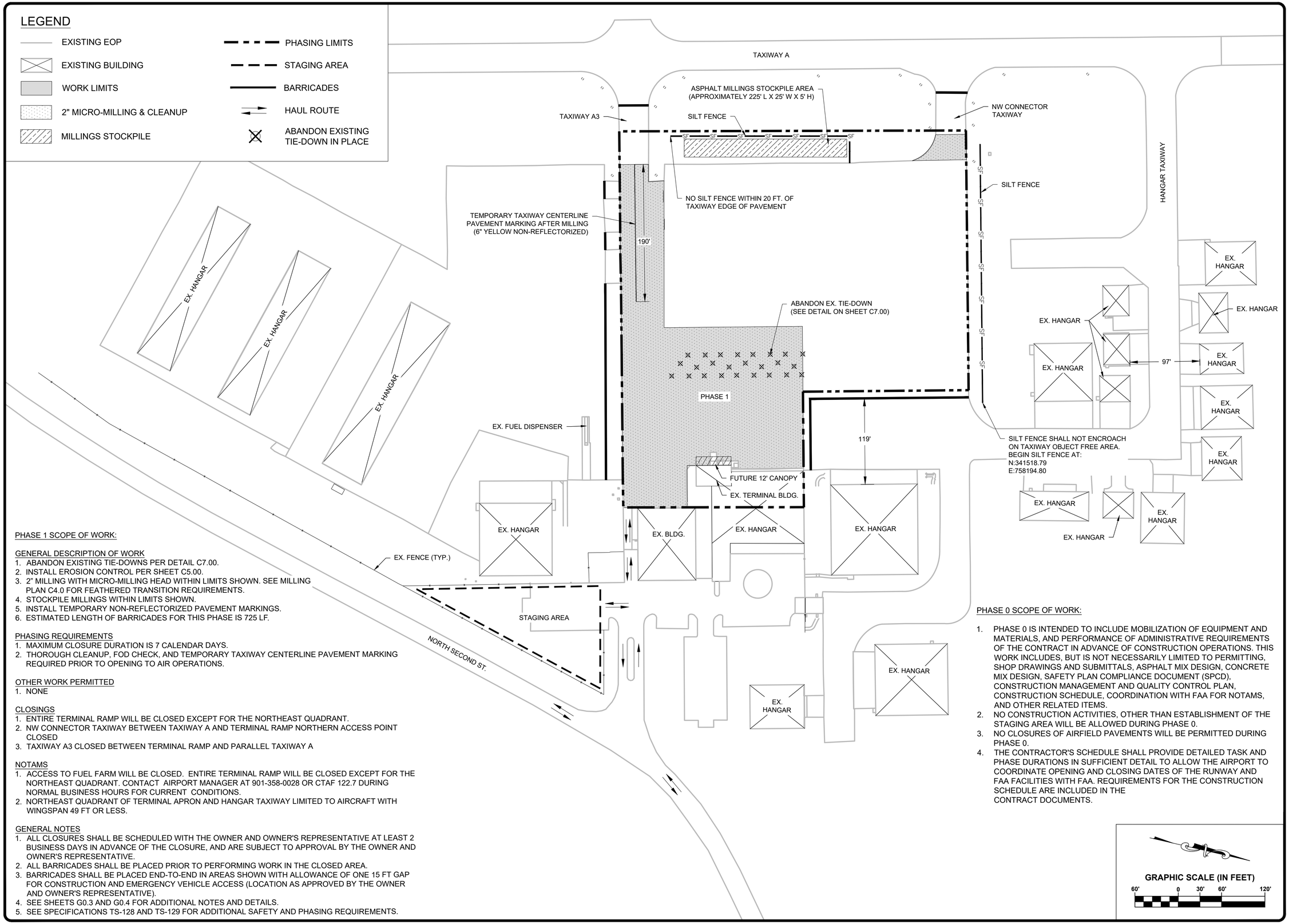
SHEET TITLE:
SAFETY & PHASING DETAILS

DWG. FILE NAME

DATE NOV. 2024
SCALE N/A
SHEET NO. G0.4

LEGEND

- EXISTING EOP
- EXISTING BUILDING
- WORK LIMITS
- 2" MICRO-MILLING & CLEANUP
- MILLINGS STOCKPILE
- PHASING LIMITS
- STAGING AREA
- BARRICADES
- HAUL ROUTE
- ABANDON EXISTING TIE-DOWN IN PLACE



PHASE 1 SCOPE OF WORK:

GENERAL DESCRIPTION OF WORK
1. ABANDON EXISTING TIE-DOWNS PER DETAIL C7.00.
2. INSTALL EROSION CONTROL PER SHEET C5.00.
3. 2" MILLING WITH MICRO-MILLING HEAD WITHIN LIMITS SHOWN. SEE MILLING PLAN C4.0 FOR FEATHERED TRANSITION REQUIREMENTS.
4. STOCKPILE MILLINGS WITHIN LIMITS SHOWN.
5. INSTALL TEMPORARY NON-REFLECTORIZED PAVEMENT MARKINGS.
6. ESTIMATED LENGTH OF BARRICADES FOR THIS PHASE IS 725 LF.

PHASING REQUIREMENTS
1. MAXIMUM CLOSURE DURATION IS 7 CALENDAR DAYS.
2. THOROUGH CLEANUP, FOD CHECK, AND TEMPORARY TAXIWAY CENTERLINE PAVEMENT MARKING REQUIRED PRIOR TO OPENING TO AIR OPERATIONS.

