

**ADDENDUM NO. 1**  
**Airfield Pavement and Marking Maintenance**  
**Middle Tennessee Airports**  
**TAD # 99-555-1303-19**  
**AERO-21-999-00**

The following additional project information and clarifications are hereby incorporated into the bidding requirements for the referenced project:

1. Revised Project Manual Sections:
  - a. Table of Contents (2 pages)
  - b. Advertisement for Bids (2 pages)
  - c. Instructions to Bidders (4 pages)
  - d. Proposal (7 pages)
  - e. Proposal Certification (2 pages)
  - f. Proposal Guarantee (1page)
  - g. Proposal Bond (2 pages)
  - h. Contract (3 pages)
  - i. Contract Payment and Performance Bond (2 pages)
  - j. Item P-608 Emulsified Asphalt Seal Coat (9 pages)
  - k. Item P-623 Emulsified Asphalt Spray Seal Coat (5 pages)
  
2. Revised Drawing Sheets, available at the following link.

<https://bwsc.sharefile.com/d-s2a2552ac57224f8a8108d8f4d98e8c52>

- |          |          |
|----------|----------|
| a. C0.01 | m. C4.08 |
| b. C0.03 | n. C5.01 |
| c. C1.01 | o. C5.02 |
| d. C1.02 | p. C5.03 |
| e. C2.01 | q. C6.01 |
| f. C2.02 | r. C6.02 |
| g. C2.03 | s. C7.01 |
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| i. C3.02 | u. C8.01 |
| j. C3.03 | v. C8.02 |
| k. C4.01 | w. C8.03 |
| l. C4.02 |          |

3. Questions and Answers

- a. **“I am confused as to whether it (the bid package) is to be sent via the internet or hard copy mailed? There are several places where it states, ‘bids will be received via the internet....’”** This, Addendum No. 1, clarifies that a hard copy of the bid must be turned in. There will not be an option for internet bids.
- b. **“it (the bid package) mentions if mailed it is to be registered – will they accept a Federal Express?”** A FedEx package will be accepted.
- c. **Do you have the list of TN Airports that were completed in this last TDOT Airport project (with P-608)?** The airports that where work was done in the last TDOT project where P-608 was used are Beech River Regional Airport, Carroll County Airport, Centerville Municipal Airport, Charles W. Baker Airport, Dickson Municipal Airport, Dyersburg Regional Airport, Everett Stewart Regional Airport, General DeWitt Spain Airport, Hassell Field Airport, Henry County Airport, Humphreys County Airport, John A. Baker Field Airport, McKellar-Sipes Regional Airport, Millington-Memphis Airport, Perry County Airport, Robert Sibley Airport, and William L. Whitehurst Airport.
- d. **What are the contractor qualifications for applying P-608?** See paragraph 608-5.2 in the P-608 Emulsified Asphalt Seal Coat specification.

**Please see Verification of Receipt form, next page.**

**END OF ADDENDUM NO. 1**

**VERIFICATION OF RECEIPT**

Receipt of Addendum No. 1 for the referenced project shall be acknowledged by signing below and immediately returning this verification of receipt via email to [michelle.howell@bargedesign.com](mailto:michelle.howell@bargedesign.com) and [john.greaud@bargedesign.com](mailto:john.greaud@bargedesign.com). A copy of this addendum **must** also be submitted with the bid proposal.

**COMPANY:** \_\_\_\_\_

**NAME:** \_\_\_\_\_

**TITLE:** \_\_\_\_\_

**DATE:** \_\_\_\_\_

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**ATTENTION**

It shall be the bidders' responsibility to confirm that the Proposal Contract contains all the documents indicated on the Table of Contents.

Should any omissions occur, the appropriate documents may be obtained from the Construction Division upon request.

## ADVERTISEMENT FOR BIDS

Separate sealed BIDS for the Airfield Pavement and Marking Maintenance, Middle Tennessee Airports will be received by the State of Tennessee at the Department of Transportation, Aeronautics Division office until 2:00 P.M. local time, Friday, February 19<sup>th</sup>, 2021. BIDS will then be publicly, virtually opened and read aloud. BIDS received after this time will not be accepted and will be returned unopened. Contractors wanting to attend should send an email to Jacob Brooks ([jacob.brooks@tn.gov](mailto:jacob.brooks@tn.gov)) no later than 4:00 P.M. local time, Thursday, February 18<sup>th</sup>, 2021 requesting a virtual meeting invitation. The Virtual Bid-Opening will be conducted using the Microsoft Teams virtual meeting platform.

Scope of work: Pavement and airfield markings rehabilitation on select Middle Tennessee airports.

A Virtual Pre-Bid Conference will be held at 11:00 A.M. local time, Tuesday, February 2<sup>nd</sup>, 2021, until 12:00 P.M. local time. Attendance at this conference by the prime contractor is mandatory in order to be eligible to submit a bid. Contractors wanting to attend should send an email to Jacob Brooks ([jacob.brooks@tn.gov](mailto:jacob.brooks@tn.gov)) no later than 4:00 P.M. local time, Monday, February 1<sup>st</sup>, 2021 requesting a virtual meeting invitation. The Virtual Pre-Bid Conference will be conducted using the Microsoft Teams virtual meeting platform.

Bid Requirements, Contract Forms and Conditions, Specifications, and Drawings may be examined at the following:

1. Barge Design Solutions, Inc., 615 3<sup>rd</sup> Ave. S., Ste. 700, Nashville, Tennessee 37210, (615) 252-4222
2. Barge Design Solutions, Inc, 60 Germantown Court, Ste. 100, Memphis, Tennessee 38018, (901) 755-7166

Copies of the Bidding Documents may be purchased from Barge Design Solutions, Inc., at a non-refundable cost of **\$100.00 per set**. Checks for copies of the Bidding Documents shall be made payable to Barge Design Solutions, Inc, and can be picked up at 60 Germantown Court, Ste. 100, Memphis, Tennessee 38018, (901) 755-7166. Contact John Greaud for additional information on purchase of Bidding Documents at [john.greaud@bargedesign.com](mailto:john.greaud@bargedesign.com) or by phone at (901) 244-5528.

All bidders, including the successful BIDDER, shall comply with all City, County and State provisions in law relative to work covered by this legal notice including licensing and/or permit laws. All bidders must be licensed contractors to perform the type of construction herein described as required by Tennessee Code Annotated, Title 62, Chapter 6. The bidder's name, license number, classification and expiration date must be placed on the envelope containing the Contractor's bid. Envelopes must be sealed.

**Bid Security:** A certified check or cashier's check payable to the State of Tennessee or, a bid bond, of an amount not less than 5% of the bid amount shall be submitted with each bid as a guarantee that, if the bid is accepted, a contract will be entered into, and the performance of the contract properly secured.

**Contract Security:** The Successful bidder will be required to furnish a separate contract bond payable to the OWNER in an amount equal to 100% of the Contract Price as security for CONTRACTOR'S faithful performance and payment of all obligations under the Contract Documents.

Bidders are advised that sureties used for obtaining bonds, must appear on the Department of Treasury's Listing of Approved Sureties (Department Circular 570).

No BID may be withdrawn by the bidder within sixty (60) days after actual date of opening thereof.

BIDS are to be based upon prevailing wages in **THE STATE OF TENNESSEE**; and in no case are wages considered less than those predetermined by the Secretary of Labor, a schedule of which is contained in the Contract Documents.

The State of Tennessee, in accordance with Title VI of the Civil Rights Acts of 1964 (42 U.S.C. 2000d) and

49 CFR, Part 26, Non-Discrimination in Federally Assisted Programs of the Department of Transportation, hereby notifies all bidders that it will affirmatively ensure that disadvantaged business enterprises are afforded full opportunity to submit bids in response to this invitation and will not be discriminated against on the grounds of race, color, sex, or national origin in consideration for and award.

The OWNER reserves the right to refuse to issue a proposal form to a prospective bidder should such bidder be in default for failure to comply with: (a.) 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 at the time the OWNER issues the proposal, (c.) contractor default under previous contracts, (d.) unsatisfactory work on previous contracts with the OWNER.

BIDS shall be on the forms included in the Bidding Documents and submitted in an opaque sealed envelope clearly identified on the outside as follows:

STATE OF TENNESSEE  
TDOT AERONAUTICS DIVISION  
BID FOR PAVEMENT AND MARKING MAINTENANCE OF MIDDLE TENNESSEE AIRPORTS  
TAD PROJECT # 99-555-1303-19  
NASHVILLE, TN 37210  
SUBMITTED BY: (Name of Bidder with Bidder's Current TN Contractor's License No.)

The BID shall be addressed to: **Tennessee Department of Transportation, Aeronautics Division, ATN: Jacob Brooks, 7335 Centennial Boulevard, Nashville, TN 37209**, and marked for which project the proposal pertains. Also, the Contractor's name, classification, address, license number, expiration date and date & time of the bid opening shall be indicated on the envelope. BIDS submitted by mail shall be registered.

The OWNER reserves the right to reject any and all BIDS, to waive any formalities or irregularities in the BIDS received, and to accept the BID which is deemed most favorable to the OWNER at the time and under the conditions stipulated.

The State of Tennessee does not discriminate on the basis of race, creed, color, national origin, sex, religion or handicap status in employment or the provisions of services.

(December 12, 2012)  
(June 14, 2013)  
(April 3, 2017)  
(February 25, 2019)

**STATE OF TENNESSEE**  
**DEPARTMENT OF TRANSPORTATION**  
**TENNESSEE STATE CONTRACT #AERO-21-999-00**  
**INSTRUCTIONS TO BIDDERS**  
**BIDS TO BE RECEIVED**  
**FEBRUARY 19<sup>TH</sup>, 2021**

Bids will be received until 2:00 P.M. CST, Friday, February 19<sup>th</sup>, 2021 and opened publicly, virtually and read aloud. Contractors wanting to attend should send an email to Jacob Brooks ([jacob.brooks@tn.gov](mailto:jacob.brooks@tn.gov)) no later than 4:00 P.M. local time, Thursday, February 18<sup>th</sup>, 2021 requesting a virtual meeting invitation. The Virtual Bid-Opening will be conducted using the Microsoft Teams virtual meeting platform. Letting results, along with other resources noted in this document, will be available upon requesting them from Jacob Brooks, [Jacob.brooks@tn.gov](mailto:Jacob.brooks@tn.gov).

