

TELLURIDE REGIONAL AIRPORT AUTHORITY  
TELLURIDE, COLORADO



BIDDING REQUIREMENTS AND CONTRACT DOCUMENTS

for

**2017 AIRPORT PAVEMENT MAINTENANCE**

at

TELLURIDE REGIONAL AIRPORT

March 31, 2017

# **CONTRACT FORMS**

**AGREEMENT  
FOR  
2017 AIRPORT PAVEMENT MAINTENANCE  
TELLURIDE REGIONAL AIRPORT**

THIS AGREEMENT (Agreement) is made this \_\_\_\_\_ day of \_\_\_\_\_, 2017, by and between the Telluride Regional Airport Authority (“Owner” or TRAA), whose address is 1500 Last Dollar Road, Suite One, Telluride, CO 81435 and \_\_\_\_\_ (Contractor), whose address is \_\_\_\_\_.

**RECITALS**

1. TRAA desires to have Contractor complete the following work at the Telluride Regional Airport as set forth in the bid package previously provided to Contractor (the “Work”):
  - (a) select Type 1 crack repair consisting of approximately 10,000 linear feet
  - (b) select Type 2 crack repair consisting of approximately 10,000 linear feet
  - (c) select Type 3 crack repair consisting of approximately 7,000 linear feet
  - (d) select marking removal consisting of approximately 9,720 square feet
  - (e) rubber removal Runway 9, consisting of approximately 20,000 square feet
  - (f) seal coat runway, taxiways and parking apron, consisting of approximately 150,000 square yards (2:1 dilution rate – 100,210 square yards, 1:1 dilution rate – 49,790 square yards)
  - (g) temporary pavement marking across the runway, taxiways and parking apron, consisting of approximately 97,200 square feet
  - (h) permanent pavement marking across the runway, taxiways and parking apron, consisting of approximately 97,200 square feet

The Contract will be awarded to the lowest qualified Bidder at the time of Contract Award. Crack seal shall be field determined by the airport. Actual quantities constructed will be based on funding.

2. Contractor represents that it has the knowledge and skills necessary to do the Work set forth in TRAA’s invitation to bid.
3. Contractor agrees to perform all of the Work required and set forth in the Contract Documents and specifications for the Project. Contractor accepts the relationship of trust and confidence established between Owner and Contractor by this Agreement. Contractor covenants with Owner to furnish Owner with Contractor’s best skill and judgment in furthering the interests of the Owner. The Contractor agrees to furnish efficient business administration and superintendence and to use Contractor’s best efforts to supply, at all times, an adequate supply of workers and materials, and to perform the Work in a good and workmanlike manner, in the best way and in the most expeditious and economical manner consistent with the interests of the Owner.

## AGREEMENT

TRAA and Contractor agree as follows:

1. Recitals. The provisions, terms and conditions of the RECITALS, herein above, shall be incorporated into this Agreement by this reference.
  
2. Obligation to Complete Improvements at the Telluride Regional Airport:
  - (a) select Type 1 crack repair consisting of approximately 10,000 linear feet
  - (b) select Type 2 crack repair consisting of approximately 10,000 linear feet
  - (c) select Type 3 crack repair consisting of approximately 7,000 linear feet
  - (d) select marking removal consisting of approximately 9,720 square feet
  - (e) rubber removal Runway 9, consisting of approximately 20,000 square feet
  - (f) seal coat runway, taxiways and parking apron, consisting of approximately 150,000 square yards (2:1 dilution rate – 100,210 square yards, 1:1 dilution rate – 49,790 square yards)
  - (g) temporary pavement marking across the runway, taxiways and parking apron, consisting of approximately 97,200 square feet
  - (h) permanent pavement marking across the runway, taxiways and parking apron, consisting of approximately 97,200 square feet

at the Telluride Regional Airport, including, without limitation, the following:

- a. Provide all materials, equipment and labor necessary to complete the Work set forth above, and as set forth in the Contract Documents
- b. The Contract Documents shall consist of this Agreement, attachments hereto, and the plans and specifications.
- c. This Agreement and the Contract Documents shall be subject to change based solely on written change orders.
- d. Contractor shall supervise and direct the Work, using Contractor's best skill and attention, and Contractor shall be responsible for all construction means, methods, techniques, sequences and procedures and for coordination of all portions of the Work.
- e. Contractor shall perform all Work to a standard which meets or exceeds the plans and specifications. Contractor warrants that all materials and equipment incorporated in the Work shall meet the specifications, unless otherwise specified in writing and approved by Owner, free of all faults and defects and in conformance with the Contract Documents. Upon completion, the Works shall be in compliance with all applicable codes, ordinances, regulations and laws.
- f. Contractor shall provide that its agents and employees, and all subcontractors who shall be under direct contract with Contractor to perform Work at the Project site, with appropriate and effective workers compensation and liability insurance. Contractor shall require all subcontractors to provide current certificates of such insurance coverage.
- g. Contractor shall at all times keep the airport premises free from undue accumulation of waste materials or rubbish caused by Contractor's operations. Upon completion of this Agreement, Contractor shall be responsible for removal of all construction materials, supplies and equipment from the Airport and a complete clean up of the construction site.