OTHER WORK PERMITTED
1. NONE

CLOSINGS
1. ENTIRE TERMINAL RAMP WILL BE CLOSED EXCEPT FOR THE NORTHEAST QUADRANT.
2. NW CONNECTOR TAXIWAY BETWEEN TAXIWAY A AND TERMINAL RAMP NORTHERN ACCESS POINT CLOSED
3. TAXIWAY A3 CLOSED BETWEEN TERMINAL RAMP AND PARALLEL TAXIWAY A

NOTAMS
1. ACCESS TO FUEL FARM WILL BE CLOSED. ENTIRE TERMINAL RAMP WILL BE CLOSED EXCEPT FOR THE NORTHEAST QUADRANT. CONTACT AIRPORT MANAGER AT 901-358-0028 OR CTAF 122.7 DURING NORMAL BUSINESS HOURS FOR CURRENT CONDITIONS.
2. NORTHEAST QUADRANT OF TERMINAL APRON AND HANGAR TAXIWAY LIMITED TO AIRCRAFT WITH WINGSPAN 49 FT OR LESS.

GENERAL NOTES
1. ALL CLOSURES SHALL BE SCHEDULED WITH THE OWNER AND OWNER'S REPRESENTATIVE AT LEAST 2 BUSINESS DAYS IN ADVANCE OF THE CLOSURE, AND ARE SUBJECT TO APPROVAL BY THE OWNER AND OWNER'S REPRESENTATIVE.
2. ALL BARRICADES SHALL BE PLACED PRIOR TO PERFORMING WORK IN THE CLOSED AREA.
3. BARRICADES SHALL BE PLACED END-TO-END IN AREAS SHOWN WITH ALLOWANCE OF ONE 15 FT GAP FOR CONSTRUCTION AND EMERGENCY VEHICLE ACCESS (LOCATION AS APPROVED BY THE OWNER AND OWNER'S REPRESENTATIVE).
4. SEE SHEETS G0.3 AND G0.4 FOR ADDITIONAL NOTES AND DETAILS.
5. SEE SPECIFICATIONS TS-128 AND TS-129 FOR ADDITIONAL SAFETY AND PHASING REQUIREMENTS.

PHASE 0 SCOPE OF WORK:

1. PHASE 0 IS INTENDED TO INCLUDE MOBILIZATION OF EQUIPMENT AND MATERIALS, AND PERFORMANCE OF ADMINISTRATIVE REQUIREMENTS OF THE CONTRACT IN ADVANCE OF CONSTRUCTION OPERATIONS. THIS WORK INCLUDES, BUT IS NOT NECESSARILY LIMITED TO PERMITTING, SHOP DRAWINGS AND SUBMITTALS, ASPHALT MIX DESIGN, CONCRETE MIX DESIGN, SAFETY PLAN COMPLIANCE DOCUMENT (SPCD), CONSTRUCTION MANAGEMENT AND QUALITY CONTROL PLAN, CONSTRUCTION SCHEDULE, COORDINATION WITH FAA FOR NOTAMS, AND OTHER RELATED ITEMS.
2. NO CONSTRUCTION ACTIVITIES, OTHER THAN ESTABLISHMENT OF THE STAGING AREA WILL BE ALLOWED DURING PHASE 0.
3. NO CLOSURES OF AIRFIELD PAVEMENTS WILL BE PERMITTED DURING PHASE 0.
4. THE CONTRACTOR'S SCHEDULE SHALL PROVIDE DETAILED TASK AND PHASE DURATIONS IN SUFFICIENT DETAIL TO ALLOW THE AIRPORT TO COORDINATE OPENING AND CLOSING DATES OF THE RUNWAY AND FAA FACILITIES WITH FAA. REQUIREMENTS FOR THE CONSTRUCTION SCHEDULE ARE INCLUDED IN THE CONTRACT DOCUMENTS.

GRAPHIC SCALE (IN FEET)
60' 0 30' 60' 120'

