RECYCLING OF ASPHALT MILLINGS BY THE COLD CENTRAL PLANT PROCESS

PUBLICATION

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1. SCOPE: This solicitation is an Invitation for Bid (IFB) for services to provide all labor, materials and equipment with operators to treat and recycle asphalt millings, also known as reclaimed asphalt pavement (RAP) by the cold central plant process at the locations listed on Attachment B – Stockpile Locations.

2. DEFINITIONS OF TERMS AND ACRONYMS

2.1. EIN – Employer Identification Number
2.2. HSP – HUB Subcontracting Plan
2.3. HUB – Historically Underutilized Business
2.4. IFB – Invitation for Bid
2.5. TxDOT – Texas Department of Transportation
2.6. RAP – Reclaimed Asphalt Pavement

3. APPLICABLE LAWS AND STANDARDS: The vendor shall provide the specified service requirements in accordance with all applicable federal, state and local laws, standards and regulations necessary to perform the services, including, but not limited to:

3.1. Texas Government Code 612, Section 612.002 of Texas Statutes
3.3. 2004 Texas Department of Transportation – Standard Specifications for Construction of Highways, Streets and Bridges
3.4. Texas Department of Transportation “Manual of Testing Procedures”

* This Specification Supersedes TxDOT Specification No. 926-77-18 Dated September 2009.
3.5. Tex-200-F – Sieve Analysis of Fine and Coarse Aggregate
3.6. Tex-201-F – Bulk Specific Gravity and Water Absorption of Aggregate
3.7. Tex-203-F – Sand Equivalent Test
3.8. Tex-206-F – Compacting Test Specimens of Bituminous Mixtures
3.10. Tex-208-F – Test for Stabilometer Value of Bituminous Mixtures
3.11. Tex-212-F – Determining Moisture Content of Bituminous Mixtures
3.12. Tex-217-F – Determining Deleterious Material and Decantation Test for Coarse Aggregates
3.13. Tex-227-F – Theoretical Maximum Specific Gravity of Bituminous Mixtures
3.15. Tex-500-C – Sampling Bituminous Materials, Pre-Molded Joint Fillers and Joint Sealers
3.16. Tex-531-C – Prediction of Moisture Induced Damage to Bituminous Paving Materials Using Molded Specimens

4. RESPONDENT QUALIFICATIONS: The respondent shall:

4.1. Be a company engaged in the business of providing treating and recycling of RAP by cold mixing for a minimum of five years within the last seven years. Recent start-up businesses do not meet the requirements of this solicitation. A start-up business is defined as a new company that has no previous operational history or expertise in the relevant business and is not affiliated with a company that has that history or expertise.

4.2. Be in good financial standing and current in payment of all taxes and fees such as state franchise fees. TxDOT reserves the right to request a copy of the respondent's audited or un-audited financial statement.

When financial statements are requested, TxDOT will review the respondent's audited or un-audited financial statement to this solicitation in accordance with Texas Government Code, Title 10, Subtitle D, Section 2156.007 to evaluate the sufficiency of the respondent's financial resources and ability to perform the contract or provide the service required in the solicitation. TxDOT will be the sole judge in determining the sufficiency of the respondent's financial resources and ability to perform the contract or provide the service. Factors to be reviewed include:

4.2.1. Balance sheets.
4.2.2. Net working capital.
4.2.3. Current asset ratio.
4.2.4. Liquidity ratio.
4.2.5. Auditor(s) notes.
4.2.6. Any notes to the financial statements.

5. **RESPONDENT REFERENCES**: The respondent should submit a minimum of three references to substantiate the qualifications and experience requirements for similar services completed for three years within the last five years. References shall illustrate respondent’s ability to provide the services outlined in the specification. References shall include name, point of contact, telephone number and dates services were performed. The response may be disqualified if TxDOT is unable to verify qualification and experience requirements from the respondent’s references. The response will be disqualified if TxDOT receives negative responses. TxDOT will be the sole judge of references.