3. Cost of Improvements, Payments to Contractor. TRAA agrees to pay Contractor the total amount of \$\_\_\_\_\_ for full and satisfactory completion of the work set forth herein. The final 10% of payment shall be paid upon the full and satisfactory completion of all work required by this Agreement. The Airport Manager shall reasonably determine whether or not the work has been satisfactorily completed. Such reasonable determination of satisfactory completion shall not be unreasonably withheld by the Airport Manager.
4. Hours of Construction Activity. Unless otherwise approved by the Airport Manager, Contractor shall limit the hours of its construction activity to the hours during which the Telluride Regional Airport is open (6:00AM to 9:00PM Monday through Saturday). Notwithstanding anything herein to the contrary, the Contractor, may, in its sole discretion, determine that it will do the all or part of the Work during the night. In the event that Contractor determines that it will do the Work during the night, it will so notify the Airport Manager of its decision in writing no less than seven (7) days prior to its commencement of Work pursuant to this Agreement.
5. Completion Date. All work, excluding permanent pavement marking, shall be completed by June 15, 2017. The airport will reopen for business May 26<sup>th</sup> through May 29<sup>th</sup>. Only crack repair may be completed on the runway prior to May 29<sup>th</sup>. The runway must be fully marked and open for use on those dates. Work schedule to be coordinated and approved by the Airport Manager. Contractor shall provide proposed work schedule with bid. Permanent pavement marking must be completed no earlier than 30 days from placement of temporary markings and be completed at night to avoid any additional runway closure. Contractor shall notify TRAA in writing at least seven (7) days prior to commencement of the Work. Time is of the essence of this Agreement.
6. Correction of Work. The Contractor shall promptly correct any Work found unsatisfactory, or as failing to conform to the Contract Documents, by Owner.
7. Conduct of Operations by Contractor during the Term of this Agreement and Performance under this Agreement. Contractor agrees that in fulfillment of its obligations hereunder, it will:
  - a. comply with all directives of the Airport Manager and the FAA;
  - b. comply fully with all Airport, FAA and TSA Rules and Regulations;
  - c. comply fully with all local, state and federal laws, rules and regulations;
  - d. utilize only those access ways designated by the Airport Manager.
8. Contractor to Have or Obtain Necessary Licenses. Contractor agrees to obtain and keep current all licenses or other regulatory requirements and perform all other actions required by any local, state or federal regulatory agency(ies) to perform under this Agreement, if any; and, further, to indemnify TRAA, including reimbursement of attorney's fees and costs, for any loss or damage to TRAA for its failure to do so.
9. Accounting Records. Contractor shall check all materials, equipment and labor entering into the Work and shall keep such full and detailed accounts as may be necessary for proper financial management under this Agreement. Upon its request, Owner shall be provided access to

all of the Contractor's records and accountings relating to this Agreement.

10. Proof of Insurance. Contractor agrees to provide TRAA with proof of insurance and a Certificate of Insurance, with TRAA named as an additional insured, in an amount no less than \$1,000,000 for each occurrence and \$2,000,000 aggregate for general liability, including bodily injury and property damage. \$1,000,000 comprehensive automobile liability. In addition, Contractor shall maintain an insurance policy for protection from claims under the Workmen's Compensation Act and other employee benefit acts, claims for damages because of bodily injury, including death, and from claims for damages, other than to the Work itself, to property which may arise out of Contractor's operations under this Agreement, whether such operation be by Contractor or by any Subcontractor or anyone employed by them.

11. Indemnification. Contractor agrees to indemnify, defend and hold harmless TRAA from any and all claims, liabilities and damages, including attorney's fees and costs, to airport structures, facilities, real and personal property, roadways, property of third parties, and to or by persons or entities which may arise as a direct or indirect result of Contractor's operations at the Telluride Regional Airport pursuant to this Agreement, whether such operations are by Contractor or its subcontractor or anyone directly or indirectly employed by Contractor or any other employee or person employed or engaged on or about, or in connection with the Work, or any failure by Contractor to strictly comply with the terms and conditions of this Agreement.

12. Termination of Agreement. If Owner wrongfully fails to make payment for a properly submitted and complete Application for Payment within thirty days of its due date, Contractor may terminate this Agreement. If Contractor defaults in any material way under this Agreement or files for bankruptcy or is adjudged bankrupt, Owner may terminate this Agreement and take possession of the site and all materials, equipment, tools and construction equipment and machinery thereon and may finish the Work by whatever method the Owner may deem expedient.

13. Binding Agreement. This Agreement shall be binding upon and inure to the benefit of the parties and their respective administrators, legal representatives, successors and assigns.

14. Assignment. This Agreement is not assignable under any circumstances.

15. Time of Essence. Time is of the essence of each and every term and condition of this Agreement.

16. Attorney's Fees. In the event of litigation or arbitration between the parties hereto concerning or arising out of this Agreement, the prevailing party shall be entitled to recover reasonable attorney's fees and costs incurred in such litigation or arbitration.

17. Governing Law. This Agreement shall be governed by the laws of the State of Colorado. Venue shall be in the San Miguel County District Court.

IN WITNESS WHEREOF, the parties have executed this Agreement on the date first noted above.

TRAA

TELLURIDE REGIONAL AIRPORT AUTHORITY

By: \_\_\_\_\_  
Jon Dwight, Chairman

Contractor

\_\_\_\_\_

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

**CERTIFICATE OF INSURANCE**

**TELLIURIDE REGIONAL AIRPORT  
TELLURIDE, COLORADO**

**2017 AIRPORT PAVEMENT MAINTENANCE**

Without limiting any liabilities or any other obligation of Contractor, the Contractor shall purchase and maintain, and cause its subcontractors to purchase and maintain, in a company or companies lawfully authorized to do business in the jurisdiction of the State of Colorado and, unless otherwise required in the Contract Documents, rated at least A- or better in the current A.M. Best ratings, the minimum insurance coverage set forth below which shall be maintained to protect against claims related to the Work or the Contractor's operations under the Contract and for which the Contractor may be legally liable.