Proposed construction shall be performed in accordance with the Standard Specification for Construction of Airports, Federal Aviation Administration, Advisory Circular 150/5370-10H, dated 12/21/2018, portions of which are incorporated herein as applicable. In addition, reference to any Special Provision not contained within the applicable Proposal Contract shall be disregarded. All questions related to the Proposal Contract, Plans, Specifications or Special Provisions shall be directed to the Tennessee Department of Transportation Aeronautics Division, (615) 741-2848. Information received from other offices of the Tennessee Department of Transportation is strictly advisory.

**IMPORTANT NOTICE TO BIDDERS:**

Prospective bidders should read the following instructions carefully before submitting their bids. Special attention is called to the regulations of the Tennessee Department of Transportation (Department) that total bids, rather than unit prices, will be provided. Proposals shall be rejected as being irregular if they fail to contain a unit price for each item listed.

After a bidder has submitted a bid, it can be withdrawn up until the time set for the opening of bids.

The awarding of the contract or rejection of all proposals will be made within thirty (30) days after the bid opening. Upon award, instructions along with appropriate contract documents will be forwarded to the awarded bidder. Award will be based on the Bid Total.

On all projects which are financed in whole or in part by funds received through Federal agencies and other third parties, the awarding of contracts by the Department will be subject to approval by the party or parties through which funds are received. The Department reserves the right to reject any bid proposal which is not acceptable to any such third party set out above, although such bid proposal would otherwise qualify as the lowest and best bid under the Standard Specifications of the Department. In addition, should the Department be unsuccessful in obtaining concurrence and/or a deposit, it could be necessary to cancel the award of the contract. It shall be the responsibility of the bidder to determine which projects are so financed in part by third parties, such information being available upon request from the Department.

The Tennessee Department of Transportation hereby notifies all bidders, that it will affirmatively ensure that in any contract entered into pursuant to this advertisement, disadvantaged business enterprises will be afforded full opportunity to submit bids in response to this invitation and will not be discriminated against on the basis of age, race, color, religion, national origin, sex or disability in consideration for an award.

The Tennessee Department of Transportation is an equal opportunity affirmative action employer, drug-free, with policies of nondiscrimination on the basis of race, sex, religion, color, national or ethnic origin, age, disability, or military service. For more information call: (615) 741-5996.

#### **PREQUALIFICATION OF BIDDERS:**

Each prospective bidder and subcontractor will be required to file the "Prequalification Questionnaire" form provided on the Construction Division's website. The form must be filled out completely, and the truth and accuracy of the information provided must be certified by a sworn affidavit signed by an officer, partner, owner or other authorized representative of the applicant who has authority to sign contracts or other legal documents on behalf of the applicant. A prospective bidder must be prequalified by and in good standing with the Department prior to being given authorization to bid. A prospective subcontractor must be prequalified by and in good standing with the Department prior to being approved as a subcontractor. Each prospective bidder or subcontractor shall notify the Department if there is any subsequent change in the name, organization or contact information provided.

Prospective bidders' "Prequalification Questionnaire" shall be filed with the Department at least fourteen (14) days prior to the date of opening bids on any letting in which the applicant intends to submit a bid to the Department, or at least fourteen (14) days prior to the date on which the applicant requests approval as a subcontractor under a contract awarded by the Department. Bidders intending to submit proposals consistently shall complete and submit the prequalification application annually; however, this document may be changed during such period upon submission of additional favorable reports or upon receipt by the Department of substantiated evidence of unsatisfactory performance. The Department reserves the right to request additional information and documentation to clarify and/or verify any information submitted in an applicant's prequalification application.

#### **PRIME CONTRACTOR LICENSING REQUIREMENTS**

The Department shall require that all prime contractors, except mowing and litter removal contractors, are to be licensed with the State of Tennessee, Department of Commerce and Insurance (TDCI), Board for Licensing Contractors (BLC) per Tenn. Code Ann. § 62-6-119. The prime contractor must be licensed in the general classification (e.g. Heavy Construction (HC), Highway, Railroad, Airport Construction (HRA), Specialty (S), Municipal and Utility Construction (MU), or Electrical Contracting (CE)) for the type of work in the project which they will perform. Bidders may submit a proposal without having a license and will be considered for award for twenty-one (21) days after proposals are opened. If the Bidder does not have a license with the TDCI, on or before twenty- one (21) days after proposals are opened, the Bidder will be considered non-responsive and their proposal will be rejected.

#### **SECRETARY OF STATE REQUIREMENTS**

Title 48 of Tenn. Code Ann. requires all contractors and subcontractors that are domestic or foreign Corporations, Limited Liability Companies, Limited Partnerships, or Limited Liability Partnerships to be in good standing with the Secretary of State. This includes being duly incorporated, authorized to transact business, and/or in compliance with other requirements as

detailed by the Secretary of State. Please contact the Secretary of State should you have any questions at (615) 741-2286 or visit [www.sos.tn.gov/business-services](http://www.sos.tn.gov/business-services).

The Department will not execute any contracts or approve subcontracts with contractors that are domestic or foreign Corporations, Limited Liability Companies, Limited Partnerships, or Limited Liability Partnerships, who are not in good standing with the Secretary of State (i.e. have a valid Certificate of Existence/Authorization). If a Bidder is not in good standing with the Secretary of State (i.e. have a valid Certificate of Existence/Authorization) on or before twenty-one (21) days after proposals are opened then the Bidder will be considered non-responsive and their bid will be rejected.

**ISSUANCE OF BIDDING DOCUMENTS**

Contact John Greaud, [john.greaud@bargedesign.com](mailto:john.greaud@bargedesign.com), (901) 244-5528, to receive a copy of the bid documents. You must purchase bid documents to be eligible to bid as a prime contractor. Addenda will be sent to all plan holders. Addenda will be acknowledged by all bidders on the addendum form(s) in the contractor's bid package. Failure to acknowledge receipt of each Addendum issued is grounds for bid rejection. Electronic copies of the Proposal Contract without Bid Form and Plans are available at <https://www.tn.gov/tdot/aeronautics/apmm-contract.html>.

When two or more contractors wish to bid together in a joint venture, each contractor will be required to make a written request to the Construction Division. This request shall be signed by an authorized signatory of each firm. In addition, a Bid Authorization Form must be submitted in the name of the joint venture.

**COMPLETE BID**

The proposal contains a bid that includes eight (8) airports.

BIDS shall be on the forms included in the Bidding Documents and submitted in an opaque sealed envelope clearly identified on the outside as follows:

STATE OF TENNESSEE  
TDOT AERONAUTICS DIVISION  
BID FOR AIRFIELD PAVEMENT AND MARKING MAINTENANCE OF MIDDLE TENNESSEE AIRPORTS  
TAD PROJECT # 99-555-1303-19  
NASHVILLE, TN 37210  
SUBMITTED BY: (Name of Bidder with Bidder's Current TN Contractor's License No.)

The BID shall be addressed to: Tennessee Department of Transportation, Aeronautics Division, ATTN: Jacob Brooks, 7335 Centennial Boulevard, Nashville, TN 37209, and marked for which project the proposal pertains. Also, the Contractor's name, classification, address, license number, expiration date and date & time of the bid opening shall be indicated on the envelope. BIDS submitted by mail shall be registered.

Bidders shall be properly licensed per Tenn. Code Ann. § 62-6-119.

**CERTIFICATION REGARDING SUBCONTRACTOR BID QUOTES**

The apparent low bidder for each project must provide a list of all subcontractors who provided a quote to perform work. The list shall be provided electronically on the TDOT form "Certification Regarding Subcontractor Bid Quotes" (Bidders List). The apparent low bidder shall submit this form before the close of business (4:30 PM, Central Time) five (5) calendar

days after the date on which bids are required to be submitted (e.g., if bids are required to be submitted on a Friday, then the completed form is due by 4:30 PM on the following Wednesday). Emergency contracts will not require a bidders list. Failure to complete and submit this form within the time period required may result in the rejection of the bid.

**BID GUARANTY**

Each bid must be accompanied by a bid bond or a Cashier's or Certified Check made payable to the Department of Transportation, in an amount equaling not less than five percent (5%) of the amount bid.

If the bidder's bond is offered as guaranty, the bond must be made by a surety company qualified and authorized to transact business in the State of Tennessee and must be acceptable to the Department.

If a check is offered as guaranty, the check must be included in the bid package and must be attached to the signed Proposal Guarantee form. The check of the successful bidder will be cashable at the discretion of the Commissioner, pending the satisfactory execution and acceptance of the contract and the contract bond.

Clay Bright  
Commissioner

The following information applies to Federal-Aid construction projects:

**NOTICE TO ALL BIDDERS**

To report bid rigging activities call:

1-800-424-9071

The U.S. Department of Transportation (DOT) operates the above toll-free "hotline" Monday through Friday, 8:00 a.m. to 5:00 p.m. eastern time. Anyone with knowledge of possible bid rigging, bidder collusion, or other fraudulent activities should use the "hotline" to report such activities.

The "hotline" is part of the DOT's continuing effort to identify and investigate highway construction contract fraud and abuse and is operated under the direction of the DOT Inspector General. All information will be treated confidentially and caller anonymity will be respected.

**PROPOSAL****TO THE TENNESSEE DEPARTMENT OF TRANSPORTATION  
AERONAUTICS DIVISION, NASHVILLE, TENNESSEE**

By submitting this Proposal, the bidder represents that it has carefully examined the sites of the work described herein, has become familiar with local conditions and the character and extent of the work; has carefully examined the Plans, the Standard Specifications for Construction of Airports, Federal Aviation Administration, Advisory Circular 150/5370-10H, with subsequent revisions which are acknowledged to be a part of this Proposal, the Special Provisions, the Proposal Form, the Form of Contract, and the Form of Contract Payment and Performance Bond (or the Form of Contract Performance Irrevocable Letter of Credit, for mowing contracts); and thoroughly understands their stipulations, requirements, and provisions.

