

**MISSOURI 2016 AIRPORT PAVEMENT MAINTENANCE PROGRAM
PAVING GROUP**

**AVA – BILL MARITN MEMORIAL AIRPORT - PROJECT NO. AIR166-102A-MODOT
DONIPHAN MUNICIPAL AIRPORT - PROJECT NO. AIR166-074A-MODOT
MONROE CITY – CAPTAIN BEN SMITH AIRFIELD PROJECT NO. AIR166-035A-MODOT**

ADDENDUM NO. 2

March 3, 2017

TO ALL PROSPECTIVE BIDDERS:

- A. You are hereby notified of the following amendments to the Contract Documents/Specifications for the subject project.
1. The Notice to Bidders, The Bid Opening Date has been revised to 2:00 p.m. (CDT), Thursday, March 9, 2017.
 2. Recycled Aggregate Base Course: On the Ava project we have allowed the use of 6% Portland Cement as an option to the 15% Fly Ash previously provided. The RABC Section of the Specification is hereby replaced with the following “Recycled Aggregate Base Course (Chemically Treated)” Section. Also please note the quantity of chemical (Fly Ash or Cement) will not be paid for separately and shall be included in the price for the new contract item “Recycled Aggregate Base Course In-Place With Chemical (8”)”.
 3. The Proposal Form pages PF-2 and PF-3 have been replaced with PF-2A and PF-3A. Proposals must be made on the revised proposal sheets. Please staple PF-2A on top of PF-2 and PF-3A on top of PF-3.
- B. All bidders must acknowledge receipt of this addendum in the space provided on page PF-6 of the Proposal Form. **Failure to acknowledge receipt of an addendum may be cause for rejection of the bid.**



LOCHNER MODIFICATIONS

ITEM RABC

RECYCLED AGGREGATE BASE COURSE (CHEMICALLY TREATED)

Item **Recycled Asphalt Base Course (Chemically Treated)** is hereby added to the technical specifications with respect to the paragraphs and sections cited below.

RABC-1. DESCRIPTION

1.1 This item shall consist of pulverizing the existing asphaltic concrete pavement, stockpiling it when required, then spreading, treating with a chemical (Fly Ash or Cement), mixing and compacting 8" of the existing base material and asphalt in accordance with these specifications, as shown on the Plans and/or as directed by the Engineer.

RABC-2. MATERIALS

2.1 The base course material shall consist of hard, durable particles or fragments of stone or gravel mixed or blended with sand, stone dust, and asphaltic concrete pavement from recycling operations. All oversized particles shall be wasted; those of acceptable quality may be mixed and become a part of the base material, provided the blend meets the specified gradations. The aggregate shall be free from soil, vegetation, lumps, or excessive amounts of clay and other objectionable substances.

Base material shall conform to the following:

TABLE 1. GRADATION REQUIREMENTS

Sieve designation (square openings) as per ASTM C 136 & ASTM D 422	Percentage by weight passing sieves
2 inch (75.0 mm)	100
No. 10 (2.0 mm)	20-100
No. 40 (0.450 mm)	5-60
No. 200 (0.075 mm)	0-8

2.2 CHEMICAL

2.2.1A Fly Ash. Fly ash shall meet ASTM Specifications C-618, Section 3.3 when sampled and tested in accordance with Sections 5, 6, and 8, unless otherwise shown on the plans. Fly ash shall be of the Class "C" designation containing a minimum of 25% CaO. The source of the ash shall be identified and approved in advance of stabilization operations in order that laboratory tests can be completed prior to commencing work.

Fly Ash shall be stored and handled in closed weatherproof containers until immediately before distribution. Temporary storage (less than 12 hours) of fly ash in open pits may be allowed provided that wetting of the fly ash by rain or ground water is not allowed. Fly ash exposed to moisture prior to mixing with soils shall be discarded."

2.2.1B - Portland cement. Portland cement shall conform to the requirements of ASTM C150, Type I, IA, II, or IIA or ASTM C595, Type IS or IS(A).