**COMPREHENSIVE GENERAL LIABILITY**

Combined single limit for Bodily Injury and Property Damage, in an amount not less than \$1,000,000 each occurrence and \$2,000,000 aggregate

**COMPREHENSIVE AUTOMOBILE LIABILITY**

Combined single limit for Bodily Injury and Property Damage, in an amount not less than \$1,000,000

**WORKMAN'S AND OCCUPATION DISEASE COMPENSATION**

Statutory Minimum \$100,000

Project Name \_\_\_\_\_

Contractor \_\_\_\_\_

Signature \_\_\_\_\_

Insurer \_\_\_\_\_

Policy No(s). \_\_\_\_\_ Expiration Date \_\_\_\_\_



# **TECHNICAL SPECIFICATIONS**

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## ITEM P-101 SURFACE PREPARATION

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### DESCRIPTION

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**101-1.1** This item shall consist of preparation of existing pavement surfaces for surface treatments and other miscellaneous items. The work shall be accomplished in accordance with these specifications and the applicable drawings.

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### EQUIPMENT

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**101-2.1** All equipment shall be specified hereinafter or as approved by the Engineer. The equipment shall not cause damage to the pavement to remain in place.

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### CONSTRUCTION

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**101-3.1 PREPARATION AND FILLING OF CRACKS.** This item shall consist of providing and installing a resilient and adhesive sealing filler capable of effectively sealing and cracks in pavement.

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Cracks along pavement shall be cleaned of crack sealer, debris, and vegetation. Any excess crack sealer on the surface of the pavement shall also be removed from the pavement surface. If vegetation is a problem a soil sterilant shall be applied. Cracks shall be filled with crack seal to meet ASTM D6690.

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**a. Type 1 Crack Repair.** Type 1 cracks (cracks less than 3/8 inch wide) are to be filled with this material.

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**b. Type 2 Crack Repair.** Type 2 cracks (cracks greater than 3/8 inch wide but less than 2 inches wide) shall be filled with pea gravel up to 3/4 inch from the top of the crack, then filled with this material.

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**c. Type 3 Crack Repair.** Type 3 cracks (cracks greater than 2 inches wide) shall be routed, filled with Deery Brand Level & Go Repair Mastic, or approved equal and follow the specifications outlined in the "Type 3 - Crack Repair Detail" shown on C-101 of the Drawings. Immediately after routing the crack, the resulting slurry shall be completely removed by flushing with a jet of water, and by use of other tools as necessary. Type 3 cracks can also be repaired with infrared patching. Exact method to be coordinated with the Airport.

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Materials for hot poured Type 1 and 2 crack sealant shall conform to the requirements of ASTM D 6690—Joint and Crack Sealants, Hot-Applied, for Concrete and Asphalt Pavements. Sealant material shall be supplied preblended, prereacted, and prepackaged. If supplied in solid form the sealant material shall be cast in a plastic or other dissolvable liner

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32 having the capability of becoming part of the crack sealing liquid. Each lot or batch of  
33 sealing compound shall be delivered to the jobsite in the manufacturer's original sealed  
34 container. Each container shall be marked with the manufacturer's name, batch or lot  
35 number, the safe heating temperature, and shall be accompanied by the manufacturer's  
36 certification stating that the compound meets the requirements of this specification.

37 The pavement temperature shall be above 50 °F at the time of installation. The cracks shall  
38 be filled to 1/16 inch below the pavement surface. The material shall be heated and applied  
39 according to the manufacturer's recommendations. Cracks shall be inspected for proper  
40 width and depth and shall be approved by the Airport before sealing is allowed. The sealant  
41 shall be applied uniformly solid from bottom to top and shall be filled without formation of  
42 entrapped air or voids. A backing material shall be placed if recommended by the  
43 manufacturer. The heating kettle shall be an indirect heating type, constructed as a double  
44 boiler. A positive temperature control and mechanical agitation shall be provided. The  
45 sealant shall not be heated to more than 20 °F below the safe heating temperature. The safe  
46 heating temperature can be obtained from the manufacturer's shipping container. A direct  
47 connecting pressure type extruding device with nozzles shaped for insertion into the crack  
48 shall be provided. Any sealant spilled on the surface of the pavement, structures and/or  
49 lighting fixtures, shall be removed immediately.

51 **101-3.2 MARKING AND RUBBER REMOVAL.** Marking and rubber shall be  
52 removed from the surface of the existing pavement, as designated on the Plans or field  
53 located by the Engineer. High-pressure water shall be used. Water blasting shall not cause  
54 major damage to the pavement. Major damage is defined as changing the properties of the  
55 pavement or removing pavement over 1/8 inch deep. No material shall be deposited on the  
56 runway shoulders. All wastes shall be disposed of in areas indicated in this specification or  
57 shown on the plans.

58 **METHOD OF MEASUREMENT**

59 **101-4.1 CRACK REPAIR.** The unit of measurement for joint and crack repair shall  
60 be per linear foot.

61 **101-4.2 MARKING REMOVAL.** The unit of measurement for paint removal shall  
62 be per square foot.

63 **101-4.3 RUBBER REMOVAL.** The unit of measurement for rubber removal shall be  
64 per square foot.

65 **BASIS OF PAYMENT**

66 **101-5.1 PAYMENT.** Payment shall be made at contract unit price for the unit of  
67 measurement as specified above. This price shall be full compensation for furnishing all  
68 materials and for all preparation, hauling, and placing of the material and for all labor,  
69 equipment, tools, and incidentals necessary to complete this item.