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REVISIONS

MARK	DATE	DESCRIPTION

MSCAA PROJ. NO. 20-1440-00

PROJECT:
DEWITT SPAIN AIRPORT APRON REHABILITATION

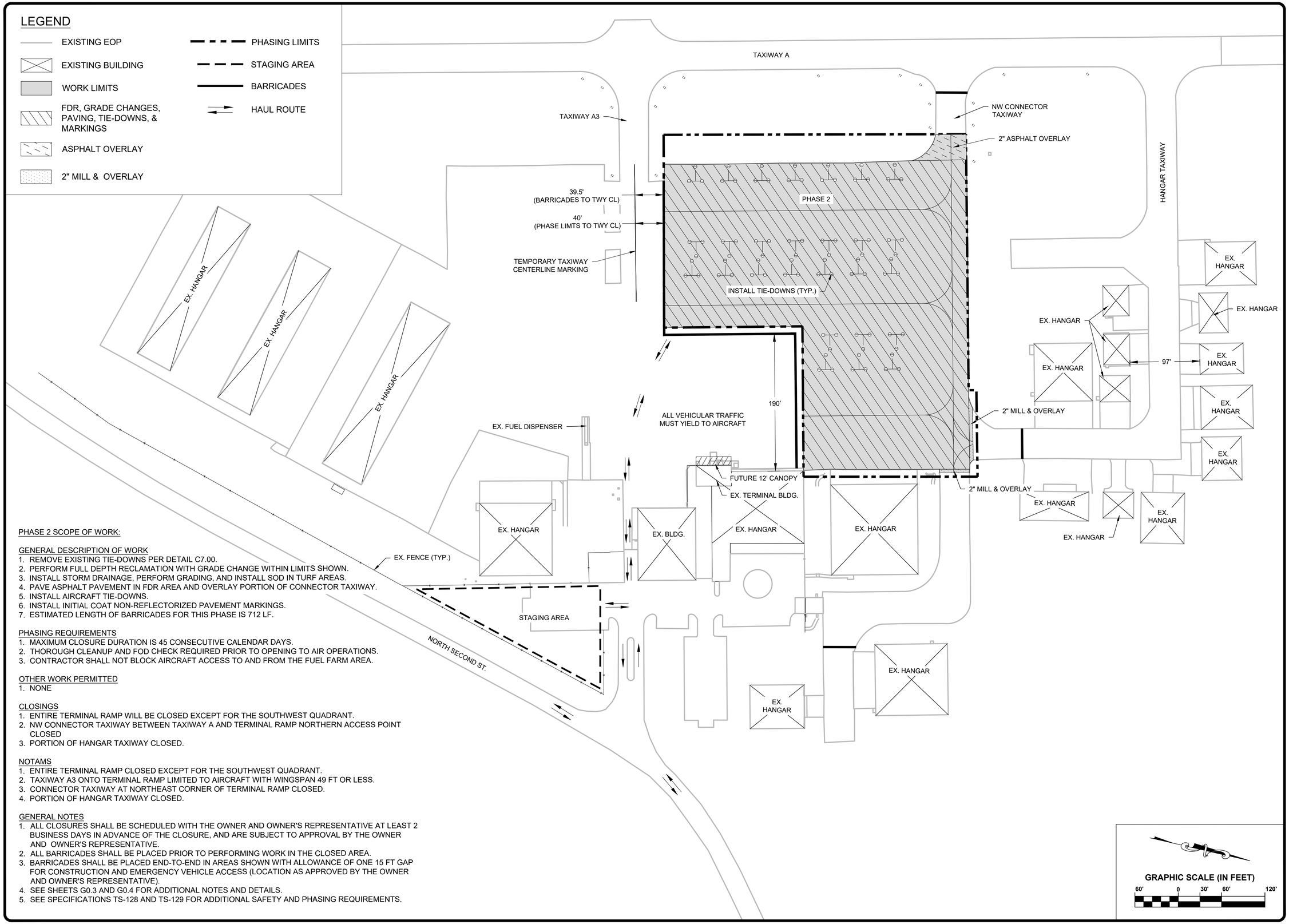
SHEET TITLE:
PHASING PLAN - PHASES 0 & 1

DWG. FILE NAME

DATE: NOV. 2024
SCALE: 1" = 60'
SHEET NO.: C1.00

LEGEND

- EXISTING EOP
- EXISTING BUILDING
- WORK LIMITS
- FDR, GRADE CHANGES, PAVING, TIE-DOWNS, & MARKINGS
- ASPHALT OVERLAY
- 2" MILL & OVERLAY
- PHASING LIMITS
- STAGING AREA
- BARRICADES
- HAUL ROUTE



PHASE 2 SCOPE OF WORK:

GENERAL DESCRIPTION OF WORK
1. REMOVE EXISTING TIE-DOWNS PER DETAIL C7.00.
2. PERFORM FULL DEPTH RECLAMATION WITH GRADE CHANGE WITHIN LIMITS SHOWN.
3. INSTALL STORM DRAINAGE, PERFORM GRADING, AND INSTALL SOD IN TURF AREAS.
4. PAVE ASPHALT PAVEMENT IN FDR AREA AND OVERLAY PORTION OF CONNECTOR TAXIWAY.
5. INSTALL AIRCRAFT TIE-DOWNS.
6. INSTALL INITIAL COAT NON-REFLECTORIZED PAVEMENT MARKINGS.
7. ESTIMATED LENGTH OF BARRICADES FOR THIS PHASE IS 712 LF.

PHASING REQUIREMENTS
1. MAXIMUM CLOSURE DURATION IS 45 CONSECUTIVE CALENDAR DAYS.
2. THOROUGH CLEANUP AND FOD CHECK REQUIRED PRIOR TO OPENING TO AIR OPERATIONS.
3. CONTRACTOR SHALL NOT BLOCK AIRCRAFT ACCESS TO AND FROM THE FUEL FARM AREA.

OTHER WORK PERMITTED
1. NONE

CLOSINGS
1. ENTIRE TERMINAL RAMP WILL BE CLOSED EXCEPT FOR THE SOUTHWEST QUADRANT.
2. NW CONNECTOR TAXIWAY BETWEEN TAXIWAY A AND TERMINAL RAMP NORTHERN ACCESS POINT CLOSED
3. PORTION OF HANGAR TAXIWAY CLOSED.

NOTAMS
1. ENTIRE TERMINAL RAMP CLOSED EXCEPT FOR THE SOUTHWEST QUADRANT.
2. TAXIWAY A3 ONTO TERMINAL RAMP LIMITED TO AIRCRAFT WITH WINGSPAN 49 FT OR LESS.
3. CONNECTOR TAXIWAY AT NORTHEAST CORNER OF TERMINAL RAMP CLOSED.
4. PORTION OF HANGAR TAXIWAY CLOSED.