The bidder has determined the quality and quantity of materials required; has investigated the location and determined the sources of supply of the materials required; has investigated labor conditions; and, has arranged for the continuous prosecution of the work herein described.

By submitting this Proposal, the bidder agrees to provide all necessary equipment, tools, labor, incidentals, and other means of construction, to do all the work, and furnish all the materials of the specified requirements which are necessary to complete the work in accordance with the Plans, and the Specifications, and agrees to accept as payment in full therefor the unit prices for the various items described in the Specifications that are set forth in this Proposal. The bidder understands that the quantities of work specified are approximate only and are subject to increase or decrease and that any such increase or decrease will not affect the unit prices set forth in this Proposal. Compensation for "extra work" which may be required by the Department in connection with the construction and completion of the work but which was not reflected in the Plans and Specifications at the time of bidding, will be made in the following manner: work for which there is a unit price set forth in this Proposal will be compensated at that unit price; work for which there is no unit price set forth in this Proposal will be compensated in accordance with the applicable Standard Specifications.

By submitting this Proposal, the parties hereto, in the performance of this Contract, shall not act as employees, partners, joint ventures, or associates of one another. It is expressly acknowledged by the parties hereto that such parties are independent contracting entities and that nothing in this Contract shall be construed to create an employer/employee relationship or to allow either to exercise control or direction over the manner or method by which the other transacts its business affairs or provides its usual services. The employees or agents of one party shall not be deemed or construed to be the employees or agents of the other party for any purpose whatsoever.

By submitting this Proposal, the bidder, if awarded the contract, agrees that it will be responsible for compliance with the Patient Protection and Affordable Care Act ("PPACA") with respect to itself and its employees, including any obligation to report health insurance coverage, provide health insurance coverage, or pay any financial assessment, tax, or penalty for not providing health insurance. The Contractor shall indemnify the State and hold it harmless for any costs to the State arising from Contractor's failure to fulfill its PPACA responsibilities for itself or its employees.

By submitting this Proposal, the bidder, if awarded the contract, shall be registered with the Department of Revenue for the collection of Tennessee sales and use tax or provide confirmation from the Department of Revenue that the bidder is not required to register for the Tennessee sales and use tax. This registration requirement is a material requirement of this Contract.

By submitting this Proposal, the bidder hereby agrees to be bound by the award of the Contract and, if awarded the Contract on this Proposal, to execute the required Contract and the required Contract Payment and Performance Bond (or Contract Payment and Performance Irrevocable Letter of Credit, for mowing contracts only) within ten days after receipt of notice of the award. The bidder must execute the required documents by signing each document provided in the bid package. The bidder submits herewith the required Proposal guaranty (or Proposal Irrevocable Letter of Credit, for mowing contracts only) in an amount of not less than five per cent of the total amount of the Proposal offered and agrees and consents that the Proposal guaranty (or Proposal Irrevocable Letter of Credit) shall immediately be at the disposal of the Department, not as a penalty, but as an agreed liquidated damage if the required Contract and Contract Payment and Performance Bond (or Irrevocable Letter of Credit ) are not executed within ten days from receipt of the notice of award.

By submission of this bid, each bidder and each person signing on behalf of any bidder certifies, and in the case of a joint bid each party thereto certifies as to its own organization, under penalty of perjury, that to the best of its knowledge and belief that each bidder is not on the list created pursuant to § 12-12-106. This list is generated to identify entities ineligible to contract with the State of Tennessee or any political subdivision of the State per the Iran Divestment Act, T.C.A. §§ 12-12-101 – 113, and the current list may be found at the Tennessee Department of General Services, Central Procurement Office, website under the Public Information Library webpage at the following link: [https://www.tn.gov/content/dam/tn/generalservices/documents/cpo/cpo-library/List\\_of\\_persons\\_pursuant\\_to\\_Tenn.\\_Code\\_Ann.\\_12-12-106\\_Iran\\_Divestment\\_Act\\_updated\\_with%20NY10.14.20.pdf](https://www.tn.gov/content/dam/tn/generalservices/documents/cpo/cpo-library/List_of_persons_pursuant_to_Tenn._Code_Ann._12-12-106_Iran_Divestment_Act_updated_with%20NY10.14.20.pdf)



BID FORM

**Tennessee Department of Transportation  
Aeronautics Division**

Re: Airfield Pavement and Marking Maintenance of Middle Tennessee Airports  
99-555-1303-19

In compliance with your Invitation to Bid for the above named project, having examined the Drawings and specifications and related documents and the proposed work, and being familiar with all of the conditions surrounding the construction of the proposed project, including availability of materials and labor, we hereby propose to furnish all labor, materials, and supplies and to construct the project in accordance with the contract documents, specifications and Drawings, within the time and prices stated below.

We acknowledge the receipt of Addenda numbered \_\_\_\_\_ through \_\_\_\_\_.  
We acknowledge the right of the Owner to accept any proposal, to reject any or all proposals, and to waive any informalities in bidding.

If notice of acceptance of bid is delivered within 60 days from date of bid opening, we will promptly execute and deliver a contract in accordance with bid, as accepted by the Owner, in the form designated, or forfeit the bid security to the Owner for delay and additional expense caused thereby.

After the Notice to Proceed (NTP) is received, we will begin work within (10) days.

We acknowledge that all work must be completed on or before October 1<sup>st</sup>, 2021. We further agree to pay as liquidated damages to the Owner the sum of \$1,600.00 for each calendar day of delay beyond the time frame shown for each airport and beyond October 1<sup>st</sup>, 2021, as provided in the Modifications to the General Conditions.

Eight (8) airports are included in the Bid as shown on the bid form. One contract will be awarded for this project. Award will be for the lowest acceptable bid, which is in the sole best interest of the Owner. Any award is subject to the availability of funding at the time of the award.

Tennessee Department of Transportation, Aeronautics Division  
 Airfield Pavement Marking and Maintenance, State Contract No. 99-555-1318-21  
 Middle Tennessee Airports

Addendum No. 1

**PROJECT BID**

Clarksville Regional Airport, CKV					
Item No.	Description	Unit	Quantity	Unit Price	Extended Price
C-100	CONTRACTOR QUALITY CONTROL PROGRAM (CQCP)	LS	1		
C-105	MOBILIZATION	LS	1		
P-101-5.1	CRACK REPAIR (TYPE I)	LF	5,200		
P-101-5.2	CRACK REPAIR (TYPE II)	LF	1,050		
P-101-5.3	AIRFIELD PAVEMENT MARKING REMOVAL	SF	765		
P-608-8.1 or P-623-8.1	EMULSIFIED ASPHALT SEAL COAT (P-608 OR P-623)	SY	12,380		
P-620-5.2	TEMPORARY YELLOW PAINT	SF	600		
P-620-5.4	YELLOW PAINT WITH REFLECTIVE MEDIA	SF	600		
<b>Subtotal</b>					

Ellington Airport, LUG					
Item No.	Description	Unit	Quantity	Unit Price	Extended Price
C-100	CONTRACTOR QUALITY CONTROL PROGRAM (CQCP)	LS	1		
C-105	MOBILIZATION	LS	1		
P-101-5.1	CRACK REPAIR (TYPE I)	LF	82,206		
P-101-5.2	CRACK REPAIR (TYPE II)	LF	1,829		
P-101-5.3	AIRFIELD PAVEMENT MARKING REMOVAL	SF	66,851		
P-608-8.1	EMULSIFIED ASPHALT SEAL COAT (P-608)	SY	56,819		
P-608-8.1 or P-623-8.1	EMULSIFIED ASPHALT SEAL COAT (P-608 OR P-623)	SY	63,181		
P-620-5.1	TEMPORARY WHITE PAINT	SF	32,000		
P-620-5.2	TEMPORARY YELLOW PAINT	SF	5,200		
P-620-5.3	WHITE PAINT WITH REFLECTIVE MEDIA	SF	32,000		
P-620-5.4	YELLOW PAINT WITH REFLECTIVE MEDIA	SF	5,200		
P-620-5.5	BLACK PAINT	SF	1,085		
<b>Subtotal</b>					

Fayetteville Municipal Airport, YFM					
Item No.	Description	Unit	Quantity	Unit Price	Extended Price
C-100	CONTRACTOR QUALITY CONTROL PROGRAM (CQCP)	LS	1		
C-105	MOBILIZATION	LS	1		
P-101-5.1	CRACK REPAIR (TYPE I)	LF	74,524		
P-101-5.3	AIRFIELD PAVEMENT MARKING REMOVAL	SF	71,500		
P-605-5.1	JOINT SEALING FILLER	LF	1,220		
P-608-8.1	EMULSIFIED ASPHALT SEAL COAT (P-608)	SY	65,725		
P-608-8.1 or P-623-8.1	EMULSIFIED ASPHALT SEAL COAT (P-608 OR P-623)	SY	46,475		
P-620-5.1	TEMPORARY WHITE PAINT	SF	32,500		
P-620-5.2	TEMPORARY YELLOW PAINT	SF	6,000		
P-620-5.3	WHITE PAINT WITH REFLECTIVE MEDIA	SF	32,500		
P-620-5.4	YELLOW PAINT WITH REFLECTIVE MEDIA	SF	6,000		
P-620-5.5	BLACK PAINT	SF	2,475		
<b>Subtotal</b>					

Tennessee Department of Transportation, Aeronautics Division  
 Airfield Pavement Marking and Maintenance, State Contract No. 99-555-1318-21  
 Middle Tennessee Airports

Addendum No. 1

John C Tune Airport, JWN					
Item No.	Description	Unit	Quantity	Unit Price	Extended Price
C-100	CONTRACTOR QUALITY CONTROL PROGRAM (CQCP)	LS	1		
C-105	MOBILIZATION	LS	1		
P-101-5.1	CRACK REPAIR (TYPE I)	LF	69,510		
P-101-5.2	CRACK REPAIR (TYPE II)	LF	9,030		
P-101-5.3	AIRFIELD PAVEMENT MARKING REMOVAL	SF	126,809		
P-620-5.1	TEMPORARY WHITE PAINT	SF	80,650		
P-620-5.2	TEMPORARY YELLOW PAINT	SF	15,395		
P-620-5.3	WHITE PAINT WITH REFLECTIVE MEDIA (TYPE III BEADS)	SF	80,650		
P-620-5.4	YELLOW PAINT WITH REFLECTIVE MEDIA (TYPE III BEADS)	SF	15,935		
P-620-5.5	BLACK PAINT	SF	31,124		
				<b>Subtotal</b>	

