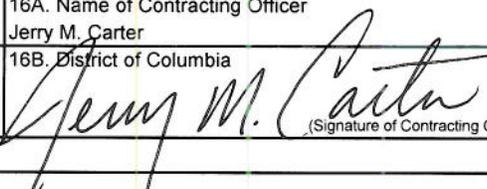


<b>AMENDMENT OF SOLICITATION/MODIFICATION OF CONTRACT</b>			1. Contract Number <b>DCKA-2012-R-0082</b>	Page of Pages 1   6
2. Amendment/Modification Number <b>Three (3)</b>	3. Effective Date See 16C Below	4. Requisition/Purchase Request No.		5. Solicitation Caption <b>Asset Pres. &amp; Maintenance of Tunnels in the District of Columbia</b>
6. Issued By: Office of Contracting and Procurement Roadways and Highway 55 M Street SE 7th Floor Washington, DC 20003		Code	7. Administered By (If other than line 6)	
8. Name and Address of Contractor (No. Street, city, country, state and ZIP Code)			(X) 9A. Amendment of Solicitation No. <b>DCKA-2012-R-0082</b>	9B. Dated (See Item 11) <b>4-Sep-12</b>
Code			10A. Modification of Contract/Order No.	
Facility			10B. Dated (See Item 13)	
11. THIS ITEM ONLY APPLIES TO AMENDMENTS OF SOLICITATIONS				
<input type="checkbox"/> The above numbered solicitation is amended as set forth in Item 14. The hour and date specified for receipt of Offers <input type="checkbox"/> is extended. <input checked="" type="checkbox"/> is not extended. Offers must acknowledge receipt of this amendment prior to the hour and date specified in the solicitation or as amended, by one of the following methods: (a) By completing Items 8 and 15, and returning <u>1</u> copies of the amendment; (b) By acknowledging receipt of this amendment on each copy of the offer submitted; or (c) By separate letter or fax which includes a reference to the solicitation and amendment number. FAILURE OF YOUR ACKNOWLEDGEMENT TO BE RECEIVED AT THE PLACE DESIGNATED FOR THE RECEIPT OF OFFERS PRIOR TO THE HOUR AND DATE SPECIFIED MAY RESULT IN REJECTION OF YOUR OFFER. If by virtue of this amendment you desire to change an offer already submitted, such change may be made by letter or fax, provided each letter or telegram makes reference to the solicitation and this amendment, and is received prior to the opening hour and date specified.				
12. Accounting and Appropriation Data (If Required)				
13. THIS ITEM APPLIES ONLY TO MODIFICATIONS OF CONTRACTS/ORDERS, IT MODIFIES THE CONTRACT/ORDER NO. AS DESCRIBED IN ITEM 14				
(X)	A. This change order is issued pursuant to: (Specify Authority)			
	The changes set forth in Item 14 are made in the contract/order no. in item 10A.			
	B. The above numbered contract/order is modified to reflect the administrative changes (such as changes in paying office, appropriation date, etc.) set forth in item 14, pursuant to the authority of 27 DCMR, Chapter 36, Section 3601.2.			
	C. This supplemental agreement is entered into pursuant to authority of:			
	D. Other (Specify type of modification and authority)			
<b>E. IMPORTANT:</b> Contractor <input type="checkbox"/> is not, <input checked="" type="checkbox"/> is required to sign this document and return <u>1</u> copies to the issuing office.				
14. Description of amendment/modification (Organized by UCF Section headings, including solicitation/contract subject matter where feasible.)				
The solicitation is amended as follows:				
<b>DELETE</b> Appendix F (from the CD included in the solicitation) in its entirety and <b>REPLACE</b> with the attached new Appendix F.				
<b>NEW RECEIPT OF PROPOSALS DATE: OCTOBER 8, 2012 BY 2:00 P.M.</b>				
Except as provided herein, all terms and conditions of the document referenced in Item (9A or 10A) remain unchanged and in full force and effect				
15A. Name and Title of Signer (Type or print)			16A. Name of Contracting Officer Jerry M. Carter	
15B. Name of Contractor		15C. Date Signed	16B. District of Columbia	16C. Date Signed
(Signature of person authorized to sign)			 (Signature of Contracting Officer)	9/13/12

## Special Mechanical Requirements:

### Fan and Drive Oil Level:

Contractor to establish normal and minimum oil levels on fan bearing sight glass based on existing maintenance and installation instructions. Oil levels to be maintained in accordance with outlined performance measures, but under no circumstances below the minimum oil levels established under this contract.