GENERAL NOTES
1. ALL CLOSURES SHALL BE SCHEDULED WITH THE OWNER AND OWNER'S REPRESENTATIVE AT LEAST 2 BUSINESS DAYS IN ADVANCE OF THE CLOSURE, AND ARE SUBJECT TO APPROVAL BY THE OWNER AND OWNER'S REPRESENTATIVE.
2. ALL BARRICADES SHALL BE PLACED PRIOR TO PERFORMING WORK IN THE CLOSED AREA.
3. BARRICADES SHALL BE PLACED END-TO-END IN AREAS SHOWN WITH ALLOWANCE OF ONE 15 FT GAP FOR CONSTRUCTION AND EMERGENCY VEHICLE ACCESS (LOCATION AS APPROVED BY THE OWNER AND OWNER'S REPRESENTATIVE).
4. SEE SHEETS G0.3 AND G0.4 FOR ADDITIONAL NOTES AND DETAILS.
5. SEE SPECIFICATIONS TS-128 AND TS-129 FOR ADDITIONAL SAFETY AND PHASING REQUIREMENTS.

GRAPHIC SCALE (IN FEET)
60' 0 30' 60' 120'

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JOB NO. 057-17-001

DRAWN BY: TCC
CHECKED BY: AM
APPROVED BY: TCH

AARON O. MCNEAL REGISTERED ENGINEER 2008 AGRICULTURE COMMERCE No. 120063 STATE OF TENNESSEE

CONSULTANT
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JOB NO. 14169.002

REVISIONS

MARK	DATE	DESCRIPTION

MSCAA PROJ. NO. 20-1440-00

PROJECT:
DEWITT SPAIN AIRPORT APRON REHABILITATION

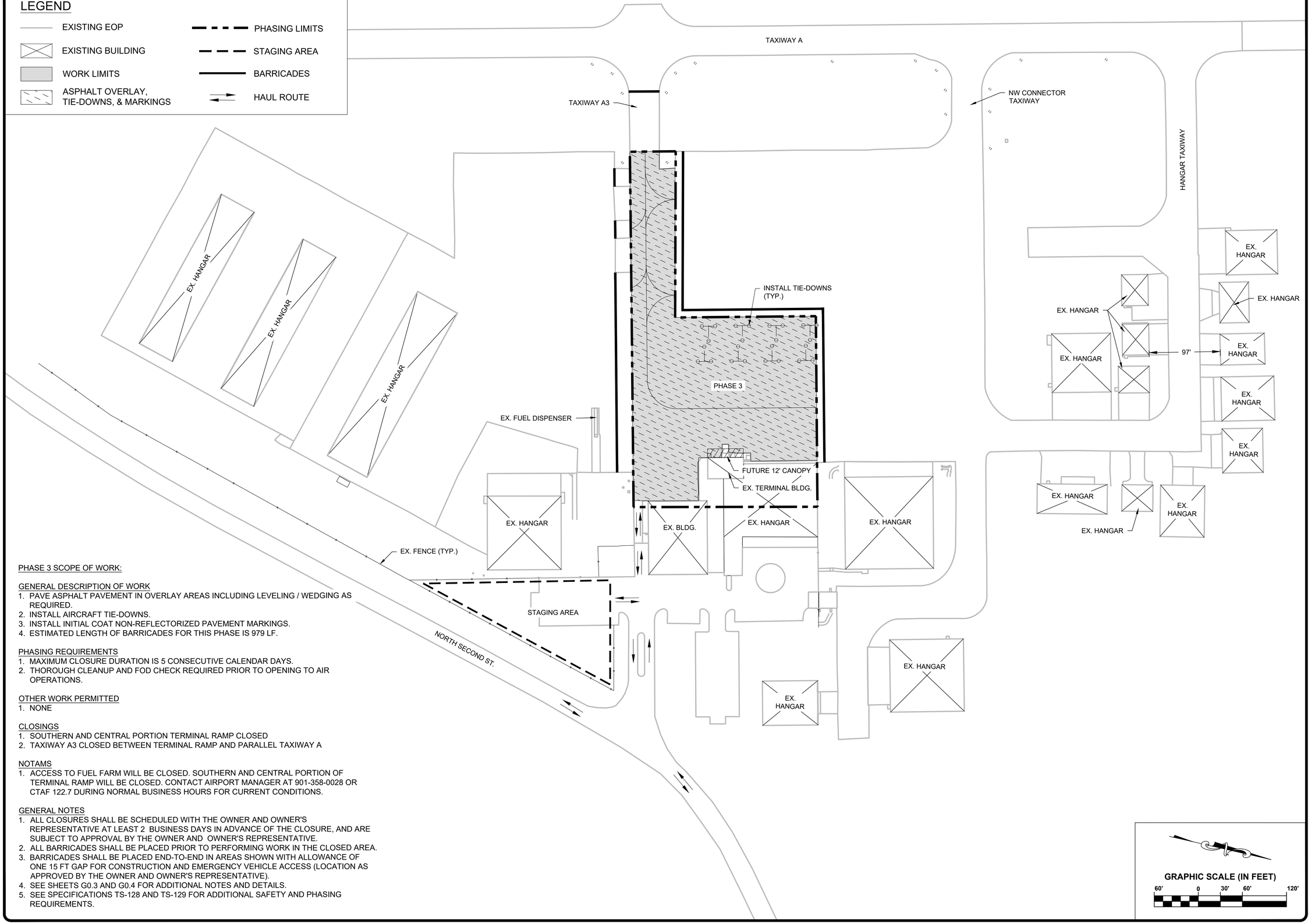
SHEET TITLE:
PHASING PLAN - PHASE 2

DWG. FILE NAME

DATE: NOV. 2024
SCALE: 1" = 60'
SHEET NO. C1.01

LEGEND

- EXISTING EOP
- EXISTING BUILDING
- WORK LIMITS
- ASPHALT OVERLAY, TIE-DOWNS, & MARKINGS
- PHASING LIMITS
- STAGING AREA
- BARRICADES
- HAUL ROUTE