Maury County Regional Airport, MRC					
Item No.	Description	Unit	Quantity	Unit Price	Extended Price
C-100	CONTRACTOR QUALITY CONTROL PROGRAM (CQCP)	LS	1		
C-105	MOBILIZATION	LS	1		
P-101-5.1	CRACK REPAIR (TYPE I)	LF	81,827		
P-101-5.2	CRACK REPAIR (TYPE II)	LF	10,925		
P-101-5.3	AIRFIELD PAVEMENT MARKING REMOVAL	SF	75,815		
P-101-5.4	CRACK REPAIR (TYPE III)	LF	75		
P-608-8.1	EMULSIFIED ASPHALT SEAL COAT (P-608)	SY	66,946		
P-608-8.1 or P-623-8.1	EMULSIFIED ASPHALT SEAL COAT (P-608 OR P-623)	SY	34,154		
P-620-5.1	TEMPORARY WHITE PAINT	SF	32,750		
P-620-5.2	TEMPORARY YELLOW PAINT	SF	5,800		
P-620-5.3	WHITE PAINT WITH REFLECTIVE MEDIA	SF	32,750		
P-620-5.4	YELLOW PAINT WITH REFLECTIVE MEDIA	SF	5,800		
P-620-5.5	BLACK PAINT	SF	1,450		
				<b>Subtotal</b>	

Portland Municipal Airport, 1M5					
Item No.	Description	Unit	Quantity	Unit Price	Extended Price
C-100	CONTRACTOR QUALITY CONTROL PROGRAM (CQCP)	LS	1		
C-105	MOBILIZATION	LS	1		
P-101-5.1	CRACK REPAIR (TYPE I)	LF	13,670		
P-101-5.2	CRACK REPAIR (TYPE II)	LF	14,315		
P-101-5.3	AIRFIELD PAVEMENT MARKING REMOVAL	SF	2,325		
P-608-8.1 or P-623-8.1	EMULSIFIED ASPHALT SEAL COAT (P-608 OR P-623)	SY	23,725		
P-620-5.2	TEMPORARY YELLOW PAINT	SF	2,100		
P-620-5.4	YELLOW PAINT WITH REFLECTIVE MEDIA	SF	2,100		
P-620-5.5	BLACK PAINT	SF	300		
				<b>Subtotal</b>	

Tennessee Department of Transportation, Aeronautics Division  
 Airfield Pavement Marking and Maintenance, State Contract No. 99-555-1318-21  
 Middle Tennessee Airports

Addendum No. 1

Smyrna Airport, MQY					
Item No.	Description	Unit	Quantity	Unit Price	Extended Price
C-100	CONTRACTOR QUALITY CONTROL PROGRAM (CQCP)	LS	1		
C-105	MOBILIZATION	LS	1		
P-101-5.1	CRACK REPAIR (TYPE I)	LF	323,897		
P-101-5.1	CRACK REPAIR (TYPE II)	LF	80,783		
P-101-5.3	AIRFIELD PAVEMENT MARKING REMOVAL	SF	159,047		
P-605-5.1	JOINT SEALING FILLER	LF	99,920		
P-608-8.1	EMULSIFIED ASPHALT SEAL COAT (P-608)	SY	61,622		
P-608-8.1 or P-623-8.1	EMULSIFIED ASPHALT SEAL COAT (P-608 OR P-623)	SY	211,998		
P-620-5.1	TEMPORARY WHITE PAINT	SF	64,692		
P-620-5.2	TEMPORARY YELLOW PAINT	SF	44,615		
P-620-5.3	WHITE PAINT WITH REFLECTIVE MEDIA	SF	64,692		
P-620-5.4	YELLOW PAINT WITH REFLECTIVE MEDIA	SF	44,615		
P-620-5.5	BLACK PAINT	SF	8,840		
P-620-5.6	RED PAINT	SF	1,600		
<b>Subtotal</b>					

Springfield-Robertson County Airport, M91					
Item No.	Description	Unit	Quantity	Unit Price	Extended Price
C-100	CONTRACTOR QUALITY CONTROL PROGRAM (CQCP)	LS	1		
C-105	MOBILIZATION	LS	1		
P-101-5.1	CRACK REPAIR (TYPE I)	LF	85,205		
P-101-5.2	CRACK REPAIR (TYPE II)	LF	41,042		
P-101-5.3	AIRFIELD PAVEMENT MARKING REMOVAL	SF	72,053		
P-608-8.1	EMULSIFIED ASPHALT SEAL COAT (P-608)	SY	61,900		
P-608-8.1 or P-623-8.1	EMULSIFIED ASPHALT SEAL COAT (P-608 OR P-623)	SY	60,350		
P-620-5.1	TEMPORARY WHITE PAINT	SF	32,350		
P-620-5.2	TEMPORARY YELLOW PAINT	SF	6,150		
P-620-5.3	WHITE PAINT WITH REFLECTIVE MEDIA	SF	32,350		
P-620-5.4	YELLOW PAINT WITH REFLECTIVE MEDIA	SF	6,150		
P-620-5.5	BLACK PAINT	SF	800		
<b>Subtotal</b>					

<b>Bid Total</b>	
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\_\_\_\_\_  
Bidder (2)\*

By: \_\_\_\_\_

\_\_\_\_\_  
Printed Name and Title

\_\_\_\_\_  
Address

\_\_\_\_\_  
City/State/Zip

Bidder (2) being a \_\_\_\_\_ composed of officers, partners, or owners as follows:  
(Type of business entity)

\_\_\_\_\_  
Name/Title

\_\_\_\_\_  
Name/Title

\_\_\_\_\_  
Name/Title

\_\_\_\_\_  
Name/Title

\_\_\_\_\_  
Name/Title

\_\_\_\_\_  
Name/Title

**STATE OF TENNESSEE**  
**DEPARTMENT OF TRANSPORTATION**  
**AERONAUTICS DIVISION**  
**PROPOSAL GUARANTEE**  
**CONTRACT NO. AERO-21-999-00**

Bidder: \_\_\_\_\_  
Print Name of Bidder

**KNOW ALL MEN BY THESE PRESENTS**, that the above-named Bidder has tendered the attached cashier's or certified check in an amount equal to five (5) percent of the total amount it bid for the project stated above, payable to the State of Tennessee, Department of Transportation, to be held pending the fulfillment of the following obligation conditions.

**NOW, THEREFORE**, the condition of this obligation is: the Bidder shall not withdraw its bid within sixty (60) days after the opening of the bids, or within such other time period as may be provided in the Proposal, and if the Department of Transportation shall award a Contract to the Bidder, the Bidder shall, within ten (10) days after it receives written notice of the award, fully execute a Contract on the basis of the terms, conditions and unit prices set forth in its Proposal or bid and provide a bond with good and sufficient surety (or Contract Performance Irrevocable Letter of Credit, for mowing contracts), as required for the faithful performance of the Contract and for the protection of all persons supplying labor, material, and equipment for the prosecution of the work. In the event the Bidder withdraws its bid after bids are opened, or after award of the Contract has been made fails to execute such the Contract and/or such additional documents as may be required and to provide the required bond (or Irrevocable Letter of Credit for mowing contracts) within the time period specified above, then the Department of Transportation shall cash the attached check and retain the funds, not as a penalty, but as agreed upon liquidated damages.

**IN WITNESS WHEREOF**, the Bidder has caused these presents to be signed by a duly authorized official.

By: \_\_\_\_\_ Date: \_\_\_\_\_

\_\_\_\_\_  
Print Name and Title

**NOTE: If a check is offered as the bid guaranty, the check and the executed Proposal Guarantee must be received by the Department with the bid package.**

**STATE OF TENNESSEE**  
**DEPARTMENT OF TRANSPORTATION**  
**AERONAUTICS DIVISION**  
**PROPOSAL GUARANTY BOND**

**KNOW ALL MEN BY THESE PRESENTS**, that we, the Principal and Surety are held and firmly bound unto the Department of Transportation in the full and just sum of five (5) percent of the total amount bid by the Principal for the project stated, for the payment of which sum well and truly to be made, we bind ourselves, our heirs, executors, administrators, and successors, jointly and severally, firmly by these presents.

**NOW, THEREFORE**, the condition of this obligation is: the Principal shall not withdraw its bid within sixty (60) days after the opening of the bids, or within such other time period as may be provided in the Proposal, and if the Department of Transportation shall award a Contract to the Principal, the Principal shall, within ten (10) days after written notice of the award is received by him, fully execute a Contract on the basis of the terms, conditions and unit prices set forth in his Proposal or bid and provide a bond (or Irrevocable Letter of Credit, for mowing contracts) with good and sufficient surety, as required for the faithful performance of the Contract and for the protection of all persons supplying labor, material, and equipment for the prosecution of the work. In the event the Principal withdraws its bid after bids are opened, or after award of the Contract has been made fails to execute such the Contract and/or such additional documents as may be required and to provide the required bond (or Irrevocable Letter of Credit, for mowing contracts) within the time period specified above, then the amount of the Proposal Bond shall be immediately paid to the Department of Transportation, not as a penalty, but as agreed upon liquidated damages.

**IN WITNESS WHEREOF**, the Principal has caused these presents to be signed by a duly authorized official and the Surety has caused these presents to be duly signed and sealed by an authorized agent or attorney-in-fact.

This \_\_\_\_\_ day of \_\_\_\_\_, 20\_\_\_\_\_.

\_\_\_\_\_  
Contractor (1)

\_\_\_\_\_  
By

\_\_\_\_\_  
Name of Agency

\_\_\_\_\_  
Title

\_\_\_\_\_  
No. & Street

\_\_\_\_\_  
Surety (1)

\_\_\_\_\_  
City, State, Zip Code

\_\_\_\_\_  
General Agent or Attorney-in-Fact

(Seal)

\_\_\_\_\_  
Principal (2); Name/Address  
(to be executed by the second party of a joint venture)

(Seal)

\_\_\_\_\_  
Contractor (2)

\_\_\_\_\_  
By

\_\_\_\_\_  
Name of Agency

\_\_\_\_\_  
Title

\_\_\_\_\_  
No. & Street

\_\_\_\_\_  
Surety (2)

\_\_\_\_\_  
City, State, Zip Code

\_\_\_\_\_  
General Agent or Attorney-in-Fact

NOTE: Each Agent representing such Surety Company must file with the Owner his Power of Attorney duly executed by said Surety Company.