### Fan and Drive Oil Quality:

All bearing oil and drive oil to be changed at regularly scheduled intervals based on equipment manufacturer's recommendations and operational conditions, however, the maximum operating hours between oil changes shall be 1500 hours. Oil testing shall be performed on oil drained at time of scheduled maintenance. Test results/analysis performed during a given quarter will be submitted prior to the inspection for review and scoring.

The contractor will be responsible for collecting samples from oil being drained, having the sample tested and forwarding a copy of the test report to the DDOT representative 2 working days prior to the inspection. An oil sample will be taken from each reservoir on the fan including bearings and drive train (as applicable). Oil samples will be analyzed per the following testing procedures:

Test/Analysis	Reference Standard	Description	Significance
<b>Spectrochemical Analysis – ICP Spectroscopy</b>	ASTIM-D-1585	Reports wear metals, contaminant metals, additive metals	The Inductively Coupled Plasma (ICP) Spectrometer measures and quantifies the elements associated with wear, contamination, and additives. This information assists decision makers in determining the oil and machine condition.
<b>Analytical Ferrography</b>		Reports type and severity of wear particles	A trained analyst visually determines the type and severity of wear deposited onto the substrate by using a high magnification microscope. The particles are readily identified and classified according to size, shape, and metallurgy.
<b>Particle Count</b>	ISO 4406-99	Measures the size and quantity of particles in a lubricant	Optical particle counters use the light blockage method and are particularly effective in clean systems such as turbines and hydraulics. However, this method yields inaccurate results in the presence of water or air bubbles.

Test/Analysis	Reference Standard	Description	Significance
			Pore blockage particle counters are based on the fluid flow decay principle. Their data is not affected by air bubbles or water.
<b>Crackle</b>	(Karl Fisher) ASTM-6304)	Reports contamination	Water seriously damages the lubricating properties of oil and promotes component corrosion. Increased water concentrations indicate possible condensation, coolant leaks, or process leaks around the seals.
<b>Ferrous Wear Concentration</b>		Measures the amount of ferrous wear in a lubricant	This test gives a direct measure of the amount of ferrous wear metals present in a sample. Trending of ferrous concentration reveals changes in the wear mode of the system.
<b>Viscosity at 40° C</b>	ASTM-445	Reports physical property of the lube oil	Viscosity is measured at 40°C for industrial applications and 100°C for engine oil applications. Viscosity for industrial lubricants is classified using the ISOVG (International Standard Organization Viscosity Grade) system which is the average viscosity (cSt) at 40°C. Viscosity for engine oils is classified according to SAE (Society of Automotive Engineers). Viscosity is the most important physical property of oil. Viscosity determination provides a specific number to compare to the recommended oil in service. An abnormal viscosity ( $\pm 15\%$ ) is usually indicative of a problem.

Any oil sample receiving a “critical” or “failed” condition rating will warrant follow-up testing. When a “critical” or “failed” result is received – oil will be changed and the equipment operated for continuously for 5-7 days. At this time a second oil sample will be drawn and analyzed. Failure or poor performance of a second oil test will require a corrective action work order to identify and correct the deficiency be initiated.

Oil test results shall be available as web-based reports.

**Bearing Temperature:**

Acceptable guidelines for bearing temperature: Using a handheld infrared thermometer oriented perpendicular to the bearing surface at a maximum distance of 12-inches, measure the bearing surface temperature for each bearing after the fan has been operated at a constant speed for a minimum of 4 hours. The space ambient temperature should be recorded at the time of measurement for each location. The difference between space ambient and bearing temperatures will be the baseline temperature used to trend and track future changes in bearing temperatures.