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BID SUBMITTAL

- 70 Item P 101-5.1 Type 1 - Crack Repair – per linear foot  
71 Item P 101-5.2 Type 2 - Crack Repair – per linear foot  
72 Item P 101-5.3 Type 3 - Crack Repair – per linear foot  
73 Item P 101-5.2 Marking Removal – per square foot  
74 Item P-101-5.3 Rubber Removal – per square foot

75 **MATERIAL REQUIREMENTS**

- 76 ASTM D6690 Standard Specification For Joint And Crack Sealants, Hot Applied, For  
77 Concrete And Asphalt Pavements

78 **END OF ITEM P-101**

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**ITEM P-608 EMULSIFIED ASPHALT SEAL COATS**

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**DESCRIPTION<sup>1</sup>**

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**608-1.1** This item shall consist of the application of a emulsified asphalt seal coat composed of an emulsion of natural and refined asphalt materials, water and a polymer additive, for taxiways, parking aprons, and runways. The emulsified asphalt seal coat shall be applied in accordance with these specifications, and as shown on the plans or as directed by the Engineer.

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**608-1.2 QUANTITIES OF MATERIALS PER SQUARE YARD.** The approximate amounts of materials per square yard for the asphalt seal coat 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 Engineer from the test area/sections evaluation.

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**Application Rate**

<b>Dilution Rate (Emulsified Asphalt: Water)</b>	<b>Quantity of Emulsion gal/yd<sup>2</sup></b>
1:1	0.10-0.15
2:1	0.08-0.15

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**MATERIALS**

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**608-2.1 ASPHALT MATERIAL.** The Contractor shall furnish the vendor’s certified test reports for the emulsified asphalt, in its concentrated form, to the Engineer, showing that the material meets the following properties:

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**Concentrated Asphalt Material Properties**

<b>Properties</b>	<b>Specification</b>	<b>Limits</b>
Saybolt Furol Viscosity at 77°F	ASTM D244	20 – 100 seconds
Residue by Distillation or Evaporation	ASTM D244	57% minimum
Sieve Test	ASTM D244	0.1% maximum

<sup>1</sup> The terms seal coat and sealer binder and asphalt material are interchangeable throughout this specification. The term emulsified asphalt means an emulsion of natural and refined asphalt materials.

BID SUBMITTAL

Properties	Specification	Limits
24-hour Stability	ASTM D244	1% maximum
5-day Settlement Test	ASTM D244	5.0% maximum
Particle Charge <sup>1</sup>	ASTM D244	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.		

21 The asphalt material concentrate must be diluted with heated water prior to application. The  
 22 asphalt material, when diluted in the volumetric proportion of one part concentrated asphalt  
 23 material to one part hot water or two parts concentrated asphalt material to one part hot water  
 24 (dilution rate specified on the plans) shall have the following properties:

25 **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>		
Saybolt Furol Viscosity at 77°F	ASTM D244	10 – 50 seconds
Residue by Distillation or Evaporation	ASTM D244	28.5% minimum
Pumping Stability <sup>1</sup>		Pass
<sup>1</sup> Pumping stability is tested by pumping one pint of seal coat diluted one (1) part concentrate to one (1) part water, at 77°F, through a 1/4-inch gear pump operating 1750 rpm for 10 minutes with no significant separation or coagulation.		

26 **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>		
Saybolt Furol Viscosity at 77°F	ASTM D244	10 – 50 seconds
Residue by Distillation or Evaporation	ASTM D244	38% minimum
Pumping Stability <sup>1</sup>		Pass
<sup>1</sup> Pumping stability is tested by pumping one pint of seal coat diluted one (1) part concentrate to one (1) part water, at 77°F, through a 1/4-inch gear pump operating 1750 rpm for 10 minutes with no significant separation or coagulation.		

27 The asphalt material base residue shall contain not less than 20% gilsonite, or uintaite and  
 28 shall not contain any tall oil pitch or coal tar material. The material shall be compatible with  
 29 asphaltic concrete, and have a 5-year minimum proven performance record at airports with  
 30 similar climatic conditions. Curing time, under recommended application conditions, shall  
 31 not exceed eight (8) hours.

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**Emulsion Residue by Distillation or Evaporation Tests**

<b>Properties</b>	<b>Specification</b>	<b>Limits</b>
Viscosity at 275°F	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

33 The Contractor shall furnish vendor’s certified test reports showing that the material is the  
 34 type, grade and quality specified for each load of asphalt material delivered to the project.  
 35 The certification shall also show the shipment number, refinery, consignee, destination,  
 36 contract number and date of shipment. The test reports and certification shall be delivered to  
 37 the Engineer before permission is granted to use the material. The furnishing of the vendor’s  
 38 certified test report for the asphalt material shall not be interpreted as a basis for final  
 39 acceptance. The manufacturer’s material test report certification may be subject to  
 40 verification by testing the material delivered for use on the project.

41 The asphalt material storage and handling temperature shall be between 50°F - 160°F and the  
 42 material shall be protected from freezing, or whenever outside temperature drops below 40°F  
 43 for prolonged time periods.

44 **608-2.2 WATER.** Water used in making the emulsion shall be potable, free from  
 45 harmful soluble salts and chemicals, and at least 100°F.