**TENNESSEE DEPARTMENT OF TRANSPORTATION  
AERONAUTICS DIVISION**

**CONTRACT NO. AERO-21-999-00**

This agreement is made and executed between the State of Tennessee, Department of Transportation Aeronautics Division, hereinafter referred to as the "Department" and

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hereinafter referred to as the "Contractor."

**WITNESSETH**

The Department did advertise for, receive and accept a bid from the Contractor for work on the above identified contract.

In consideration of the agreements herein contained, to be performed by the parties hereto and of the payments hereafter agreed to be made, it is mutually agreed by both parties that:

1. The contract between the parties consists of the following "Contract Documents" all of which constitute one instrument:
  - (a) The Instructions to Bidders
  - (b) The Proposal
  - (c) All conditions and terms of this Contract form
  - (d) The Contract Payment & Performance Bond
  - (e) The most current version of the Standard Specifications for Construction of Airports, Federal Aviation Administration, Advisory Circular 150/5370-10H (hereinafter referred to as the "FAA Advisory Circulars")
  - (f) General Provisions
  - (g) Technical Specifications
  - (h) Special Provisions
  - (i) Addenda
  - (j) The Contract Plans
  - (k) The Work Order
  - (l) Construction Changes
  - (m) Supplemental Agreements

All of the provisions contained in the listed Contract Documents are incorporated herein by reference with the same force and effect as though set out in full.

2. The Contract Documents are intended to be complementary and to describe and provide for a complete work. Requirements in one of these are as binding as if occurring in all of them. In case of discrepancy, Supplemental Specifications will govern over the TDOT Standard Specifications; the Contract Plans will govern over both Supplemental and Standard Specifications, and Special Provisions will govern over both Plans and Specifications. In interpreting Plans, calculated dimensions will govern over scaled dimensions. Contract Plans, typical cross sections and approved working drawings will govern over Standard Drawings.
3. The Contractor agrees to furnish all materials, equipment, machinery, tools and labor and to perform the work required to complete the project in a thorough and skillful manner, to the satisfaction of the appropriate official of the Department.

4. The Department agrees to pay to the Contractor such unit prices for the work actually done as are set out in the accompanying proposal, in the manner provided for in the TDOT Standard Specifications, Supplemental Specifications and applicable Special Provisions.
5. The Contractor shall, at all times, observe and comply with all applicable federal, state and local laws, ordinances and regulations and shall indemnify and hold harmless the State of Tennessee and all of its officers, agents and servants against any claim of liability or assessment of fines or penalties arising from or based upon the Contractor's and/or its employees' violations of any such law ordinance or regulation. The Contractor shall maintain documentation for all charges against the State under this Contract. The books, records and documents of the Contractor insofar as they relate to the work performed or money received under this contract shall be maintained for a period of three (3) full years from the date of the final payment and shall be subject to audit at any reasonable time and upon reasonable notice by the State, the Comptroller of the Treasury, or their duly appointed representatives.
6. The Contractor shall be responsible for any and all injury or damage to persons or to property arising from the prosecution of the work and due to any act, omission, neglect or misconduct in its manner or method of prosecuting the work or due to its non-execution of the work or due to defective work or materials. The Contractor shall provide proof of adequate and appropriate general liability insurance providing liability coverage in an amount not less than \$1 million dollars per occurrence and \$300,000 per claimant, naming the State of Tennessee as an additional insured.
7. The Contractor shall indemnify and hold harmless the State, the Department and all of its officers, agents and employees from all suits, actions or claims of any character arising from the Contractor's acts or omissions in the prosecution of the work, use of unacceptable materials in constructing the work, infringement of patent, trademark or copyright, or claims for Workers' Compensation. If any such suit, action or claim is filed, the Department may retain from the monies due to the Contractor under this Contract a sum deemed sufficient by the Department to protect the Department from loss therefrom. Upon resolution of the suit, action or claim, any remaining retained funds will be released.
8. Upon execution of this Contract, the Contractor shall be prepared to begin the work to be performed under the Contract, but will not proceed until it has received official "Notice to Proceed". This official notice will stipulate the date upon which it is expected that the Contractor will begin his work, and from which date the working days tabulated against its time limit will begin. All other requirements in regard to the beginning of construction set forth in the Proposal and Special Provisions will date from the official notice.

**IN WITNESS WHEREOF**, the parties hereto have caused this Contract to be signed and executed by their respective authorized agents or officials.

\_\_\_\_\_  
Contractor

By: _____	_____
Authorized Agent/Official	Name
_____	
Date	

**STATE OF TENNESSEE**  
**DEPARTMENT OF TRANSPORTATION**  
**AERONAUTICS DIVISION**

Approved:

_____
Department Attorney
_____
Date

_____
Commissioner
_____
Date

This Contract is accepted on \_\_\_\_\_ and is effective on \_\_\_\_\_.

Once executed by the Commissioner, Regional Operations shall proceed with scheduling the Preconstruction Conference and issuing the official "Notice to Proceed".

**CONTRACT PAYMENT AND PERFORMANCE BOND**

**Note: to be filled out post-award**  
**CONTRACT NO. AERO-21-999-00**

Be it known that \_\_\_\_\_, as Principal, and \_\_\_\_\_, as Surety(ies), all authorized to do business in the State of Tennessee, hereby bind themselves to the State of Tennessee, Department of Transportation, and other potential claimants, for all obligations incurred by the Principal under its contract with the State of Tennessee, Department of Transportation, for the construction of the above identified contract; in the full contract amount of \$\_\_\_\_\_.

The obligations of the Principal and Surety(ies) under these payment and performance bonds shall continue in full force and effect until all materials, equipment and labor have been provided AND all requirements contained in the contract, plans and specifications have been completed in a timely, thorough and satisfactory manner. The parties agree that these bonds are statutory in nature and are governed by the provisions contained in Title 12, chapter 4 and Title 54, chapter 5 of the Tennessee Code Annotated relating to bonds required of contractors and that those provisions constitute a part of this bond.

By this instrument, the Principal and Surety(ies) specifically bind themselves, their heirs, successors, and assigns, *in solido*, under the following bonds:

**Payment Bond.** To the Tennessee Department of Transportation Aeronautics Division and all "Claimants," as contemplated by T.C.A. Title 54, chapter 5, in the full contract amount of \$\_\_\_\_\_, in order to secure the payment in full of all timely claims under the project.

**Performance Bond.** To the Tennessee Department of Transportation Aeronautics Division in the full contract amount of \$\_\_\_\_\_, in order to secure the full and faithful performance and timely completion of the project according to its plans and specifications, inclusive of overpayments to the contractor and liquidated damages as assessed.

Upon receipt of notice that the Principal is in default under the contract, the Surety(ies) shall undertake to complete performance, without regard to cost. If the Surety(ies) fail or refuse to complete performance of the contract, the Department may then proceed with the work in any lawful manner that it may elect until it is finally completed. When the work is thus finally completed, the total cost of the same will be computed. All costs and charges incurred by the Department in completing the Work will be deducted from any monies due or which may become due to the Principal. If the total costs of completion exceeds the sum which would have been payable under the Contract, then the Principal and the Surety(ies), *in solido*, shall be liable for and shall pay to the Department the amount of such excess.



## Item P-608 Emulsified Asphalt Seal Coat

### DESCRIPTION

**608-1.1** This item shall consist of the application of a emulsified asphalt surface treatment composed of an emulsion of natural and refined asphalt materials, water and a polymer additive, for taxiways and runways with the application of a suitable aggregate to maintain adequate surface friction; and airfield secondary and tertiary pavements including low-speed taxiways, shoulders, overruns, roads, parking areas, and other general applications with or without aggregate applied as designated on the plans. The terms seal coat, asphalt sealer, and asphalt material are interchangeable throughout this specification. The term emulsified asphalt means an emulsion of natural and refined asphalt materials.

### MATERIALS

**608-2.1 Aggregate.** The aggregate material shall be a dry, clean, dust and dirt free, sound, durable, angular shaped manufactured specialty sand, such as that used as an abrasive, with a Mohs hardness of 6 to 8. The Contractor shall submit the specialty sand manufacturer's technical data and a manufacturer's Certificate of Analysis (COA) indicating that the specialty sand meets the requirements of the specification to the RPR prior to start of construction. The sand must be approved for use by the RPR and shall meet the following gradation limits when tested in accordance with ASTM C136 and ASTM C117:

#### Aggregate Material Gradation Requirements<sup>1</sup>

Sieve Designation (square openings)	Individual Percentage Retained by Weight
No. 10 (2.00 mm)	0
No. 14 (1.41 mm)	0-4
No. 16 (1.18 mm)	0-8
No. 20 (850 µm)	0-35
No. 30 (600 µm)	20-50
No. 40 (425 µm)	10-45
No. 50 (300 µm)	0-20
No. 70 (212 µm)	0-5
No. 100 (150 µm)	0-2
No. 200 (75 µm)	0-2

<sup>1</sup> Locally available sand or abrasive material that is slightly outside of the gradation requirements may be approved by the RPR with concurrence by the seal coat manufacturer for the use of locally available sand or abrasive material. The RPR and manufacturer's field representative should verify acceptance during application of Control strips indicated under paragraph 608-3.2.

The Contractor shall provide a certification showing particle size analysis and properties of the material delivered for use on the project. The Contractor's certification may be subject to verification by testing the material delivered for use on the project.