A target should be permanently identified on each bearing to ensure the temperature is measured at the same location for each test. While operating, the temperature should be measured and recorded each day to track temperatures. Each daily reading should immediately be compared to the previous day's readings to determine if an increase in bearing temperature has occurred and compared with the ambient temperature.

Acceptable bearing temperatures are a maximum of 80° F above ambient temperature or a maximum temperature of 160° F.

A reading greater than 160° F or relative bearing-to-ambient temperature increase of over 20° F should be investigated to determine possible conditions such as low oil level, bearing contamination, etc. If no indications of abnormal operation are identified, the fan should be closely monitored for further rise in temperature.

A bearing temperature greater than 160° F should immediately initiate a corrective action work order to identify and correct possible problems with bearing operations.

**Vibration Monitoring:**

Vibration testing and analysis of all tunnel ventilation fans (centrifugal and axial) is required to be preformed. .

	<b>Reference Standard</b>	<b>Requirement</b>
<b>Field Technician</b>	18436-2	Requirement for vibration analysis personnel who perform machine vibration measurements: Category I certification.  Certification to this standard will provide recognition of the qualifications and competence of the individuals to perform machinery vibrations analysis using portable and permanently installed sensors and equipment.

	<b>Reference Standard</b>	<b>Requirement</b>
<b>Vibration Analyst / Report Preparation</b>	18436-2	<p>Requirement for vibration analysis personnel who perform machine vibration analysis: Category II certification.</p> <p>Certification to this standard will provide recognition of the qualifications and competence of the individuals to perform machinery vibrations analysis using portable and permanently installed sensors and equipment.</p>
<b>Vibration Report</b>		For each tunnel ventilation fan and motor bearing: Provide all velocity (in.-sec.) and acceleration (Grms) data for current period as well as historical data for previous 8 test periods for review and trend analysis.
<b>Measurement Points</b>		Bearings to be measured in both vertical and horizontal planes. Shafts to be measured in the axial plane. Each measurement point to be permanently identified (or sensor attached) to ensure consistency data collection.
<b>Vibration Measurement Equipment</b>	ISO	Provide certification of calibration of test equipment. Test equipment to be re-calibrated per applicable ISO standards within manufacturer's recommended time frame.
<b>Vibration Measurement Parameters</b>		<p>Vibration measurements to be performed while fans are on <u>highest speed</u>.</p> <p>Frequency: 1-10 kHz / 0 to 96,000 CPM</p>
<b>Maximum Acceleration</b>	ISO-10816	Measurements exceeding 1.0 Grms – Retest bearing within 7 days, if second measurement also exceeds max. acceleration, initiate corrective action work order to address condition. For measurements exceeding 2.0 Grms – Immediately initiate corrective action work order.
<b>Maximum Velocity</b>	ISO-10816	<p>Measurements exceeding 0.3 in.-sec. for fans with isolation or isolation bases or 0.2 in.-sec. for fans without isolation or isolation bases. - Retest bearing within 7 days, if second measurement also exceeds max. velocity, initiate corrective action work order to address condition. For measurements exceeding 0.7 in.-sec. – Immediately initiate corrective action work order.</p>

**Fan Drive Belt Tensioning and Alignment:**

Belts to be tensioned and pulleys to be aligned per manufacturer's recommendations and recorded in the work order. Record of most recent fan drive belt tensioning and alignment service work orders to be submitted to DDOT representative 2 working days prior to quarterly inspections.

**Fan Run Times:**

In a given 12 month rolling time period - Equalize operating hours for all fans sharing a common supply or exhaust plenum. Record tunnel fan run times and submit them to the DDOT representative 2 working days prior to quarterly inspections.

**Reference Material list:**

Tunnel Operations and Maintenance Manuals  
Mechanical Inspection Reports - 2005