PHASE 3 SCOPE OF WORK:

GENERAL DESCRIPTION OF WORK
1. PAVE ASPHALT PAVEMENT IN OVERLAY AREAS INCLUDING LEVELING / WEDGING AS REQUIRED.
2. INSTALL AIRCRAFT TIE-DOWNS.
3. INSTALL INITIAL COAT NON-REFLECTORIZED PAVEMENT MARKINGS.
4. ESTIMATED LENGTH OF BARRICADES FOR THIS PHASE IS 979 LF.

PHASING REQUIREMENTS
1. MAXIMUM CLOSURE DURATION IS 5 CONSECUTIVE CALENDAR DAYS.
2. THOROUGH CLEANUP AND FOD CHECK REQUIRED PRIOR TO OPENING TO AIR OPERATIONS.

OTHER WORK PERMITTED
1. NONE

CLOSINGS
1. SOUTHERN AND CENTRAL PORTION TERMINAL RAMP CLOSED
2. TAXIWAY A3 CLOSED BETWEEN TERMINAL RAMP AND PARALLEL TAXIWAY A

NOTAMS
1. ACCESS TO FUEL FARM WILL BE CLOSED. SOUTHERN AND CENTRAL PORTION OF TERMINAL RAMP WILL BE CLOSED. CONTACT AIRPORT MANAGER AT 901-358-0028 OR CTAF 122.7 DURING NORMAL BUSINESS HOURS FOR CURRENT CONDITIONS.

GENERAL NOTES
1. ALL CLOSURES SHALL BE SCHEDULED WITH THE OWNER AND OWNER'S REPRESENTATIVE AT LEAST 2 BUSINESS DAYS IN ADVANCE OF THE CLOSURE, AND ARE SUBJECT TO APPROVAL BY THE OWNER AND OWNER'S REPRESENTATIVE.
2. ALL BARRICADES SHALL BE PLACED PRIOR TO PERFORMING WORK IN THE CLOSED AREA.
3. BARRICADES SHALL BE PLACED END-TO-END IN AREAS SHOWN WITH ALLOWANCE OF ONE 15 FT GAP FOR CONSTRUCTION AND EMERGENCY VEHICLE ACCESS (LOCATION AS APPROVED BY THE OWNER AND OWNER'S REPRESENTATIVE).
4. SEE SHEETS G0.3 AND G0.4 FOR ADDITIONAL NOTES AND DETAILS.
5. SEE SPECIFICATIONS TS-128 AND TS-129 FOR ADDITIONAL SAFETY AND PHASING REQUIREMENTS.

GRAPHIC SCALE (IN FEET)

60' 0 30' 60' 120'