**608-2.2 Asphalt Emulsion.** The asphalt emulsion shall meet the properties in the following table:

**Concentrated Asphalt Emulsion Properties**

Properties	Specification	Limits
Viscosity, Saybolt Furol at 77°F (25°C)	ASTM D7496	20 – 100 seconds
Residue by Distillation or Evaporation	ASTM D6997 or ASTM D6934	57% minimum
Sieve Test	ASTM D6933	0.1% maximum
24-hour Stability	ASTM D6930	1% maximum
5-day Settlement Test	ASTM D6930	5.0% maximum
Particle Charge <sup>1</sup>	ASTM D7402	Positive 6.5 maximum pH

<sup>1</sup> pH may be used in lieu of the particle charge test which is sometimes inconclusive in slow setting, asphalt emulsions.

The asphalt material base residue shall contain not less than 20% gilsonite, or uintaite and shall not contain any tall oil pitch or coal tar material and shall contain between one and three and one-half percent (1-3.5%) polymer.

**Tests on Residue from Distillation or Evaporation**

Properties	Specification	Limits
Viscosity at 275°F (135°C)	ASTM D4402	1750 cts maximum
Solubility in 1, 1, 1 trichloroethylene	ASTM D2042	97.5% minimum
Penetration	ASTM D5	50 dmm maximum
Asphaltenes	ASTM D2007	15% minimum
Saturates	ASTM D2007	15% maximum
Polar Compounds	ASTM D2007	25% minimum
Aromatics	ASTM D2007	15% minimum

The asphalt emulsion, when diluted in the volumetric proportion of one part concentrated asphalt material to one part hot water shall have the following properties:

**One-to-One Dilution Emulsion Properties**

Properties	Specification	Limits
<b>In Ready-to-Apply Form, one part concentrate to one part water, by volume</b>		
Viscosity, Saybolt Furol at 77°F (25°C)	ASTM D7496	5 – 50 seconds
Residue by Distillation or Evaporation	ASTM D6997 or ASTM D6934	28.5% minimum
Pumping Stability <sup>1</sup>		Pass

<sup>1</sup> Pumping stability is tested by pumping one pint (475 ml) of seal coat diluted one (1) part concentrate to one (1) part water, at 77°F (25°C), through a 1/4-inch (6 mm) gear pump operating 1750 rpm for 10 minutes with no significant separation or coagulation.

**Two-to-One Dilution Emulsion Properties**

Properties	Specification	Limits
<b>In Ready-to-Apply Form, two parts concentrate to one part water, by volume</b>		
Viscosity, Saybolt Furol at 77°F (25°C)	ASTM D7496	5 – 50 seconds
Residue by Distillation or Evaporation	ASTM D6997 or ASTM D6934	38% minimum
Pumping Stability <sup>1</sup>		Pass

<sup>1</sup> Pumping stability is tested by pumping one pint (475 ml) of seal coat diluted one (1) part concentrate to one (1) part water, at 77°F (25°C), through a 1/4-inch (6 mm) gear pump operating 1750 rpm for 10 minutes with no significant separation or coagulation.

The Contractor shall provide a copy of the manufacturer's Certificate of Analysis (COA) for the emulsified asphalt delivered to the project. If the asphalt emulsion is diluted at other than the manufacturer's facility, the Contractor shall provide a supplemental COA from an independent laboratory verifying the asphalt emulsion properties.

The COA shall be provided to and approved by the RPR before the emulsified asphalt is applied. The furnishing of the vendor's certified test report 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.

The asphalt material storage and handling temperature shall be between 50°F - 160°F (10°C - 70°C) and the material shall be protected from freezing, or whenever outside temperature drops below 40°F (4°C) for prolonged time periods.

Contractor shall provide a list of airport pavement projects, exposed to similar climate conditions, where this product has been successfully applied within at least 5 years of the project.

**608-2.3 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. Water used in making and diluting the emulsion shall be potable, with a maximum hardness of 90ppm calcium and 15ppm magnesium; deleterious iron, sulfates, and phosphates maximum 7ppm, and less than 1ppm of organic byproducts. Water shall be a minimum of 140°F (60°C) prior to adding to emulsion.

**608-2.4 Polymer.** The polymer shall meet the properties in the following table:

### Polymer Properties

Properties	Limits
Solids Content	47% to 65%, Percent by Weight
Weight	8.0 to 9.0 pounds/gallon (1.07 to 1.17 kg/L)
pH	3.0 to 8.0
Particle Charge	Nonionic/Cationic
Mechanical Stability	Excellent
Film Forming Temperature, °C	+5°C, minimum
Tg, °C	22°C, maximum

The manufacturer shall provide a copy of the Certificate of Analysis (COA) for the polymer used in the seal coat; and the Contractor shall include the COA with the emulsified asphalt COA when submitting to the RPR.

**608-2.5 Seal Coat with Aggregate.** The Contractor shall submit friction test data from no less than one of the airport projects identified under 608-2.2. The test data must be from the same project and include technical details on application rates, aggregate rates, and point of contact at the airport to confirm use and success of sealer with aggregate.

Friction test data in accordance with AC 150/5320-12, at 40 or 60 mph (65 or 95 km/h) wet, must include as a minimum; the friction value prior to sealant application; two values, between 24 and 96 hours after application, with a minimum of 24 hours between tests; and one value between 180 days and 360 days after the application. The results of the tests between 24 and 96 hours shall indicate friction is increasing at a rate to obtain similar friction value of the pavement surface prior to application, and the long-term test shall indicate no apparent adverse effect with time relative to friction values and existing pavement surface.

Seal coat material submittal without required friction performance will not be approved. Friction tests performed on this project cannot be used as a substitute of this requirement.

### COMPOSITION AND APPLICATION RATE

**608-3.1 Application Rate.** The approximate amounts of materials per square yard (square meter) for the asphalt surface treatment shall be as provided in the table for the treatment area(s) at the specified dilution rate(s) as noted on the plans. The actual application rates will vary within the range specified to suit field conditions and will be recommended by the manufacturer's representative and approved by the RPR from the test area/sections evaluation.

#### Application Rate

Dilution Rate	Quantity of Emulsion gal/yd <sup>2</sup> (l/m <sup>2</sup> )	Quantity of Aggregate lb/yd <sup>2</sup> (kg/m <sup>2</sup> )
1:1	0.10-0.17 (0.45-0.77)	0.20-0.50 (0.11-0.27)

**608-3.2 Control areas and control strips.** Prior to full application, the control strip must be accepted by the RPR. The surface preparation, personnel, equipment, and method of operation used on the test area(s) and control strip(s) shall be the same as used on the remainder of the work.

A qualified manufacturer's representative shall be present in the field to assist the Contractor in applying control areas and/or control strips to determine the appropriate application rate of both emulsion and aggregate to be approved by the RPR.

A test area(s) and control strip(s) shall be applied for each differing asphalt pavement surface identified in the project. The test area(s) and control strip(s) shall be used to determine the material application rate(s) of both emulsion and sand prior to full production.

**a. For taxiway, taxilane and apron surfaces.** Prior to full application, the Contractor shall place test areas at varying application rates as recommended by the Contractor's manufacturer's representative to determine appropriate application rate(s). The test areas will be located on representative section(s) of the pavement to receive the asphalt surface treatment designated by the RPR.

**b. For runway and high-speed exit taxiway surfaces.** Prior to full application, the Contractor shall place a series of control strips a minimum of 300 feet (90 m) long by 12 feet (3.6 m) wide, or width of anticipated application, whichever is greater, at varying application rates as recommended by the manufacturer's representative and acceptable to the RPR to determine appropriate application rate(s). The control strips should be separated by a minimum of 200 feet between control strips. The area to be tested will be located on a representative section of the pavement to receive the asphalt surface treatment designated by the RPR. The control strips should be placed under similar field conditions as anticipated for the actual application. The skid resistance of the existing pavement shall be determined for each control strip with a continuous friction measuring equipment (CFME). The skid resistance of existing pavement can be immediately adjacent to the control strip or at the same location as the control strip if testing prior to application. The Contractor may begin testing the skid resistance of runway and high-speed exit taxiway control strips after application of the asphalt surface treatment has fully cured, generally 8 to 36 hours after application of the control strips depending on site and environmental conditions. Aircraft shall not be permitted on the runway or high speed exit taxiway control strips until such time as the Contractor validates that its surface friction meets the maintenance planning friction levels in AC 150/5320-12, Table 3-2 when tested at speeds of 40 and 60 mph (65 and 95 km/h) wet with approved CFME.

If the control strip should prove to be unsatisfactory, necessary adjustments to the application rate, placement operations, and equipment shall be made. Additional control strips shall be placed and additional skid resistance tests performed and evaluated. Full production shall not begin without the RPR's approval of an appropriate application rate(s). Acceptable control strips shall be paid for in accordance with paragraph 608-8.1.

## CONSTRUCTION METHODS

**608-4.1 Worker safety.** The Contractor shall obtain a Safety Data Sheet (SDS) for both the asphalt emulsion product and sand and require workmen to follow the manufacturer's recommended safety precautions.

**608-4.2 Weather limitations.** The asphalt emulsion shall be applied only when the existing pavement surface is dry and when the weather is not foggy, rainy, or when the wind velocity will prevent the uniform application of the material. No material shall be applied in strong winds that interfere with the uniform application of the material(s), or when dust or sand is blowing or when rain is anticipated within eight (8) hours of application completion. The atmospheric temperature and the pavement surface

temperature shall both be at, or above 60°F (16°C) and rising. Seal coat shall not be applied when pavement temperatures are expected to exceed 130°F within the subsequent 72 hours if traffic will be opened on pavement within those 72 hours. During application, account for wind drift. Cover existing buildings, structures, runway edge lights, taxiway edge lights, informational signs, retro-reflective marking and in-pavement duct markers as necessary to protect against overspray before applying the emulsion. Should emulsion get on any light or marker fixture, promptly clean the fixture. If cleaning is not satisfactory to the RPR, the Contractor shall replace any light, sign or marker with equivalent equipment at no cost to the Owner.

**608-4.3 Equipment and tools.** The Contractor shall furnish all equipment, tools, and machinery necessary for the performance of the work.

**a. Pressure distributor.** 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 hundred (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. The Contractor will provide verification of truck set-up (via a test-shot area), including but not limited to, nozzle tip size appropriate for application per nozzle manufacturer, spray-bar height and pressure and pump speed appropriate for the viscosity and temperature of sealer material, 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 12-foot (3.7-m), minimum, spray bar with individual nozzle control. The distributor truck shall be capable of specific application rates in the range of 0.05 to 0.25 gallons per square yard (0.15 to 0.80 liters per square meter). These rates shall be computer-controlled rather than mechanical. 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.