6. **VENDOR REQUIREMENTS**: The vendor shall:

6.1. Adhere to the TxDOT Terms and Conditions identified on the solicitation.

6.2. Provide all labor, materials and equipment necessary to meet requirements of the specified services throughout the term of the purchase order.

6.3. Provide a primary point of contact.

7. **SERVICE REQUIREMENTS**: The vendor shall:

7.1. Recycle cold mix asphalt using 100 percent RAP incorporating emulsified asphalt, water and other additives as required by Attachment A – Mix Design Procedures For RAP – Short Term Stockpile Material and specific end use.

7.2. Guarantee usable material for a minimum of 14 days and a maximum of 75 days.

7.3. Provide a cold central plant with the following as a minimum:

7.3.1. **Material-Sizing Unit**: The unit shall:

7.3.1.1. Have screening and crushing capabilities to reduce 100 percent of the pulverized bituminous material to the size required by Para. 7.4.2. of this specification prior to mixing with asphalt emulsion.

7.3.1.2. Be capable of returning oversized material to the crusher.

7.3.1.3. Be electronically linked to the pugmill to control the specified amount of emulsified asphalt binder being added to the crushed asphalt millings.

7.3.1.4. Be able to remove crack filler, fabric and other foreign materials.
7.3.2. **Mixing Unit:** The unit shall:

7.3.2.1. Process the pulverized bituminous material, asphalt emulsion and other additives to a homogeneous mixture at a minimum rate of 200 tons per hour. The asphalt emulsion, water and other additives, if required, shall be incorporated into the pulverized bituminous material at the initial rate determined by the mix design and approved by the designated TxDOT representative. The designated TxDOT representative will determine adjustments in the rate of asphalt emulsion or water. An allowable tolerance of plus or minus 0.2 percent by weight of the asphalt emulsion will be maintained unless otherwise directed by the designated TxDOT representative. The recycled bituminous material shall be allowed to cure in the stockpile for a minimum of 14 calendar days prior to use.

7.3.2.2. Be equipped with a belt scale for the continuous weighing of the pulverized and sized bituminous material and a coupled and interlocked computer-controlled liquid metering device certified and meeting requirements of Item 520 "Weighing and Measuring Equipment", 2004 Texas Department of Transportation - Standard Specifications for Construction of Highways, Streets and Bridges and any applicable special provisions. The liquid metering device shall adjust the flow of asphalt emulsion and other liquid additives to compensate for any variation in the weight of pulverized material coming into the mixer. The metering device shall deliver the amount of asphalt emulsion or other liquid additive to within plus or minus 0.2 percent of the required amount by weight of pulverized bituminous material.

7.3.2.3. Display automatic digital readings for both the flow rate and total amount of pulverized bituminous material and asphalt emulsion in appropriate units of weight and time. The plant shall be a continuous process from the crusher and screening unit to the pugmill to eliminate possible segregation of the finished product.

7.3.3. **Measurement:** shall be in tons and in accordance with Item 520 "Weighing and Measuring Equipment", 2004 Texas Department of Transportation - Standard Specifications for Construction of Highways, Streets and Bridges and any applicable Special Provisions.

7.3.4. The vendor may also be required to supply trucks to haul material to stockpile site.
7.4. MATERIALS: Process the materials as follows:

7.4.1. Asphalt Emulsion For Recycling: The type and required amount of emulsified recycling agent and asphalt shall be determined by the mix design and the specific end use. The emulsion binder selected shall meet the requirements of Item 300, "Asphalt, Oils and Emulsions", 2004 Texas Department of Transportation - Standard Specifications for Construction of Highways, Streets and Bridges and any applicable special provisions, latest revision.

A representative from the asphalt emulsion supplier shall be at the job site at the beginning of the work to monitor the characteristics and performance of the asphalt emulsion. Also, the representative shall be available throughout the project to check on the mixing and make adjustments to the asphalt formulation as required, such as to improve coating or adjust breaking properties.