46 **608-2.3 POLYMER.** The polymer shall be a vinyl acrylic polymer approved for use  
 47 by the asphalt material manufacturer. The Contractor shall submit manufacturer’s technical  
 48 data, the manufacturer’s certification indicating that the polymer meets the requirements of  
 49 the specification, and the asphalt material manufacturer’s approval of its use to the Engineer.  
 50 The polymer must be approved for use by the Engineer and shall meet the following  
 51 properties:

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**Polymer Properties**

<b>Properties</b>	<b>Limits</b>
Solids Content	54 to 57%, Percent by Weight
Weight	8.9 to 9.8 pounds/gallon
pH	4.0 to 6.0
Particle Charge	Nonionic/Anionic

Properties	Limits
Mechanical Stability	Excellent
Film Forming Temperature, °C	+5°C, minimum
T <sub>g</sub> , °C	22°C, maximum

53 **608-2.4 TEST AREAS AND TEST SECTIONS.** A qualified manufacturer’s  
 54 representative shall be present in the field to assist the Contractor in applying test areas  
 55 and/or test sections to determine the appropriate application rate of both 2:1 and 1:1 emulsion  
 56 application rates to be approved by the Engineer.

57 A test area and/or section shall be applied for each differing HMA pavement surface  
 58 identified in the project. The test areas shall be used to determine the material application  
 59 rates. The same equipment and method of operation shall be utilized on the test areas as will  
 60 be utilized on the remainder of the work.

61 **a. For taxiway, taxilane and apron surfaces.** Prior to full application, the  
 62 Contractor shall place test areas at varying application rates as advised by the manufacturer’s  
 63 representative and acceptable to the Engineer to determine appropriate application rates. The  
 64 test areas will be located on representative sections of the pavement to receive the asphalt  
 65 surface treatment designated by the Engineer.

66 **b. For runway surfaces.** Prior to full application, the Contractor shall place a  
 67 series of test sections a minimum of 300 feet long by 12 feet wide, or width of anticipated  
 68 application, whichever is greater, at varying application rates as recommended by the  
 69 manufacturer’s representative and acceptable to the Engineer to determine appropriate  
 70 application rate. The area to be tested will be located on a representative section of the  
 71 pavement to receive the asphalt surface treatment designated by the Engineer. Before  
 72 beginning the test section, the skid resistance of the existing pavement shall be determined  
 73 for each test section with a continuous friction measuring equipment (CFME). The skid  
 74 resistance test after application shall be at approximately the same location as the test done  
 75 on the existing pavement. The Contractor may begin testing the skid resistance of runway  
 76 test sections after application of the asphalt surface treatment has fully cured. Aircraft shall  
 77 not be permitted on the runway test sections for a minimum of 24 hours and until such time  
 78 as the Contractor validates that its surface friction meets AC 150/5320-12. The results of the  
 79 friction evaluation meet or exceed the Maintenance Planning levels provided in Table 3-2,  
 80 “Friction Level Classification for Runway Pavement Surfaces,” in AC 150/5320-12,  
 81 Measurement, Construction, and Maintenance of Skid-resistant Airport Pavement Surfaces,  
 82 when tested at speeds of 40 and 60 mph wet with approved CFME.

83 If the test section should prove to be unsatisfactory, necessary adjustments to the application  
 84 rate, placement operations, and equipment shall be made. Additional test sections shall be  
 85 placed and additional skid resistance tests performed and evaluated. Full production shall not  
 86 begin without the Engineer’s approval of an appropriate application rate(s). Acceptable test  
 87 sections shall be paid for under this specification.



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## CONSTRUCTION METHODS

89 **608-3.1 WORKER SAFETY.** The seal coat product shall be handled with caution.  
90 The Contractor shall obtain a Material Safety Data Sheet (MSDS) for both the asphalt  
91 emulsion product and sand and require workmen to follow the manufacturer's recommended  
92 safety precautions.

93 **608-3.2 WEATHER LIMITATIONS.** The asphalt emulsion shall be applied only  
94 when the existing pavement surface is dry and when the weather is not foggy, rainy, or when  
95 the wind velocity will prevent the uniform application of the material. No material shall be  
96 applied when dust or sand is blowing or when rain is anticipated within eight (8) hours of  
97 application completion. The atmospheric temperature and the pavement surface temperature  
98 shall both be above 60°F and rising. During application, account for wind drift. Cover  
99 existing buildings, structures, runway edge lights, taxiway edge lights, informational signs,  
100 retro-reflective marking and in-pavement duct markers as necessary to protect against  
101 overspray before applying the emulsion. Should emulsion get on any light or marker fixture,  
102 promptly clean the fixture. If cleaning is not satisfactory to the Engineer, the Contractor  
103 shall replace any light, sign or marker with equivalent equipment at no cost to the Owner.

104 **608-3.3 EQUIPMENT AND TOOLS.** The Contractor shall furnish all equipment,  
105 tools, and machinery necessary for the performance of the work.

106 **a. Pressure distributor.** The emulsion shall be applied with a manufacturer-  
107 approved computer rate-controlled asphalt distributor. The equipment shall be in good  
108 working order and contain no contaminants or diluents in the tank. Spreader bar tips must be  
109 clean, free of burrs, and of a size to maintain an even distribution of the emulsion. Any type  
110 of tip or pressure source is suitable that will maintain predetermined flow rates and constant  
111 pressure during the application process with application speeds under eight (8) miles per hour  
112 or seven hundred (700) feet per minute. Test the equipment under pressure for leaks and to  
113 ensure it is in good working order before use.