RABC-1

2.2.2 Water. Water used for mixing or curing shall be reasonably clean and free of oil, salt, acid, alkali, sugar, vegetable, or other substances injurious to the finished product. Water shall be tested in accordance with and shall meet the suggested requirements of AASHTO T 26. Water known to be of potable quality may be used without test.

2.2.3 Soil. The soil for this work shall consist of materials on the site or selected materials from other sources and shall be uniform in quality and gradation, and shall be approved by the Engineer. The soil shall be free of roots, sod, weeds, and stones larger than 2-1/2 inches (60 mm).

2.3 COMPOSITION

2.3.1A Fly Ash. Fly ash shall be applied at the rate of 15% by dry weight for the depth of treatment shown on the plans.

2.3.1B Cement. Cement shall be applied at the rate of 6% by dry weight for the depth of treatment shown on the plans.

2.3.2 Tolerances. At final compaction, the chemical and water content for each course of treatment shall conform to the following tolerances:

<u>Material</u>	<u>Tolerance</u>
Fly Ash or Cement.....	+ 0.5%
Water	+ 2%, -0%

RABC-3. CONSTRUCTION METHODS

3.1 EQUIPMENT

3.1.1 Configuration

Equipment shall consist of a unit or a combination of units which will satisfactorily perform the following requirements.

- a) Pulverize the existing bituminous pavement using a recycler, mill or similar construction equipment and pick up the reclaimed material and existing base rock, if required.
- b) Stockpile the mixture or deposit in a windrow, if required.
- c) Spread and compact mixture to the lines and grades shown on the Plans.

3.1.2 Performance

- a) The pulverizing unit shall be capable of pulverizing the asphaltic concrete pavement into small pieces. It shall have automatic controls capable of maintaining reasonable uniform grade and cross slope.
- b) Other equipment necessary to perform the work shall be approved by the Engineer.

3.2 PULVERIZING AND MIXING OPERATION NOT USED

3.3 PLACING OPERATION

3.3.1. Spreading and Finishing. The recycled asphalt and base material shall be mixed at the rate of 60% recycled asphalt and 40% subgrade material, by volume, and shall be spread and finished in one or more lifts, reasonably true to crown and grade then smooth drum rolled to provide a smooth surface. Following the blending of the recycled asphalt and subgrade material, Chemical shall be incorporated, in one pass, at the rate specified in paragraph 2.3. **Composition.**

3.3.2 General. It is the primary requirement of this specification to secure a completed treatment containing a uniform chemical mixture, free from loose or segregated areas, of uniform density and moisture content, well bound for its full depth, and with a smooth surface suitable for placing subsequent courses. It shall be the responsibility of the Contractor to regulate the sequence of his/her work, to use the proper amount of chemical, maintain the work, and rework the courses as necessary to meet the above requirements. Prior to beginning any chemical treatment the recycled asphalt blended subgrade shall be constructed and brought to grade as specified in Item P-152 "Excavation and Embankment" and shall be shaped to conform to the typical sections, lines, and grades as shown on the plans.

3.3.3 Application.

3.3.3.1 Fly Ash shall be spread only on that area where the first mixing operations can be completed within 2 hours. The application and mixing of fly ash with the soil shall be accomplished by the methods hereinafter described as "Dry Placing."

a) **Dry Placing.** The fly ash shall be spread uniformly over the top of the subgrade by an approved screw-type spreader box or other approved spreading equipment. The amount of fly ash spread shall be the amount required for mixing to the specified depth which will result in the percentage determined in the job mix formula.

The fly ash shall be distributed in such manner that scattering by wind will be minimal. Fly ash shall not be applied when wind conditions, in the opinion of the Engineer, are detrimental to a proper application. A motor grader shall not be used to spread the fly ash.