7.4.2. Cold Pulverized Material: The pulverized material shall meet the following gradation requirements prior to the addition of asphalt emulsion unless otherwise directed by the designated TxDOT representative.

<table>
<thead>
<tr>
<th>Sieve Size</th>
<th>Percent Passing</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 inch</td>
<td>100</td>
</tr>
</tbody>
</table>

7.4.3. Gradation Guidelines: The limits set forth in the recommended RAP Gradation Guideline (Table 1) should be considered as recommended guidelines for the 100 percent crushed and sized RAP material after being run through the crushing and screening unit. After being run through the crushing and screening unit, the crushed and sized RAP material shall be subjected to a sieve analysis using Tex-200-F, Sieve Analysis of Fine and Coarse Aggregate. If the crushed and sized RAP material does not meet recommended RAP Gradation Guidelines (Table 1), the designated TxDOT representative will first determine if adjustments could be made to the crushing unit to bring the crushed and screened material within the limits of the guideline. If adjustments to the crushing unit do not bring the material within the recommended RAP Gradation Guideline (Table 1), the designated TxDOT representative will evaluate the performance of the finished product based on the criteria of Table 3 and determine whether the finished product will perform for its intended end use. If not, the designated TxDOT representative may require the addition of additional crushed RAP meeting requirements of Table 3 or additional aggregate meeting requirements of Table 4 as needed to bring the integrity of the finished product within performance criteria of Table 3.
### Table 1. RAP Gradation Guidelines

<table>
<thead>
<tr>
<th>Sieve Size</th>
<th>Percent Passing</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 inch</td>
<td>100</td>
</tr>
<tr>
<td>3/4 inch</td>
<td>75 - 95</td>
</tr>
<tr>
<td>1/2 inch</td>
<td>60 – 80</td>
</tr>
<tr>
<td>#4</td>
<td>35 - 65</td>
</tr>
<tr>
<td>#200</td>
<td>1 - 10</td>
</tr>
</tbody>
</table>

7.4.4. **Mixture Design:** The type and quantity of asphalt emulsion, water and other additives shall be determined by the mixture design and Hveem stability. The mixture design shall be completed by the asphalt emulsion supplier and the vendor shall submit the mixture design to the designated TxDOT representative for approval. The cold recycled mixture shall have properties as indicated by the criteria in Table 2. The amount of asphalt emulsion, water and other additives determined from the mix design shall be the percentages initially used, but the percentages may be varied during cold mix production if the mix properties indicate a change is required (balling of fines, raveling or other). Refer to Attachment 1 - Mix Design Procedures for RAP – Short Term Stockpile Material.
Table 2. Laboratory Mixture Design Properties

<table>
<thead>
<tr>
<th>Property</th>
<th>Test Method</th>
<th>Requirement</th>
</tr>
</thead>
<tbody>
<tr>
<td>Compaction, Texas Gyratory Compactor</td>
<td>Tex-206-F</td>
<td>NA</td>
</tr>
<tr>
<td>Moisture Content, %</td>
<td>Tex-212-F</td>
<td>Report</td>
</tr>
<tr>
<td>Theoretical Maximum Specific (Rice) Gravity</td>
<td>Tex-227-F</td>
<td>Report</td>
</tr>
<tr>
<td>Laboratory Molded Bulk Specific Gravity</td>
<td>Tex-207-F</td>
<td>Report</td>
</tr>
<tr>
<td>Laboratory Molded Density, %</td>
<td>Tex-207-F</td>
<td>Report</td>
</tr>
<tr>
<td>Unconditioned Hveem Stability, min.*</td>
<td>Tex-208-F</td>
<td>15</td>
</tr>
<tr>
<td>Conditioned Hveem Stability Ratio, % min.**</td>
<td>Tex-208-F</td>
<td>80</td>
</tr>
</tbody>
</table>

*Long term stabilities tested on compacted specimens after curing to constant weight in a 140 degree F oven.