114 The distributor truck shall be equipped with a 12-foot, minimum, spreader bar with  
115 individual nozzle control. The distributor truck shall be capable of specific application rates  
116 in the range of 0.05 to 0.25 gallons per square yard. These rates shall be computer-controlled  
117 rather than mechanical. The distributor truck shall have an easily accessible thermometer  
118 that constantly monitors the temperature of the emulsion, and have an operable mechanical  
119 tank gauge that can be used to cross-check the computer accuracy.

120 A distributor truck shall be provided, if necessary, equipped to effectively heat and mix the  
121 material to the required temperature prior to application. Heating and mixing shall be done  
122 in accordance with the manufacturer's recommendations. Care shall be taken not to overheat  
123 or over mix the material.

124 The distributor shall be equipped to hand spray the emulsion in areas identified either on the  
125 plans or by the Engineer.

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

128           **c. Equipment calibration.** The Contractor shall calibrate the equipment using  
129 either of the following procedures:

130                   **(1) First procedure.** The Contractor shall furnish a State Calibration  
131 Certification for the emulsified asphalt distributor, from any state providing that service, or  
132 other acceptable agency certification approved by the Engineer, and the calibration date shall  
133 have been within six (6) months of the contract award, or up to 12 months if supporting  
134 documents substantiate continuous work using the same distributor.

135                   **(2) Second procedure.** The Contractor shall furnish all equipment,  
136 materials and labor necessary to calibrate the emulsified asphalt distributor. Perform all  
137 calibrations with the approved job materials and prior to applying the specified coatings to  
138 the prepared surface. Perform calibration of the emulsified asphalt distributor in accordance  
139 with ASTM D2995. Perform work to calibrate the tank and measuring devices of the  
140 distributor. Perform inspection and calibration at the beginning of the work and at least once  
141 a day during construction.

142 **608-3.4 PREPARATION OF ASPHALT PAVEMENT SURFACES.** Clean  
143 pavement surface immediately prior to placing the seal coat by sweeping, flushing well with  
144 water leaving no standing water, or a combination of both, so that it is free of dust, dirt,  
145 grease, vegetation, oil or any type of objectionable surface film. Remove oil or grease that  
146 has not penetrated the asphalt pavement by scraping or by scrubbing with a detergent, then  
147 wash thoroughly with clean water. After cleaning, treat these areas with the oil spot primer.  
148 Any additional surface preparation, such as crack repair, shall be in accordance with  
149 specification P-101.

150 **608-3.5 EMULSION MIXING.** The application emulsion shall be obtained by  
151 blending asphalt material concentrate, water and polymer. Always add heated water to the  
152 asphalt material concentrate, never add asphalt material concentrate to heated water. Mix  
153 one part heated water to either one part or two parts asphalt material concentrate, by volume.

154 Add 1% polymer, by volume, to the emulsion mix. If the polymer is added to the emulsion  
155 mix at the plant, submit weigh scale tickets to the Engineer. As an option, the polymer may  
156 be added to the emulsion mix at the job site provided the polymer is added slowly while the  
157 circulating pump is running. The mix must be agitated for a minimum of 15 minutes or until  
158 the polymer is mixed to the satisfaction of the Engineer.

159 **608-3.6 APPLICATION OF ASPHALT EMULSION.** The asphalt emulsion shall  
160 be applied using a pressure distributor upon the properly prepared, clean and dry surface at  
161 the application rate recommended by the manufacturer's representative and approved by the  
162 Engineer from the test area/sections evaluation for each designated treatment area. The  
163 asphalt emulsion should be applied at a temperature between 130°F and 160°F or in  
164 accordance with the manufacturer's recommendation.

165 Pavement surfaces which have excessive runoff of seal coat due to excessive amount of  
166 material being applied or excessive surface grade shall be treated in two or more applications  
167 to the specified application rate at no additional cost to the Owner. Each additional  
168 application shall be performed after the prior application of material has penetrated into the  
169 pavement.

170 If low spots and depressions greater than 1/2 inch in depth in the pavement surface cause  
171 ponding or puddling of the applied materials, the pavement surface shall be broomed with a  
172 broom drag. Brooming shall continue until the pavement surface is free of any pools of  
173 excess material. Ponding and/or puddling shall not cause excessive pavement softening  
174 and/or additional distress. The Engineer shall inspect and approve areas after brooming.

175 During all applications, the surfaces of adjacent structures shall be protected to prevent their  
176 being spattered or marred. Asphalt materials shall not be discharged into borrow pits or  
177 gutters or on the airport area.

178 **QUALITY CONTROL**

179 **608-4.1 MANUFACTURER'S REPRESENTATION.** The manufacturer's  
180 representative shall have knowledge of the material, procedures, and equipment described in  
181 the specification and shall be responsible for determining the application rates and shall  
182 oversee the preparation and application of the seal coat product. Documentation of the  
183 manufacturer representative's experience and knowledge for applying the seal coat product  
184 shall be furnished to the Engineer a minimum of 10 work days prior to placement of the test  
185 sections.

186 **METHOD OF MEASUREMENT**

187 **608-5.1 ASPHALT SEAL COAT.** The quantity of asphalt seal coat shall be  
188 measured by the square yards of material applied in accordance with the plans and  
189 specifications and accepted by the Engineer.

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

194 **BASIS OF PAYMENT**

195 **608-6.1** Payment shall be made at the contract unit price per square yard for the  
196 asphalt seal coat applied and accepted by the Engineer. This price shall be full compensation  
197 for all surface preparation, furnishing all materials, delivery and application of these  
198 materials, for all labor, equipment, tools, and incidentals necessary to complete the item.