The distributor truck shall effectively heat and mix the material to the required temperature prior to application in accordance with the manufacturer's recommendations.

The distributor shall be equipped with a hand sprayer to spray the emulsion in areas not accessible to the distributor truck.

**b. Aggregate spreader.** The asphalt distributor truck will be equipped with an aggregate spreader mounted to the distributor truck that can apply sand to the emulsion in a single pass operation without driving through wet emulsion. The aggregate spreader shall be equipped with a variable control system capable of uniformly distributing the sand at the specified rate at varying application widths and speeds. The aggregate spreader must be adjusted to produce an even and accurate application of specified aggregate. Prior to any seal coat application, the aggregate spreader will be calibrated onsite to ensure acceptable uniformity of spread. The RPR will observe the calibration and verify the results. The aggregate spreader will be re-calibrated each time the aggregate rate is changed either during the application of test strips or production. The Contractor may consult the seal coat manufacturer representative for procedure and guidance. The sander shall have a minimum hopper capacity of 3,000 pounds (1361 kg) of sand. Push-type hand sanders will be allowed for use around lights, signs and other obstructions, if necessary.

**c. Power broom/blower.** A power broom and/or blower shall be provided for removing loose material from the surface to be treated.

**d. Equipment calibration.** Asphalt distributors must be calibrated within the same construction season 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.

**608-4.4 Preparation of asphalt pavement surfaces.** Clean pavement surface immediately prior to placing the seal coat so that it is free of dust, dirt, grease, vegetation, oil or any type of objectionable surface film. Remove oil or grease from the asphalt pavement by scrubbing with a detergent, washing thoroughly with clean water, and then treat these areas with a spot primer. Any additional surface preparation, such as crack repair, shall be in accordance with Item P-101, paragraph 101-3.6.

**a. New asphalt pavement surfaces.** Allow new asphalt pavement surfaces to cure so that there is no concentration of oils on the surface. A period of at least 30 days at 70°F (21°C) daytime temperatures shall elapse between the placement of a hot mixed asphalt concrete surface course and the application of the surface treatment.

Perform a water-break-free test to confirm that the surface oils have degraded and dissipated. (Cast approximately one gallon (4 liters) of clean water out over the surface. The water should sheet out and wet the surface uniformly without crawling or showing oil rings.) If signs of crawling or oil rings are apparent on the pavement surface, additional time must be allowed for additional curing and retesting of the pavement surface prior to treatment.

**608-4.5 Emulsion mixing.** The application emulsion shall be obtained by blending asphalt material concentrate, water and polymer, if specified. Always add heated water to the asphalt material concentrate, never add asphalt material concentrate to heated water. Mix one part heated water to one part asphalt material concentrate, by volume.

Add 1% polymer, by volume, to the emulsion mix. If the polymer is added to the emulsion mix at the plant, submit weight scale tickets to the RPR. As an option, the polymer may be added to the emulsion mix at the job site provided the polymer is added slowly while the asphalt distributor truck circulating pump is running. The mix must be agitated for a minimum of 15 minutes or until the polymer is mixed to the satisfaction of the RPR.

**608-4.6 Application of asphalt emulsion.** The asphalt emulsion shall be applied using a pressure distributor upon the properly prepared, clean and dry surface at the application rate recommended by the manufacturer's representative and approved by the RPR from the test area/sections evaluation for each designated treatment area. The asphalt emulsion should be applied at a temperature between 130°F (54°C) and 160°F (70°C) or in accordance with the manufacturer's recommendation.

If low spots and depressions greater than 1/2 inch (12 mm) in depth in the pavement surface cause ponding or puddling of the applied materials, the pavement surface shall be lightly broomed with a broom or brush type squeegee until the pavement surface is free of any pools of excess material.

During all applications, the surfaces of adjacent structures shall be protected to prevent their being spattered or marred.

**608-4.7 Application of aggregate material.** Immediately following the application of the asphalt emulsion, friction sand at the rate recommended by the manufacturer's representative and approved by the RPR from the test area/sections evaluation for each designated application area, shall be spread uniformly over the asphalt emulsion in a single-pass operation simultaneous with the sealer application. The aggregate shall be spread to the same width of application as the asphalt material and shall not be applied in such thickness as to cause blanketing.

Sprinkling of additional aggregate material, and spraying additional asphalt material over areas that show up having insufficient cover or bitumen, shall be done by hand whenever necessary. In areas where hand work is necessitated, the sand shall be applied before the sealant begins to break.

Minimize aggregate from being broadcast and accumulating on the untreated pavement adjacent to an application pass. Prior to the next application pass, the Contractor shall clean areas of excess or loose aggregate and remove from project site.

### QUALITY CONTROL (QC)

**608-5.1 Manufacturer's representation.** The manufacturer's representative knowledgeable of the material, procedures, and equipment described in the specification is responsible to assist the Contractor and RPR in determining the appropriate application rates of the emulsion and aggregate, as well as recommendations for proper preparation and start-up of seal coat application. Documentation of the manufacturer representative's experience and knowledge for applying the seal coat product shall be furnished to the RPR a minimum of 10 work days prior to placement of the control strips. The cost of the manufacturer's representative shall be included in the Contractor's bid price.

**608-5.2 Contractor qualifications.** The Contractor shall provide documentation to the RPR that the seal coat Contractor is qualified to apply the seal coat, including personnel, and equipment, and has made at least three (3) applications similar to this project in the past two (2) years.

### MATERIAL ACCEPTANCE

**608-6.1 Application rate.** The rate of application of the asphalt emulsion shall be verified at least twice per day.

**608-6.2 Friction tests.** Friction tests in accordance with AC 150/5320-12, Measurement, Construction, and Maintenance of Skid-Resistant Airport Pavement Surfaces, shall be performed on all runway and high-speed taxiways that received a seal coat. Each test includes performing friction tests at 40 mph and 60 mph (65 or 95 km/h) both wet, 15 feet (4.5 m) to each side of runway centerline with approved continuous friction measuring equipment (CFME). The Contractor shall coordinate testing with the RPR and provide the RPR a written report of friction test results. The RPR shall be present for testing.

### METHOD OF MEASUREMENT

**608-7.1 Asphalt surface treatment.** The quantity of asphalt surface treatment shall be measured by the square yards of material applied in accordance with the plans and specifications and accepted by the RPR.

The Contractor must furnish the RPR with the certified weigh bills when materials are received for the asphalt material used under this contract. The Contractor must not remove material from the tank car or storage tank until initial amounts and temperature measurements have been verified.

### BASIS OF PAYMENT

**608-8.1** Payment shall be made at the contract unit price per square yard [ square meter ] for the asphalt surface treatment applied and accepted by the RPR, and the contract unit price per lump sum for runway friction testing. This price shall be full compensation for all surface preparation, furnishing all materials, delivery and application of these materials, for all labor, equipment, tools, and incidentals necessary to complete the item, including the friction testing and all work required to meet AC 150/5320-12, and any costs associated with furnishing a qualified manufacturer's representative to assist with control strips.

Payment will be made under:

Item P-608-8.1 Emulsified Asphalt Seal Coat – 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 C117	Standard Test Method for Materials Finer than 75- $\mu$ m (No. 200) Sieve in Mineral Aggregates by Washing
ASTM C136	Standard Test Method for Sieve Analysis of Fine and Coarse Aggregates
ASTM C1602	Standard Specification for Mixing Water Used in the Production of Hydraulic Cement Concrete
ASTM D5	Standard Test Method for Penetration of Asphalt Materials
ASTM D244	Standard Test Methods and Practices for Emulsified Asphalts
ASTM D2007	Standard Test Method for Characteristic Groups in Rubber Extender and Processing Oils and Other Petroleum-Derived Oils by the Clay-Gel Absorption Chromatographic Method
ASTM D2042	Standard Test Method for Solubility of Asphalt Materials in Trichloroethylene
ASTM D2995	Standard Practice for Estimating Application Rate of Bituminous Distributors
ASTM D4402	Standard Test Method for Viscosity Determination of Asphalt at Elevated Temperatures Using a Rotational Viscometer
ASTM D5340	Standard Test Method for Airport Pavement Condition Index Surveys

#### Advisory Circulars (AC)

AC 150/5320-12	Measurement, Construction, and Maintenance of Skid-Resistant Airport Pavement Surfaces
AC 150/5320-17	Airfield Pavement Surface Evaluation and Rating (PASER) Manuals
AC 150/5380-6	Guidelines and Procedures for Maintenance of Airport Pavements

**END OF ITEM P-608**

## Item P-623 Emulsified Asphalt Spray Seal Coat

### DESCRIPTION

**623-1.1** This item shall consist of the application of a polymer modified, asphalt emulsion spray seal coat (seal coat) composed of an emulsion of binders prepared from crude petroleum, mineral fillers, water and polymer, applied to an existing, previously prepared asphalt surface. The seal coat shall be applied in accordance with these specifications, and as shown on the plans or as directed by the Resident Project Representative (RPR).

**623-1.2 Application rate per square yard (square meter).** The approximate amounts of seal coat per square yard (square meter) for the spray seal will be applied as provided in the Application Rate Table. The actual application rates will vary within the range specified to suit field conditions and will be recommended by the manufacturer's representative and approved by the RPR from the test area/sections evaluation.

#### Application Rate

	2-coat application	3-coat application
<b>1<sup>st</sup> Coat</b>	0.14 - 0.20	0.14 - 0.20
<b>2<sup>nd</sup> Coat</b>	0.10 - 0.20	0.10 - 0.20
<b>3<sup>rd</sup> Coat</b>	-	0.08 - 0.15
<b>Total Application</b>	0.30 minimum	0.30 – 0.55

### MATERIALS

**623-2.1 Aggregate.** The aggregate shall be black beauty sand or silica sand for taxiways and aprons, in the quantities as specified below. Gradation limits shall be 20/40 mesh or 30/60 mesh as approved by the Engineer. Sand shall be clean and free of vegetation, dirt, dust, and other deleterious substances. The black beauty aggregate material shall meet the requirements of Table 1.