**23 hours soak at 77 degrees F followed by 1 hour soak at 104 degrees F.

7.4.5 Addition of Crushed RAP Material: Additional RAP material, if available, may be added at the discretion of the designated TxDOT representative provided the RAP material meets the requirements set forth in Table 2. The crushed RAP shall be free from vegetation and all other deleterious materials, including silt and clay balls. The crushed RAP shall be graded to produce a product that meets the specifications in Table 1 and shall not exceed the maximum size requirement in Table 3 prior to the addition of the emulsified binder and water.

Table 3. Additional Crushed RAP

<table>
<thead>
<tr>
<th>Tests</th>
<th>Test Method</th>
<th>Requirement</th>
</tr>
</thead>
<tbody>
<tr>
<td>Deleterious Materials: Clay Lumps and Friable Particles in Aggregate, % max</td>
<td>Tex-217-F</td>
<td>5</td>
</tr>
<tr>
<td>Maximum size, % Passing 1 inch</td>
<td>Tex-200-F</td>
<td>100</td>
</tr>
</tbody>
</table>
7.4.6 **Additional Aggregate**: Based on the results of the mix design, the vendor and the designated TxDOT representative will determine if additional aggregate is required. Any additional coarse aggregate shall meet the requirements of Item 340, "Hot Mix Asphaltic Concrete Pavement", 2004 Texas Department of Transportation Standard Specifications for Construction of Highways, Streets and Bridges and any applicable special provisions. It shall also meet the requirements in Table 4, and shall be graded to produce a product that meets the specifications in Table 2.

<table>
<thead>
<tr>
<th>Tests</th>
<th>Test Method</th>
<th>Requirement</th>
</tr>
</thead>
<tbody>
<tr>
<td>Los Angeles abrasion value, % max.</td>
<td>Tex -410-A</td>
<td>(See Note 1 below)</td>
</tr>
<tr>
<td>Sand Equivalent, % min.</td>
<td>Tex -203-F</td>
<td>45</td>
</tr>
<tr>
<td>Maximum size, 100 % Passing, Sieve Size</td>
<td>Tex -200-F</td>
<td>1 inch</td>
</tr>
<tr>
<td>Water absorption, % max.</td>
<td>Tex -201-F</td>
<td>5</td>
</tr>
</tbody>
</table>

**NOTE**: The requirements for Tex-410-A shall be determined by the designated TxDOT representative based on the specified end-use.

7.5. **STOCKPILE**: Stockpile the recycled material in a configuration agreed upon with the designated TxDOT representative. At no time shall any equipment be allowed on the recycled material.

7.5.1. Not exceed a height greater than eight feet when creating stockpiles.

7.5.2. Not reconfigure stockpiles. Reconfiguration will be done by TxDOT forces.

7.6. Begin work on this project within 30 state working days of notification by the designated TxDOT representative. Notification will be in the form of a work order.

8. **LOCATION(S)**: Location(s) of facilities are specified on the solicitation, Attachment B – Stockpile Locations. TxDOT reserves the right to add or delete facilities serviced under the purchase order. TxDOT will provide ten business days written notice to the vendor for facilities to be deleted or of any additional facilities requiring service within the same area or region.

8.1. RAP shall be processed at each location listed on Attachment B – Stockpile Locations.

8.2. Finished product shall be stockpiled at each location listed on Attachment B – Stockpile Locations.
9. **VENDOR PERFORMANCE:** Vendor performance will be monitored on a regular basis by TxDOT. TxDOT may consider the following performance by the vendor as unsatisfactory performance.

9.1. An unsatisfactory performance determination includes, but is not limited to:

9.1.1. One service “call back” to correct the same problem within 30 calendar days.

9.1.2. One instance within one year of vendor personnel assigned to an authorized service call not having the state license and certification required to diagnose the problem and perform the repair.

9.1.3. Two instances within one year of response time, as defined in this specification, to an authorized service call exceeding the two-hour limit.

**NOTE:** Unsatisfactory performance may result in a negative vendor performance report, or cancellation of the purchase order or both.