199 Payment will be made under:

200 Item P-608-6.1 Asphalt Seal Coat (Dilution Rate 2:1) – per square yard

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BID SUBMITTAL

201 Item P-608-6.2 Asphalt Seal Coat (Dilution Rate 1:1) – per square yard

202 **MATERIAL REQUIREMENTS**

203 ASTM D5 Standard Test Method for Penetration of Bituminous Materials

204 ASTM D244 Standard Test Methods and Practices for Emulsified Asphalts

205 ASTM D2007 Standard Test Method for Characteristic Groups in Rubber Extender  
206 and Processing Oils and Other Petroleum-Derived Oils by the Clay-  
207 Gel Absorption Chromatographic Method

208 ASTM D2042 Standard Test Method for Solubility of Asphalt Materials in  
209 Trichloroethylene

210 ASTM D2995 Standard Practice for Estimating Application Rate of Bituminous  
211 Distributors

212 ASTM D4402 Standard Test Method for Viscosity Determination of Asphalt at  
213 Elevated Temperatures Using a Rotational Viscometer

214 AC 150/5320-12 Measurement, Construction, and Maintenance of Skid-Resistant  
215 Airport Pavement Surfaces

216 AC 150/5320-17 Airfield Pavement Surface Evaluation and Rating (PASER) Manuals

217 AC 150/5380-6 Guidelines and Procedures for Maintenance of Airport Pavements

218 **END OF ITEM P-608**

1

## ITEM P-620 PAVEMENT MARKING

2

### DESCRIPTION

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**620-1.1** This item shall consist of the preparation and painting of numbers, markings, and stripes on the surface of runways, taxiways, and aprons, in accordance with these specifications and at the locations shown on the plans, or as directed by the Engineer. The terms “paint” and “marking material” as well as “painting” and “application of markings” are interchangeable throughout this specification.

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### MATERIALS

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**620-2.1 MATERIALS ACCEPTANCE.** The Contractor shall furnish manufacturer’s certified test reports for materials shipped to the project. The certified test reports shall include a statement that the materials meet the specification requirements. The reports can be used for material acceptance or the Engineer may perform verification testing. The reports shall not be interpreted as a basis for payment. The Contractor shall notify the Engineer upon arrival of a shipment of materials to the site. All material shall arrive in sealed containers 55 gallons or smaller for inspection by the Engineer. Material shall not be loaded into the equipment until inspected by the Engineer.

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**620-2.2 MARKING MATERIALS.** Paint shall be waterborne in accordance with the requirements of paragraph 620-2.2. Paint shall be furnished in White (37925), Red (31136), Yellow (33655), Black (37038) in accordance with Federal Standard No. 595.

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**a. Waterborne.** Paint shall meet the requirements of Federal Specification TT-P-1952E, Type I or Type II. The non-volatile portion of the vehicle for all paint types shall be composed of a 100% acrylic polymer as determined by infrared spectral analysis.

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**620-2.3 REFLECTIVE MEDIA.** Glass beads shall meet the requirements for Federal Specification TT-B-1325D, Type I for all paint. Glass beads shall be treated with all compatible coupling agents recommended by the manufacturers of the paint and reflective media to ensure adhesion and embedment.

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### CONSTRUCTION METHODS

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**620-3.1 WEATHER LIMITATIONS.** The painting shall be performed only when the surface is dry and when the surface temperature is at least 45°F and rising and the pavement surface temperature is at least 5°F above the dew point or meets the manufacturer’s recommendations. Markings shall not be applied when the wind speed exceeds 10 mph unless windscreens are used to shroud the material guns.

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38 **620-3.2 EQUIPMENT.** Equipment shall include the apparatus necessary to properly  
39 clean the existing surface, a mechanical marking machine, a bead dispensing machine, and  
40 such auxiliary hand-painting equipment as may be necessary to satisfactorily complete the  
41 job.

42 The mechanical marker shall be an atomizing spray-type or airless-type marking machine  
43 suitable for application of traffic paint. It shall produce an even and uniform film thickness at  
44 the required coverage and shall apply markings of uniform cross-sections and clear-cut edges  
45 without running or spattering and without over spray.

46 **620-3.3 PREPARATION OF SURFACE.** Immediately before application of the  
47 paint, the surface shall be dry and free from dirt, grease, oil, laitance, or other foreign  
48 material that would reduce the bond between the paint and the pavement. The area to be  
49 painted shall be cleaned by waterblasting as required to remove all contaminants without  
50 damage to the pavement surface. After the cleaning operations, sweeping, blowing, or rinsing  
51 with pressurized water shall be performed to ensure the surface is clean and free of grit or  
52 other debris left from the cleaning process.

53 Prior to the initial application of markings, the Contractor shall certify in writing that the  
54 surface has been prepared in accordance with the paint manufacturer's requirements, that the  
55 application equipment is appropriate for the type of marking paint and that environmental  
56 conditions are appropriate for the material being applied. This certification along with a  
57 copy of the paint manufacturer's surface preparation and application requirements must be  
58 submitted and approved by the Engineer prior to the initial application of markings.

59 **620-3.4 LAYOUT OF MARKINGS.** The proposed markings shall be laid out in  
60 advance of the paint application.