3.3.3.2 Cement application, mixing, and spreading. Mixing of the soil, cement, and water shall be accomplished by the mixed-in-place method. Approximately shape pulverized material to the cross-section indicated. Cement shall be applied so that when uniformly mixed with the soil, the specified cement content is obtained, and a sufficient quantity of cement-treated soil is produced to construct a compacted cement-treated course conforming to the lines, grades, and cross-section indicated. Immediately after the cement has been distributed, it shall be mixed with the soil. The cement shall not be mixed below the required depth. Continue mixing until the cement has been sufficiently blended with the soil to prevent the formation of cement balls when water is applied. Determine moisture content of the mixture immediately after completion of mixing of the soil and cement. Provide water supply and pressure distributing equipment that will permit the application within three (3) hours of all mixing water on the section being processed. Incorporate water in the mix so that concentration of water near the surface does not occur. After all mixing water has been applied, continue mixing until the water is uniformly distributed throughout the full depth of the mixture. Do not apply cement if the soil moisture content exceeds the optimum moisture content specified for the cement-treated mixture. After mixing is complete, the proportions of the mixture shall be in accordance with the approved mix design.

3.3.4 Mixing. The mixing procedure shall be for Dry Placing as hereinafter described.

The full depth of the treated subgrade shall be mixed with a rotary pulvamixer that utilizes a direct hydraulic drive. The Chemical shall not be left exposed for more than 30 minutes after distribution. The mixing machine shall make two coverages. Water shall be added through use of a pulvamixer equipped with a spray bar in the mixing drum capable of applying sufficient quantities of water to achieve the required moisture content of the soil-chemical mixture. The system shall be capable of being regulated to the degree as to maintain moisture contents within the recommended range.

Required moisture contents shall be established by the Engineer based on laboratory tests with the site soils and specific chemical to be used for the treatment. Final moisture content of the mix, immediately prior to compaction shall be determined in accordance with ASTM D 698 and shall not be below nor more than 2 percent above the optimum moisture content for maximum density of the mix. If moisture contents exceed the specified limits, additional chemical may be added to lower the moisture content to the required limits. Lowering moisture contents by aeration following addition of the chemical will not be permitted.

If the soil chemical mixture contains clods greater than 1-1/2 inch in size, they shall be reduced in size by additional pulverization.

3.3.5 Compaction. Compaction of the soil, asphalt, and chemical mixture shall begin immediately after mixing of the chemical and be completed within two hours following incorporation of the chemical. The field density of the compacted mixture shall be determined by determining the number of passes required to achieve a density that holds up to proof rolling by a loaded tandem dump truck. For final density acceptance, a final proof rolling with a loaded tandem dump truck will be done in the presence of the Engineer

All irregularities, depressions, or weak spots, which develop, shall be corrected immediately by scarifying the areas affected, adding or removing material as required, and reshaping and re-compacting. The surface of the course shall be maintained in a smooth condition, free from undulations and ruts, until other work is placed thereon or the work is accepted.

In addition to the requirements specified for density, the full depth of the material shown on the plans shall be compacted to the extent necessary to remain firm and stable under construction equipment. After each section is completed, tests will be made by the Engineer. If the material fails to meet the density requirements, it shall be reworked to meet these requirements. Throughout this entire operation, the shape of the course shall be maintained by blading, and the surface upon completion shall be smooth and shall conform with the typical section shown on the plans and to the established lines and grades. Should the material, due to any reason or cause, lose the required stability, density, and finish before the next course is placed or the work is accepted, it shall be recompacted and refinished at the sole expense of the Contractor.

3.3.6 Finishing And Curing. After the final layer or course of the chemical treated subgrade, asphalt, and base has been compacted, it shall be brought to the required lines and grades in accordance with the typical sections. The finished surface shall not vary more than 3/8 inch (9mm) when tested with a 16-foot straightedge applied parallel with and at right angles to the pavement centerline. Any variations in excess of this tolerance shall be corrected by the Contractor, at his/her own expense, in a manner satisfactory to the Engineer.

After the chemically treated course has been finished as specified herein, the surface shall be protected against rapid drying maintaining a thorough and continuously moist condition by sprinkling for a period of not less than three days or until the pavement section is placed.

3.3.7 Thickness. The thickness of the chemically-treated subgrade and recycled asphalt shall be determined by depth tests or cores taken at intervals so that each test shall represent no more than 300 square yards (250 square meters). When the base deficiency is more than 1/2 inch (12 mm), the Contractor shall correct such areas in a manner satisfactory to the Engineer. The Contractor shall replace, at his/her expense, the base material where borings are taken for test purposes.