9.2. An exceptional performance determination includes, but is not limited to:

9.2.1. Product upgrade substitution suggested and accepted at no additional cost to TxDOT.

9.2.2. Vendor commended for exceptional customer service, exceptional service provided.

9.2.3. Provided assistance when not required.

10. **QUALITY ASSURANCE PLAN:** The vendor shall provide a comprehensive, continuous, and measurable quality assurance program. The plan shall include:

10.1. Strategies and processes to promote quality.

10.2. Procedures to periodically measure and report quality performance to TxDOT throughout the term of the purchase order.

10.3. How often the vendor conducts internal audits and engages external audit firms to conduct audits of its operations.

10.4. Controls to be used within the project to assure quality and consistency throughout the term of the purchase order.

11. **VENDOR PERSONNEL SAFETY:** The vendor shall provide all required safety equipment and instruct personnel to observe all safety policies, rules and requirements at all times, including, but not limited to, wearing hard hats, safety shoes, goggles, etc.

12. **WORK HOURS**

12.1. Notify the designated TxDOT representative 24 hours prior to beginning work.

12.2. Proceed with each job as detailed by the work order until satisfactorily completed unless otherwise designated by TxDOT.
12.3. Coordinate and obtain approval for any change in work schedule with and from the designated TxDOT representative.

12.4. Work hours may be flexible, based on production schedules and TxDOT requirements. Work hours will be determined by designated TxDOT representative.

13. **SUBCONTRACTING**

13.1. Subcontractors providing service under the purchase order shall meet the same qualifications and service requirements and provide the same quality of service required of the vendor.

13.2. No subcontract under the purchase order shall relieve the primary vendor of responsibility for the services.

13.3. The vendor shall be the only contact for TxDOT and subcontractor(s).

13.4. The vendor shall manage all quality and performance, project management, and schedules for subcontractors. The vendor shall be held solely responsible and accountable for the completion of all work for which the vendor has subcontracted.

13.5. TxDOT retains the right to check subcontractor’s background and make a determination to approve or reject the use of submitted subcontractor(s). Any negative responses may result in disqualification of the subcontractor.

13.6. TxDOT reserves the right to request the removal of vendor’s subcontractor staff deemed unsatisfactory by TxDOT.

13.7. Subcontracting shall be at the vendor’s expense.

13.8. During the term of the purchase order, if the vendor determines a need for a subcontractor change, TxDOT shall be notified in writing by the vendor within 30 calendar days of any proposed change. The vendor shall be required to provide references and work history for any proposed subcontractor to TxDOT. No change will be allowed without written authorization by TxDOT.

13.9. **SOLICITATIONS OVER $100,000**: TxDOT will make an initial determination of whether subcontracting is probable. It is the respondent’s determination to choose to subcontract any of the work under this purchase order with a Texas certified Historically Underutilized Business (HUB) or other businesses.

13.9.1. If TxDOT has determined that subcontracting opportunities are probable, the class and items in which HUBs may be registered will be noted in the solicitation.

13.9.2. The respondent shall identify all proposed HUB and other subcontractors at the time of response submittal. The required forms with video instructions can be found at the following website: http://www.window.state.tx.us/procurement/prog/hub/hub-subcontracting-plan/

13.9.3. **RESPONSES THAT DO NOT INCLUDE A COMPLETED HUB SUBCONTRACTING PLAN AS INDICATED ON THE SOLICITATION SHALL BE REJECTED PURSUANT TO TEXAS GOVERNMENT CODE §2161.252(B).**
13.10. HUB SUBCONTRACTING PLAN (HSP) PRIME CONTRACTOR PROGRESS ASSESSMENT REPORT: After award of the purchase order, the vendor shall report all HUB and non-HUB subcontractor information using the HSP Prime Contractor Progress Assessment Report form. The report shall be submitted to the TxDOT contract manager monthly. The report shall be submitted monthly even during the months the vendor is not invoicing TxDOT. All payments made to subcontractors shall be reported. TxDOT may verify the amounts being reported as paid by requesting copies of cancelled checks paid to subcontractors.