61 **620-3.5 APPLICATION.** Paint shall be applied at the locations and to the dimensions  
62 and spacing shown on the plans. Paint shall not be applied until the layout and condition of  
63 the surface has been approved by the Engineer. The edges of the markings shall not vary  
64 from a straight line more than 1/2 inch in 50 feet, and marking dimensions and spacings  
65 shall be within the following tolerances:

Dimension and Spacing	Tolerance
36 inch or less	±1/2 inch
greater than 36 inch to 6 feet	±1 inch
greater than 6 feet to 60 feet	±2 inch
greater than 60 feet	±3 inch

66 The paint shall be mixed in accordance with the manufacturer's instructions and applied to  
67 the pavement with a marking machine at the rate shown in Table 1. The addition of thinner

68 will not be permitted. A period of 30 days shall elapse between placement of a bituminous  
69 surface course and final application of the paint.

70 Prior to the initial application of markings, the Contractor shall certify in writing that the  
71 surface has been prepared in accordance with the paint manufacturer's requirements, that the  
72 application equipment is appropriate for the marking paint and that environmental conditions  
73 are appropriate for the material being applied. This certification along with a copy of the  
74 paint manufactures application and surface preparation requirements must be submitted to  
75 the Engineer prior to the initial application of markings.

76

**Table 1. Application Rates For Paint And Glass Beads**

<b>Paint Type</b>	<b>Paint</b> Square feet per gallon, ft <sup>2</sup> /gal	<b>Glass Beads, Type I, Gradation A</b> Pounds per gallon of paint-lb/gal
<b>Waterborne Type I or II</b>	115 ft <sup>2</sup> /gal max	5lb/gal min

79 Temporary markings shall be applied at a 50% application rate and will not require glass  
80 beads.

81 Glass beads shall be distributed upon the marked areas immediately after application of the  
82 paint. A dispenser shall be furnished that is properly designed for attachment to the marking  
83 machine and suitable for dispensing glass beads. Glass beads shall be applied at the rate  
84 shown in Table 1. Glass beads shall not be applied to black paint. Glass beads shall adhere to  
85 the cured paint or all marking operations shall cease until corrections are made. Regular  
86 monitoring of glass bead embedment should be performed.

87 All emptied containers shall be returned to the paint storage area for checking by the  
88 Engineer. The containers shall not be removed from the airport or destroyed until authorized  
89 by the Engineer.

90 **620-3.6 PROTECTION AND CLEANUP.** After application of the markings, all  
91 markings shall be protected from damage until dry. All surfaces shall be protected from  
92 excess moisture and/or rain and from disfiguration by spatter, splashes, spillage, or drippings.  
93 The Contractor shall remove from the work area all debris, waste, loose or unadhered  
94 reflective media, and by-products generated by the surface preparation and application  
95 operations to the satisfaction of the Engineer. The Contractor shall dispose of these wastes in  
96 strict compliance with all applicable state, local, and Federal environmental statutes and  
97 regulations.

98

**METHOD OF MEASUREMENT**

99 **620-4.1** The quantity of pavement marking to be paid for shall be the number of  
100 square feet of marking performed in accordance with the specifications and accepted by the  
101 Engineer.

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**BASIS OF PAYMENT**

103 **620-5.1** Payment shall be made at the respective contract price per square foot of  
104 marking. This price shall be full compensation for furnishing all materials and for all labor,  
105 equipment, tools, and incidentals necessary to complete the item.

106 Payment will be made under:

107 Item P-620-5.1 Temporary Pavement Marking – per square foot

108 Item P-620-5.2 Permanent Pavement Marking – per square foot

109

**TESTING REQUIREMENTS**

110 ASTM E1710 Standard Test Method for Measurement of Retroreflective Pavement  
111 Marking Materials with CEN-Prescribed Geometry Using a Portable  
112 Retroreflectometer

113 ASTM E2302 Standard Test Method for Measurement of the Luminance Coefficient  
114 Under Diffuse Illumination of Pavement Marking Materials Using a  
115 Portable Reflectometer

116

**MATERIAL REQUIREMENTS**

117 ASTM D476 Standard Classification for Dry Pigmentary Titanium Dioxide  
118 Products

119 29 CFR Part 1910.1200 Hazard Communication

120 FED SPEC TT-B-1325D Beads (Glass Spheres) Retro-Reflective

121 FED SPEC TT-P-1952E Paint, Traffic and Airfield Marking, Waterborne

122 FED STD 595 Colors used in Government Procurement

123 AC 150/5340-1 Standards for Airport Markings

124

**END OF ITEM P-620**



**BID PROPOSAL**  
**For**  
**2017 Airport Pavement Maintenance**

# BID PROPOSAL

## TELLURIDE REGIONAL AIRPORT 2017 AIRPORT PAVEMENT MAINTENANCE

**2017 AIRPORT PAVEMENT MAINTENANCE**

Bid Item	Specification	Description	Quantity	Unit	Unit Price	Total
1	P-101-5.1	Type 1 - Crack Repair	10,000	LF		
2	P-101-5.2	Type 2 - Crack Repair	10,000	LF		
3	P-101-5.3	Type 3 - Crack Repair	7,000	LF		
4	P-101-5.4	Marking Removal	9,720	SF		
5	P-101-5.5	Rubber Removal	20,000	SF		
6	P-608-6.1	Asphalt Seal Coat (Dilution Rate 2:1)	105,315	SY		
7	P-608-6.2	Asphalt Seal Coat (Dilution Rate 1:1)	40,600	SY		
8	P-620-5.1	Temporary Pavement Marking	97,200	SF		
9	P-620-5.2	Permanent Pavement Marking	97,200	SF		

**TOTAL**

Name of Company Submitting Bid: \_\_\_\_\_

Signature of Company Representative: \_\_\_\_\_

Print Name of Signatory Representative: \_\_\_\_\_

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