3.3.8 Maintenance. The Contractor shall maintain, at his/her own expense, the entire chemically-treated subgrade, asphalt, and base in good condition from the start of work until all the work has been completed, cured, and accepted by the Engineer.

3.4 WEATHER LIMITATIONS

3.6.1 Work on the base course shall not be accomplished during freezing temperatures nor when the subgrade is frozen. When the aggregates contain frozen materials or when the underlying course is frozen, the construction shall be stopped.

RABC-4. METHOD OF MEASUREMENT

4.1 **“Recycled Aggregate Base Course In-Place With Chemical (8”)”.** Recycled asphalt and Subgrade with chemical shall be measured per square yard of plan area of the final lift, regardless of any excess depth of the treatment.

RABC-5. BASIS OF PAYMENT

5.1 Payment for recycled asphalt and subgrade with chemical shall be made at the contract unit price per square yard. The price shall be full compensation for furnishing all materials, for all preparation, delivering, and placing of these materials, and for all labor, equipment, tools, and incidentals necessary to complete the item, including pavement removal. **Quantity of Chemical (Fly Ash or Cement) will not be paid for separately and shall be considered subsidiary to Recycled Aggregate Base Course In-Place with Chemical (8”)**

Payment will be made under:

Recycled Aggregate Base Course In-Place With Chemical (8”) -per square yard

RABC-6. TESTING REQUIREMENTS

ASTM D 75	Sampling Aggregates
ASTM D 2922	Test for Density of Soil and Soil-Aggregate In-Place by Nuclear Methods (Shallow Depth)
ASTM D 3017	Test for Moisture Content of Soil and Soil-Aggregate In-Place by Nuclear Methods (Shallow Depth)
ASTM D 3665	Random Sampling of Paving Materials

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AVA (AOV)

BID ITEM	FAA or MoDOT SPEC.	ITEM DESCRIPTION	APPROX. QTY. AND UNITS	UNIT PRICE		EXTENSION	
				DOLLARS	CTS	DOLLARS	CTS
BASE BID (AOV)							
Reconstruct Runway 13-31 (3,634' x 50')							
1	MO-100	Mobilization	1 L.S.				
2	TEMP	Temporary Marking & Barricades	1 L.S.				
3	MO-152	Embankment (Contractor Furnish)	735 C.Y.				
4	MO-156	Erosion Control Barrier (Silt Fence)	515 L.F.				
5	RABC	Recycled Aggregate Base Course In Place with Chemical (8")	21,798 S.Y.				
6	MO-401S	Bituminous Surface Course	3,650 Tons				
7	MO-601	Saw Cut	122 L.F.				
8	MO-601	Asphalt Pavement Removal	20,761 S.Y.				
9	MO-602	Bituminous Prime Coat	10,466 Gal.				
10	MO-620	Reflectorized Pavement Marking	11,545 S.F.				
11	MO-620	Non-Reflectorized Pavement Marking	4,524 S.F.				
12	MO-901	Seeding	2.5 Ac.				
13	MO-908	Mulching	2.5 Ac.				
BASE BID (AOV) SUBTOTAL							

ADD ALTERNATE (AOV)							
Reconstruct Connecting Taxiway and Aircraft Parking Apron							
1	MO-152	Embankment (Contractor Furnish)	82 C.Y.				
2	MO-156	Erosion Control Barrier (Silt Fence)	458 L.F.				
3	RABC	Recycled Aggregate Base Course In Place with Chemical (8")	4,259 S.Y.				
4	MO-401S	Bituminous Surface Course	721 Tons				
5	MO-601	Saw Cut	155 L.F.				
6	MO-601	Asphalt Pavement Removal	4,127 S.Y.				
7	MO-602	Bituminous Prime Coat	3,044 Gal.				
8	MO-620	Reflectorized Pavement Marking	245 S.F.				
9	MO-620	Non-Reflectorized Pavement Marking	358 S.F.				
10	MO-901	Seeding	0.4 Ac.				
11	MO-908	Mulching	0.4 Ac.				
12	TIE	Tie-Down Anchor	9 Each				
ADD ALTERNATE (AOV) TOTAL							
BASE BID AND ADD ALTERNATE TOTAL							