13.11. REVISIONING THE HSP DURING THE TERM OF THE PURCHASE ORDER: Vendors may need to revise the original HSP submitted with the response during the term of the purchase order to add additional subcontractors or change existing subcontractors. The additional subcontractor shall be approved by TxDOT prior to beginning work. If the vendor is replacing a HUB subcontractor with another HUB, no Good Faith Effort is required. If the vendor is replacing a HUB with a non-HUB, a Good Faith Effort is required and the rules which apply to notifying HUBs of the subcontracting opportunity apply.

14. BUSINESS CONTINUITY PROCEDURES AND DISASTER RECOVERY PLAN: The respondent shall submit the respondent’s business continuity procedures and disaster recovery plan (limit one page) which shall include procedures that shall be implemented to fulfill all requirements of the purchase order including, but not limited to: fire, theft, natural disaster, technical difficulty, workforce problems, equipment failure or other disruption of business.

NOTE: Business continuity and a disaster recovery plan for this service shall be maintained by the vendor throughout the term of the purchase order. The vendor shall be responsible for all cost of disaster recovery.

15. CONFLICT OF INTEREST: The vendor, vendor’s personnel and vendor’s subcontractor(s) shall affirm not to have, nor acquire any interest during the term of the purchase order that would conflict in any manner with the performance of the vendor’s obligations in regards to services authorized.

15.1. To avoid an appearance of a conflict of interest, any qualified non-TxDOT laboratory shall perform only one of the following types of testing on the same project:

15.1.1. Quality assurance verification testing.

15.1.2. Quality control testing.

15.2. The vendor certifies and warrants that he or she and any relative to the first consanguinity (blood) or affinity (marriage) have not been employed or an employee or contracted agent for the firm in which he/she is performing inspections as required under the purchase order for a period not less than five years from the effective date of the purchase order. Furthermore, the vendor certifies and warrants that he or she and any relative to the first consanguinity (blood) or affinity (marriage) have no financial interests of any kind in the firm in which he or she is performing inspections as required under the purchase order. Violation of this provision may be grounds for termination of the purchase order.

15.2.1. First consanguinity (blood) is described as: A person is related to you by blood in the first degree if the person is your: Mother or father, brother or sister, son or daughter.

15.2.2. Affinity (marriage) is described as: A person who is: your spouse, or spouse’s mother or father, brother or sister, son or daughter; your brother’s or sister’s spouse, son’s or daughter’s spouse, step-mother or step-father.
16. **INVOICING INSTRUCTIONS:** The vendor shall provide:

16.1. **ORIGINAL INVOICE:** A comprehensive and detailed invoice with reference to the line item on the purchase order for each item charged. The original invoice shall be e-mailed to FIN_Invoices@txdot.gov unless otherwise shown on the purchase order to ensure timely payment and shall include the following:

16.1.1. Complete 16-digit purchase order number.

16.1.2. Vendor Federal Employer Identification Number (EIN).

16.1.3. Date and time of service.

16.1.4. Location of service.

16.1.5. Technician’s name with hours totaled.

16.1.6. Labor hours and rates detailed on each vendor invoice.

**NOTE:** Invoices requiring correction shall be re-submitted with a new invoice date.

16.2. **COPY OF INVOICE AND SUPPORTING DOCUMENTATION:** A copy of the invoice and original supporting documentation that validates the invoice charges shall be e-mailed to the designated TxDOT representative to include but not be limited to: Copies of invoices from subcontractors or other entities to which vendor has made payment and requires reimbursement from TxDOT as agreed to in the purchase order.