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REVISIONS

MARK	DATE	DESCRIPTION

MSCAA PROJ. NO. 20-1440-00

PROJECT:
DEWITT SPAIN AIRPORT APRON REHABILITATION

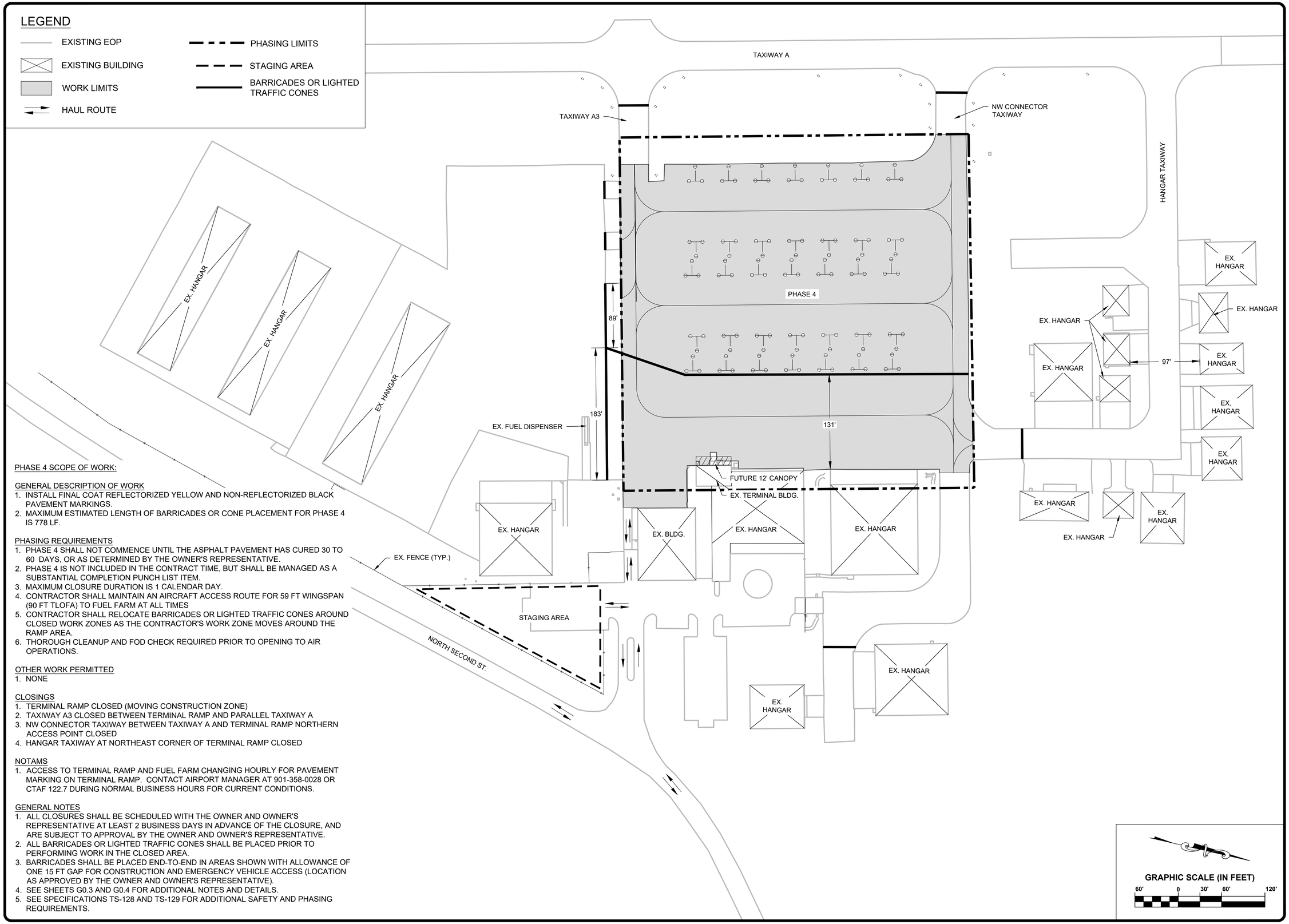
SHEET TITLE:
PHASING PLAN - PHASE 3

DWG. FILE NAME

DATE NOV. 2024
SCALE 1" = 60'
SHEET NO. C1.02

LEGEND

- EXISTING EOP
- EXISTING BUILDING
- WORK LIMITS
- HAUL ROUTE
- PHASING LIMITS
- STAGING AREA
- BARRICADES OR LIGHTED TRAFFIC CONES



PHASE 4 SCOPE OF WORK:

GENERAL DESCRIPTION OF WORK
1. INSTALL FINAL COAT REFLECTORIZED YELLOW AND NON-REFLECTORIZED BLACK PAVEMENT MARKINGS.
2. MAXIMUM ESTIMATED LENGTH OF BARRICADES OR CONE PLACEMENT FOR PHASE 4 IS 778 LF.

PHASING REQUIREMENTS
1. PHASE 4 SHALL NOT COMMENCE UNTIL THE ASPHALT PAVEMENT HAS CURED 30 TO 60 DAYS, OR AS DETERMINED BY THE OWNER'S REPRESENTATIVE.
2. PHASE 4 IS NOT INCLUDED IN THE CONTRACT TIME, BUT SHALL BE MANAGED AS A SUBSTANTIAL COMPLETION PUNCH LIST ITEM.
3. MAXIMUM CLOSURE DURATION IS 1 CALENDAR DAY.
4. CONTRACTOR SHALL MAINTAIN AN AIRCRAFT ACCESS ROUTE FOR 59 FT WINGSPAN (90 FT TLOFA) TO FUEL FARM AT ALL TIMES
5. CONTRACTOR SHALL RELOCATE BARRICADES OR LIGHTED TRAFFIC CONES AROUND CLOSED WORK ZONES AS THE CONTRACTOR'S WORK ZONE MOVES AROUND THE RAMP AREA.
6. THOROUGH CLEANUP AND FOD CHECK REQUIRED PRIOR TO OPENING TO AIR OPERATIONS.

OTHER WORK PERMITTED
1. NONE

CLOSINGS
1. TERMINAL RAMP CLOSED (MOVING CONSTRUCTION ZONE)
2. TAXIWAY A3 CLOSED BETWEEN TERMINAL RAMP AND PARALLEL TAXIWAY A
3. NW CONNECTOR TAXIWAY BETWEEN TAXIWAY A AND TERMINAL RAMP NORTHERN ACCESS POINT CLOSED
4. HANGAR TAXIWAY AT NORTHEAST CORNER OF TERMINAL RAMP CLOSED

NOTAMS
1. ACCESS TO TERMINAL RAMP AND FUEL FARM CHANGING HOURLY FOR PAVEMENT MARKING ON TERMINAL RAMP. CONTACT AIRPORT MANAGER AT 901-358-0028 OR CTAF 122.7 DURING NORMAL BUSINESS HOURS FOR CURRENT CONDITIONS.