Mixing quantities of sand – pounds per gallon of asphalt emulsion:

- A. Taxiway and Apron – two (2) pounds of black beauty sand or two (2) pounds of silica sand.

<b>TABLE 1</b>	
<b>Properties of Black Beauty Aggregate</b>	
Hardness (Mohs Scale)	6 – 7
Bulk Density	75 – 100 pcf
Specific Gravity	2.70 min.

Moisture Content	0.5% max.
Conductivity	25 microSiemens max.
Free Silica	1% max.

**623-2.2 Polymer modified asphalt emulsion spray seal (seal coat).** A seal coat fortified with fillers created from binders prepared from crude petroleum shall meet the properties in the following table:

**Polymer Modified Asphalt Emulsion Spray Seal Properties<sup>1</sup>**

Property	Characteristics	
	Minimum	Maximum
Density at 77°F (25°C), lb./gal (g/mL)	9 (1.0)	12 (1.5)
Residue by evaporation, %	44	...
Water content, %	...	56
Ash content of residue, %	30	40
Uniformity	Uniform homogeneous consistency.	
Wet film continuity	No separation, coagulation, or settlement that cannot be overcome by moderate agitation.	
Resistance to heat	No blistering, sagging, or slipping.	
Resistance to water	No loss of adhesion and no blistering or tendency to re-emulsify.	
Flash point	No tendency to flash.	
Flexibility	No flaking, cracking, or loss of adhesion to the substrate.	
Polymer modification	Minimum 3% by weight of asphalt binder.	

<sup>1</sup> For water content testing, use ASTM Test Method D95. For flash point testing, use ASTM Test Method D93. For other properties, use AASHTO T 59 and T 111.

The Contractor shall provide a copy of the manufacturer's Certificate of Analysis (COA) for material delivered to the project. If the asphalt emulsion is diluted at other than the manufacturer's facility, the Contractor shall provide a supplemental COA from an independent laboratory verifying the asphalt emulsion properties. The COA shall be provided to and approved by the RPR before material is applied. The furnishing of the vendor's certified test report 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.

**623-2.3 Polymer modification.** The type of polymer used for modification shall be chosen by the manufacturer. The polymer modifier shall be incorporated in the manufacturing process. The Contractor shall submit manufacturer's technical data, the manufacturer's certification indicating that the polymer meets the requirements of the specification, and the manufacturer's approval of its use to the RPR. The

amount of polymer will be a minimum 3% of the weight of the asphalt binder in the seal coat surface treatment.

**623-2.4 Water.** Water used in mixing or curing shall be from potable water sources, free of harmful soluble salts, and at least 50°F (10°C). Other sources shall be tested in accordance with ASTM C1602 prior to use.

**623-2.5 Friction characteristics.** The Contractor shall submit to the RPR friction tests, from previous airport projects which used the emulsified asphalt spray seal coat in a similar environment, in accordance with AC 150/5320-12, at 40 mph (65 km/h) wet, showing, as a minimum; friction value of pavement surface prior to sealant application; two values, tested between 24 and 96 hours after application, with a minimum of 24 hours between tests; and one value tested at no less than 180 days or greater than 360 days after the application. The results of the two tests between 24 and 96 hours shall indicate friction is increasing at a rate to obtain similar friction value of the pavement surface prior to application, and the long-term test shall indicate no apparent adverse effect with time relative to friction values and existing pavement surface. The Contractor shall submit to the RPR a list of airports which meet the above requirements, as well as technical details on application rates, aggregate rates, and point of contact at these airports to confirm use and success of sealer. Friction tests shall be submitted from no less than one of the airports on the list and each set of tests described above, must be from one project.

Submittals without the required friction performance will not be approved. Friction tests performed on this project cannot be used as a substitute of this requirement.

## CONSTRUCTION METHODS

**623-4.1 Worker safety.** The Contractor shall obtain a Safety Data Sheet (SDS) for both the asphalt sealer product and aggregate and require workmen to follow the manufacturer's recommended safety precautions. All additional industry standard safety precautions regarding the storage and applications of asphalts should be understood and followed by the Contractor.

**623-4.2 Control strip.** Prior to full production the Contractor shall construct a control strip, a minimum of 250 square yards. The test area will be designated by the RPR in an area representative of the project. The control strip will determine the application rate to be used as well as to demonstrate the equipment and placement methods to be used. If the control strip should prove to be unsatisfactory, the necessary adjustments to the mix composition, application rate, placement operations and equipment shall be made. Additional control strips shall be placed and evaluated if required. Full production shall not begin without the RPR's approval of an appropriate application rate. Acceptable control strips shall be paid for in accordance with paragraph 623-8.1.

**623-4.3 Weather limitations.** The spray seal shall be applied only when the existing pavement surface is dry and when the weather is not foggy, rainy, or the humidity will not allow proper curing, or when the wind velocity will prevent the uniform application of the material. No material shall be applied when dust or sand is blowing or when rain is anticipated within eight (8) hours of application completion. The atmospheric temperature and the pavement surface temperature shall both be above 50°F (10°C) and rising and is expected to remain above 50°F (10°C) for 24 hours, unless otherwise directed by the RPR. Cover existing buildings, structures, runway edge lights, taxiway edge lights, informational signs, retro-reflective marking and in-pavement duct markers as necessary to protect against overspray before applying the emulsion. Should emulsion get on any light or marker fixture, promptly clean the fixture. If cleaning is not satisfactory to the RPR, the Contractor shall replace any light, sign or marker with equivalent equipment at no cost to the Owner.

**623-4.3 Equipment and tools.** The Contractor shall furnish all equipment, tools, and machinery necessary for the performance of the work. Equipment used to apply the seal coat shall have continuous agitation or mixing capabilities to maintain homogeneous consistency of the seal coat throughout the application process. Spray equipment shall be capable of mixing and spraying seal coat with aggregate

added. Self-propelled squeegee equipment with mixing capability shall have at least two squeegee or brush devices (one behind the other) to ensure adequate distribution and penetration of seal coat surface treatment into pavement surface. Hand squeegees and brushes shall be acceptable in areas where practicality prohibits the use of mechanized equipment. A power broom or blower may be used for removing loose material from the surface to be treated.

**623-4.4 Preparation of asphalt pavement surfaces.** Clean pavement surface immediately prior to placing the seal coat so that it is free of dust, dirt, grease, vegetation, oil or any type of objectionable surface film. Remove oil or grease by scrubbing with a detergent, then wash thoroughly with clean water. Any additional surface preparation, such as crack repair, shall be in accordance with Item P-101, paragraph 101-3.6.

#### **623-4.5 Emulsion mixing.**

Contractor must ensure the mixture is homogeneous with no balling or lumping. Continue to agitate the seal coat mixture in the mixing tank at all times prior to and during application so that a consistent mix is available for application. Small additional increments of water may be needed to provide a workable consistency, but in no case is the water content to exceed the specified amount.

**623-4.6 Application of seal coat.** Application of seal coat generally consists of two application coats of material. The first coat must be dry prior to the application of the second coat or subsequent coats if more than two coats are being applied. During all applications, the surfaces of adjacent structures shall be protected to prevent their being spattered or marred. Should the seal coat get on any light or marker fixture, promptly clean the fixture. If cleaning is not satisfactory to the RPR, the Contractor shall replace any light, sign or marker with equivalent equipment at no cost to the Owner.

Traffic shall not be allowed until the seal coat has thoroughly cured for approximately 24 hours.

If low spots and depressions greater than 1/2 inch (12 mm) in depth in the pavement surface cause ponding or puddling of the applied materials, the pavement surface shall be broomed with a broom drag. Brooming shall continue until the pavement surface is free of any pools of excess material. The RPR shall inspect and approve areas after brooming.

**623-4.7 Freight and weigh bills.** 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 seal coat used in the construction of the pavement covered by the contract. Do not remove seal coat 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.

### **QUALITY CONTROL (QC)**

**623-5.1 Contractor qualifications.** The Contractor shall furnish a certification demonstrating a minimum of three years of experience in the application of seal coats.

**623-5.2 Sampling.** A minimum of one sample per day shall be tested as specified in the table in paragraph 623-2.1. A random sample of approximately one-quarter of the composite mix from the onsite storage tank will be obtained daily by the Contractor in the presence of the owner's representative and stored in a proper container. The containers shall be sealed against contamination and retained in storage by the Owner for a period of six months. Samples shall be stored at room temperature and not be subjected to freezing temperatures.

A sample of undiluted asphalt emulsion shall be obtained from each consignment shipped to the job.

**MATERIAL ACCEPTANCE**

**623-6.1 Application rate.** The rate of application of the asphalt emulsion shall be verified at least twice per day. The Contractor must furnish the RPR the results daily.

**METHOD OF MEASUREMENT**

**623-7.1 Asphalt seal coat.** The quantity of seal coat shall be measured by the square yards of material applied in accordance with the plans and specifications and accepted by the RPR.

**BASIS OF PAYMENT**

**623-8.1** Payment shall be made at the contract unit price per square yard for the seal coat applied and accepted by the RPR. This price shall be full compensation for all surface preparation, furnishing all materials, delivery and application of these materials, for all labor, equipment, tools, and incidentals necessary to complete the item control strip.

Payment will be made under:

Item P-623-8.1                      Pavement Friction Sealcoat Surface Treatment (Apron & Taxi Lane Only – P-608 Alternate) – 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 C1602                      Standard Specification for Mixing Water Used in the Production of Hydraulic Cement Concrete

ASTM D93                         Standard Test Methods for Flash Point by Pensky-Martens Closed Cup Tester

ASTM D95                         Standard Test Method for Water in Petroleum Products and Bituminous Materials by Distillation

ASTM D2939

ASTM D5340                      Standard Test Method for Airport Pavement Condition Index Surveys

Advisory Circulars (AC)

AC 150/5380-7                    Airport Pavement Management Program (PMP)

Code of Federal Regulations (CFR)

29 CFR 1910.1200                Occupational Safety and Health Standards, Toxic and Hazardous Substances, Hazard Communication

40 CFR – Protection of Environment.

**END OF ITEM P-623**