17. **TxDOT RESPONSIBILITIES:** TxDOT will:

17.1. Provide a point of contact.

17.2. Provide required forms to file accident reports.

17.3. Provide office space at TxDOT facilities.

18. **RESPONSE SUBMISSION**

18.1. The following shall be submitted with the response. Failure by the respondent to submit the documentation listed below will disqualify the respondent from further consideration:

18.1.1. Original, signed, dated, and completed Invitation For Bid (IFB)

18.1.2. Schedule(s) (if applicable; i.e., Pricing if line items are not listed on the IFB)

18.1.3. HUB Subcontracting Plan

18.2. The following should be submitted with the response. Failure by the respondent to submit the documentation listed below may disqualify the respondent from further consideration.

18.2.1. Respondent References

18.2.2. Copies of Certifications, Permits, Licenses
19. **AWARD**

19.1. TxDOT reserves the right to award a single purchase order to the most responsive, responsible respondent meeting the specification. TxDOT may award to a single vendor, multiple vendors, or use any combination that best serves the interest of TxDOT.

19.2. **TYPES OF AWARD**

19.2.1. **Single Award:** One purchase order awarded to a single vendor.

19.2.2. **Multiple Award:** A multiple award is the award of multiple purchase orders for the same line item(s) from a single solicitation to two or more vendors to provide the same or similar goods or services.

19.2.3. **Multi-tiered Award:** Multi-tiered award sets the priority sequence for use of multiple vendors. Multiple purchase orders are awarded for the same line item(s) from a single solicitation to primary, secondary and tertiary vendors.

19.2.4. **Split Award:** Award of separate line items on a single solicitation to different vendors resulting in two or more purchase orders.

20. **POST AWARD MEETING:** Vendor(s) shall be required to attend a post award meeting in person with TxDOT within 10 calendar days after the award of the purchase order. The purpose of the meeting is to discuss the terms and conditions of the purchase order and to provide additional information regarding the purchase order. Vendor(s) and TxDOT shall identify specific goals, strategies and activities planned for meeting particular program area objectives.

21. **CONTRACT ADMINISTRATION:** Administration of the purchase order is the responsibility of TxDOT. TxDOT Procurement Division staff will be responsible for administering the contractual business relationship with the vendor.

21.1. Any proposed changes to work to be performed, whether initiated by TxDOT or the vendor, must receive final written approval in the form of a Purchase Order Change Notice signed by the authorized TxDOT purchasing agent.

21.2. Upon issuance of purchase order, TxDOT will designate an individual to serve as the Contract Manager and point of contact between TxDOT and the vendor. The Contract Manager does not have any express or implied authority to vary the terms of the purchase order, amend the purchase order in any way or waive strict performance of the terms or conditions of the purchase order. This individual’s contract management and contract administration responsibilities include, but are not limited to:

21.2.1. Monitoring the vendor’s progress and performance and ensuring services conform to established specification requirements.

21.2.2. Managing the financial aspects of the contract including approval of payments.

21.2.3. Meeting with the vendor as needed to review progress, discuss problems and consider necessary action.

21.2.4. Identifying a breach of contract by assessing the difference between contract performance and non-performance.
MIX DESIGN PROCEDURES FOR RAP - SHORT TERM STOCKPILE MATERIAL

1. SAMPLING AND PROCESSING: The vendor shall:
   1.1. Obtain representative crushed RAP millings (as it will be crushed in the field). Use Tex-222-F as a guideline for sampling. Determine moisture content of millings by drying in an oven. Gradation of representative millings shall be determined by Tex-200-F. The washed material shall be dried with a warm air stream or a fan.
   1.2. Dry, screen and recombine millings in the laboratory to field gradation. Suggested screens are 1/2-inch, 3/8-inch, No. 4, No. 8, No. 30, No. 200, and pan. Scalp oversize with a 3/4-inch screen when using 4-inch diameter compaction molds.