GENERAL NOTES
1. ALL CLOSURES SHALL BE SCHEDULED WITH THE OWNER AND OWNER'S REPRESENTATIVE AT LEAST 2 BUSINESS DAYS IN ADVANCE OF THE CLOSURE, AND ARE SUBJECT TO APPROVAL BY THE OWNER AND OWNER'S REPRESENTATIVE.
2. ALL BARRICADES OR LIGHTED TRAFFIC CONES SHALL BE PLACED PRIOR TO PERFORMING WORK IN THE CLOSED AREA.
3. BARRICADES SHALL BE PLACED END-TO-END IN AREAS SHOWN WITH ALLOWANCE OF ONE 15 FT GAP FOR CONSTRUCTION AND EMERGENCY VEHICLE ACCESS (LOCATION AS APPROVED BY THE OWNER AND OWNER'S REPRESENTATIVE).
4. SEE SHEETS G0.3 AND G0.4 FOR ADDITIONAL NOTES AND DETAILS.
5. SEE SPECIFICATIONS TS-128 AND TS-129 FOR ADDITIONAL SAFETY AND PHASING REQUIREMENTS.

GRAPHIC SCALE (IN FEET)
60' 0 30' 60' 120'

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REVISIONS

MARK	DATE	DESCRIPTION

MSCAA PROJ. NO. 20-1440-00

PROJECT:
DEWITT SPAIN AIRPORT APRON REHABILITATION

SHEET TITLE:
PHASING PLAN - PHASE 4

DWG. FILE NAME

DATE: NOV. 2024
SCALE: 1" = 60'
SHEET NO. C1.03

LEGEND

- EXISTING EOP
- EXISTING BUILDING
- WORK LIMITS
- FULL DEPTH RECLAMATION
- MILL & OVERLAY
- HAUL ROUTE
- STAGING AREA

GRAPHIC SCALE (IN FEET)
50' 0 25' 50' 100'

TAXIWAY A

EX. TAXIWAY LIGHT (TYP.)

TRANSITIONAL MILL & OVERLAY

TRANSITIONAL MILL & OVERLAY

0+00 1+00 2+00 3+00 4+00 5+00 6+00 6+50

STA 0+00
N: 340880.71
E: 757974.37

STA 10+50
N: 341518.66
E: 757849.79

FULL DEPTH RECLAMATION WITH GRADE CHANGE

MILL & OVERLAY

EX. HANGAR

EX. HANGAR

EX. HANGAR

EX. FUEL DISPENSER

EX. HANGARS

EX. HANGAR

FUTURE 12' CANOPY

EX. TERMINAL BLDG.

TRANSITIONAL MILL & OVERLAY

EX. HANGAR

EX. HANGAR

EX. HANGARS

EX. HANGAR

EX. BLDG.

EX. HANGAR

EX. FENCE (TYP.)

STAGING AREA

NORTH SECOND ST.

EX. HANGAR

EX. HANGAR

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MARK	DATE	DESCRIPTION

MSCAA PROJ. NO. **20-1440-00**

PROJECT:
DEWITT SPAIN AIRPORT APRON REHABILITATION

SHEET TITLE:
OVERALL SITE PLAN

DWG. FILE NAME

DATE: NOV. 2024
SCALE: 1" = 50'
SHEET NO.: C3.00

Appendix 2: Example Inspection Sheet

Appendix 2. Construction Project Daily Safety Inspection Checklist

The situations identified below are potentially hazardous conditions that may occur during airport construction projects. Safety area encroachments, unauthorized and improper ground vehicle operations, and unmarked or uncovered holes and trenches near aircraft operating surfaces pose the most prevalent threats to airport operational safety during airport construction projects. The list below is one tool that the airport operator or contractor may use to aid in identifying and correcting potentially hazardous conditions. It should be customized as appropriate for each project.

Potentially Hazardous Conditions

Item	Action Required	or	None
Excavation adjacent to runways, taxiways, and aprons improperly backfilled.			☐
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 in (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 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.			☐

Item	Action Required	or	None
Inappropriate or poorly maintained fencing during construction intended to deter human and animal intrusions into the AOA. Fencing and other markings that are inadequate to separate construction areas from open AOA create aviation hazards.			☐
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.			☐
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.			☐

Item	Action Required	or	None
Failure to maintain drainage system integrity during construction (for example, no temporary drainage provided when working on a drainage system).			☐
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 3:

Contractor's Safety Compliance Document

AC 150/5370-2 SAFETY PLAN COMPLIANCE DOCUMENT (SPCD)
WORKSHEET FOR AIRPORT PROJECTS

Contractor's Responsibility

Following Federal Aviation Administration (FAA) Advisory Circular 150/5370-2, an SPCD for a project shall be submitted to the Mississippi Department of Aeronautics and to the airport operator for review and approval. This should be submitted prior to the preconstruction conference. The notice-to-proceed cannot be issued without approval of this document.

The SPCD shall be prepared in a detailed, written and pictorial format that identifies the timing and methodology for the contractor's compliance with the project's Construction Safety and Phasing Plan (CSPP) located in the construction plans & specifications. Any proposed alteration by the contractor from the CSPP shall be fully explained so a thorough analysis and determination can be made of the proposed modification.

Project Information

Project ID: A.I.P. project No. _____ Airport: _____

Description of Project: _____

Type of Work: _____

Prime Contractor: _____

Address: _____

Contractor Contact: _____ Phone: _____

Project Manager Contact: _____ Phone: _____

Airport Manager Contact: _____ Phone: _____

The following shall complement the safety plan compliance document:

1. Contractor shall have copies of the CSPP and SPCD available at all times for reference by the airport operator and its representatives, and by subcontractors and contractor employees.