2. MIXING:
   2.1. Specimen size: Use an amount that will produce a 2.4 to 2.6 inch tall specimen and use Tex-227-F to determine the size for Rice specific gravity.
   2.2. Number of specimens: Six per emulsion content for a total of nine for long-term stability and nine for moisture testing for three emulsion contents. Two specimens are required for Rice specific gravity.
   2.3. Recommended emulsion contents: 1.0 percent, 1.5 percent, 2.0 percent, 2.5 percent, 3.0 percent. Choose three emulsion contents that would bracket the estimated recommended emulsion content.
   2.4. Add moisture that is expected during field production. Keep in mind that moisture during field production may be added if sufficient moisture is not present in the stockpile. If the millings will not contain adequate moisture, add just enough water to adequately disperse the emulsion and give the mix cohesion. This will be the recommended total water content.
   2.5. Introduce any additives added to the mixture in a manner similar to the way they will be added during field production.
   2.6. Mixing of test specimens shall be performed with a mechanical bucket mixer or by hand mixing (spoon and bowl). Mix the RAP millings thoroughly with water first, then mix with emulsion. Mixing shall occur with the RAP at ambient temperature and the emulsion at the anticipated delivery temperature. One specimen shall be mixed at a time. Mixing time with emulsion should not exceed 60 seconds. After mixing is complete the mixture shall be placed in a suitable pan and covered with aluminum foil and placed in a 140 degrees F oven for 24 hours.

3. COMPACATION:
   3.1. After 24 hour cure at 140 degrees F, the specimens shall be removed and allowed to cool to ambient compaction temperature prior to compaction. Place paper disks on the top and bottom of the specimen before compaction.
   3.2. Specimens shall be compacted with a Texas gyratory compactor in accordance with Tex-206-F. The mold shall not be heated.

4. CURING AFTER COMPACTION: Extrude specimens from molds as soon as possible after compaction. Carefully remove paper disks.
   4.1. Place specimens in 140 degree F forced draft oven with ventilation on sides and top. Place each specimen in a small container to account for material loss from the specimens.
   4.2. Specimens for Rice specific gravity shall be dried to constant weight (less than 0.05 percent weight loss in two hours). Care should be taken not to over-dry the specimens.
4.3. Cure compacted specimens for 24 hours plus or minus two hours. Determine the mass of the specimen, cure another two hours and determine mass again. If the difference in mass is greater than 0.05 percent, continue curing at 140 degrees F until the difference is less than 0.05 percent. After curing, cool specimens overnight, at a minimum.

5. MEASUREMENTS: Determine bulk specific gravity (density) of each compacted (cured and cooled) specimen according to Tex-207-F; however, the mass of the specimen in water can be recorded immediately once the balance reading has stabilized.

5.1. Determine specimen heights according to Tex-207-F.

5.2. Determine Rice (maximum theoretical) specific gravity, Tex-227-F, except as noted in Para. 4 of this Attachment, and do not break any agglomerates which will not easily reduce with a flexible spatula. It may be necessary to perform the supplemental dry-back procedure to adjust for uncoated particles.

5.3. Determine air voids at each emulsion content according to Tex-207-F.

5.4. Determine corrected Hveem stability by Tex-208-F at 104 degrees F after a two-hour temperature conditioning in a forced draft oven. This testing shall be performed at the same time that the moisture-conditioned specimens are tested.

6. MOISTURE SUSCEPTIBILITY: Perform same conditioning, compaction, and volumetric measurements on moisture-conditioned specimens as on other specimens. Soak specimens for 23 hours in ambient temperature water followed by a one-hour soak at 104 degrees F. Determine amount of water absorbed by Tex-531-C. Determine corrected Hveem stability. This value shall be referred to as retained stability.

7. EMULSION CONTENT SELECTION: The emulsion content shall be based on density and shall meet minimum Hveem stability and minimum retained Hveem stability data. Air void data shall only be reported.

8. REPORT: The report shall contain the following minimum information:

8.1. Gradation of RAP

8.2. Amount and gradation of virgin aggregate, if any; recommended total water content as a percentage of dry RAP

8.3. Optimum emulsion content as a percentage of dry RAP and corresponding density, air void level, and absorbed water

8.4. Hveem stability and retained stability at recommended moisture and emulsion contents. Include the emulsion designation, company name, plant location, and residue content.
## ATTACHMENT B

### STOCKPILE LOCATIONS

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