   Location(s) of CSPP and SPCD: _____

   _____

2. Provide a point of contact that will coordinate an immediate response to correct any construction-related activity that may adversely affect the operational safety of the airport. Project will require 24-hour coverage.

   Point of Contact: _____ Phone: _____

3. Contractor's on-site employees responsible for monitoring compliance with the CSPP and SPCD whenever active construction is taking place.

   Contact Person: _____ Phone: _____

   Contact Person: _____ Phone: _____

4. The contractor shall list all proposed deviations or modifications to the CSPP. For each alteration the contractor shall provide:

a. The reason why the alteration is desired.
b. Provide sufficient narrative description and/or pictorial descriptions of the proposed change so a complete review of the proposal can be made.
c. If no alterations are to be made to the CSPP, clearly state; "**No alterations to the CSPP are proposed."**

5. The contractor shall describe the frequency of 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. Inspections shall ensure that all proper safety devices, signs, demarcations etc. are in place and in proper working order in accordance with the approved CSPP & SPCD. A Construction Project Daily Safety Inspection Checklist is attached to aid in making a thorough inspection.

6. Provide a description of contractor's plan to 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. Include the appropriate plan sheets to identify timing and/or location of control measures.

7. Provide a description of contractor's plan to ensure that no contractor employees, employees of subcontractors or suppliers, or other persons enter any part of the air operations area (AOA) unless authorized.

8. Provide a description and schedule for any anticipated supplemental 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 as part of the CSPP.

9. Provide a description of contractor's plan to ensure that construction personnel are familiar with the safety procedures and regulations on the airport, the CSPP, and the SPCD.

SPCD Amendment

The SPCD shall be amended any time there is a construction practice proposed by the contractor that does not conform to the CSPP and SPCD and may impact the airport's operational safety. This will require a revision to the CSPP and SPCD and re-coordination with the airport operator and the FAA in advance.

Certification

I certify that we understand the operational safety requirements of the CSPP and assert that we will not deviate from the approved CSPP and SPCD unless written approval is granted by the airport operator.

Print Name: _____ Title: _____

Signature: _____ Date: _____

DESCRIPTION

131-1.1 The Contractor shall perform all necessary surveying required to construct all elements of the work as shown on the Contract Drawings and specified in the proposal and specifications. This shall include but not be limited to stakeout, layout, and elevations for pavements, structures, forms and appurtenances as shown and required, consistent with the current practices and shall be performed by qualified personnel acceptable to the Engineer. All survey work shall be provided under the direction of a land surveyor licensed in the State of Tennessee.

131-2.2 The Contractor must give weekly copies of the survey notes to the Engineer so that the Engineer may check them as to accuracy and method of staking. The Engineer may make periodic checks of the grades and alignment set by the Contractor. In case of error on the part of the Contractor, or his/her employees, resulting in establishing grades and/or alignment that are not in accordance with the plans or established by the Engineer, all construction not in accordance with the established grades and/or alignment shall be replaced without additional cost to the Owner.

No direct payment will be made, unless otherwise specified in contract documents, for this labor, materials, or other expenses therewith. The cost thereof shall be included in the price of the bid for the various items of the Contract.

The Contractor shall be required to provide, at a minimum, the following:

1. Verify survey existing control points and elevations as shown in the plans prior to construction. Adjudicate any differences with Engineer prior to commencement of construction operations.
2. Survey the existing pavement surface on the grid matching the spot elevation plans. Data to be submitted to Engineer in AutoCAD version 2012 or higher prior to construction for verification / validation of information drawings. Adjudicate any differences with Engineer prior to commencement of construction operations.
3. In Mill and Overlay areas (with and without asphalt leveling), survey the milled pavement surface on the grid matching the spot elevation plans. Provide elevation and “fill” heights for bituminous surface course construction. Delineate areas to receive leveling course prior to nominal 2” overlay in CAD for layout in the field. Data to be submitted to Engineer in AutoCAD version 2012 or higher at least 48 hours prior to paving operations.
4. In Full Depth Reclamation areas (after pulverization, compaction, and grading but prior to import of P-208 Base Course material), survey the FDR base course surface elevation on the grid matching the spot elevation plans. Provide elevation and “fill” heights for P-208 Base Course construction, as well as planned volume of imported fill. Delineate areas to receive P-208 Base Course in CAD for layout in the field. Data to be submitted to Engineer in AutoCAD version 2012 or higher at least 48 hours prior to paving operations.
5. In Full Depth Reclamation areas (after filling to grade with P-208 Base Course material), survey the FDR/P-208 Base Course surface elevation on the grid matching the spot elevation plans. Provide elevation and “fill” heights for P-401 Surface Course construction and provide computed volume of P-208 constructed. Data to be submitted to Engineer in AutoCAD version 2012 or higher at least 48 hours prior to paving operations.
6. Provide survey of as-constructed elevations for all finished pavements on the grid matching the spot elevation plans. Data to be submitted to Engineer in AutoCAD version 2012 or higher.

METHOD OF MEASUREMENT

131-3.1 Project Survey and Stakeout and all associated work shall not be measured for separate payment.

BASIS OF PAYMENT

131-4.1 Payment for Project Survey and Stakeout and all associated work is incidental to the construction activity pay items to which it pertains and shall be compensated under Specification C-105 Mobilization.

TESTING REQUIREMENTS

131-5.1 None**.**

END OF ITEM TS-131