

AMENDMENT OF SOLICITATION/MODIFICATION OF CONTRACT		1. CONTRACT ID CODE	PAGE OF PAGES 1 2
2. MODIFICATION NO.: 0007	3. EFFECTIVE DATE JUL 08, 2003	4. REQUISITION/PURCHASE REQ. NO. W81W3G-2035-7181	PROJECT NO. (If applicable)
6. ISSUED BY Department of the Army Baltimore District, Corps of Engineers Contracting Division P.O. Box 1715 Baltimore MD 21203-1715	CODE CA31	7. ADMINISTERED BY: Contracting Division, Contracts Branch CENAB-CT-C 10 S. Howard ST. Room 7000 Baltimore, MD 21203-1715	CODE E1P0100
8. NAME AND ADDRESS OF CONTRACTOR (No., street, county, State and ZIP Code)		(x)	9A. AMENDMENT OF SOLICITATION NO. DACW31-03-R-0022
		X	9B. DATED (SEE ITEM 11) JUN 09, 2003
			10A. MODIFICATION OF CONTRACT/ ORDER NO.
			10B. DATED (SEE ITEM 13)
CODE	FACILITY CODE		

11. THIS ITEM ONLY APPLIES TO AMENDMENTS OF SOLICITATIONS

The above numbered solicitation is amended as set forth in Item 14. The hour and date specified for receipt of Offers **is extended.**

DATE OF RECEIPT OF PROPOSALS SEE THE FOLLOWING PAGE

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 1 copies of the amendment; (b) By acknowledging receipt of this amendment on each copy of the offer submitted; or (c) By separate letter or telegram which includes a reference to the solicitation and amendment numbers. FAILURE OF YOUR ACKNOWLEDGMENT 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 telegram or letter, provided each telegram or letter 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.

A. THIS CHANGE ORDER IS ISSUED PURSUANT TO: (Specify authority) THE CHANGES SET FORTH IN ITEM 14 ARE MADE IN THE CONTRACT ORDER No. 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 FAR43.103(b)
C. THIS SUPPLEMENTAL AGREEMENT IS ENTERED INTO PURSUANT TO AUTHORITY OF: changes clause FAR 52.243.1
D. OTHER (Specify type of modification and authority)

E. IMPORTANT: Contractor is not, is required to sign this document and return copies to the issuing office.

14. DESCRIPTION OF AMENDMENT/MODIFICATION (Organized by UCF section headings, including solicitation/contract subject matter where feasible.)

**BOOK STORAGE MODULE 2 FACILITY, ARCHITECT OF THE CAPITAL PROJECT
FORT GEORGE G. MEADE, MARYLAND**

SEE THE FOLLOWING PAGE

Except as provided herein, all terms and conditions of the document referenced in Item 9A or 10A, as heretofore changed, remains unchanged and in full force and effect

15A. NAME AND TITLE OF SIGNER (Type or print)	16A. NAME AND TITLE OF CONTRACTING OFFICER (Type or print)		
15B. CONTRACTOR/OFFEROR	15C. DATE SIGNED	16B. UNITED STATES OF AMERICA	16C. DATE SIGNED
 <i>(signature of person authorized to sign)</i>		BY _____ <i>(Signature of Contracting Officer)</i>	

AMENDMENT NO.0006 TO ADVERTISED RFP DACW31-03-R-0022
EFFECTIVE JUL 08, 2003

SOLICITATION:

- 1) The time and date for receiving proposals for this project is extended to 4:00 PM, local time, Jul 17, 2003. Revise Form 1442 of the Solicitation, Block 13A, to reflect this change.
- 2) Section 00100, Page 7 of 74, Paragraph 3.3B(3): Add the following sentence: "The wheel provided by the desiccant wheel manufacturer shall meet the requirements specified under Section 15856. The desiccant dehumidifier manufacturer's experience criteria shall apply to equipment provided with wheels of this same desiccant wheel manufacturer".

SPECIFICATIONS:

- 3) Section 15861: Delete this section in its entirety and substitute the attached revised Section 15861 AIR FILTERS AND AIR FILTER HOUSINGS, dated Jul 07, 2003

ATTACHMENTS: Revised Section 15861 AIR FILTERS AND AIR FILTER HOUSINGS, dated Jul 07, 2003

SECTION 15861 - AIR FILTERS AND AIR FILTER HOUSINGS, JUL 07, 2003

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. This Section includes factory fabricated air filter devices and media for HVAC applications. This section includes prefilters, high efficiency filters and gas phase filters to provide effective filtration for the removal of particulates and gaseous pollutants from make-up and recirculated indoor air.
- B. Related sections:
 - 1. Division 15, Section 15241, "Vibration Isolators, Equipment Frames and Bases," for vibration hangers and supports.
 - 2. Division 15, Section 15854, "Central Station Air Handling Units."
 - 3. Division 15, Section 15856, "Packaged Desiccant Dehumidification Units."
 - 4. Division 15, Section 15975, "Control Systems Equipment" for control devices.
 - 5. Division 15, Section 15995, "Mechanical System Commissioning."

1.3 SUBMITTALS

- A. Product Data: Include dimensions; shipping, installed, and operating weights; required clearances and access; rated flow capacity, including initial and final pressure drop at rated air flow; efficiency and test method; fire classification; furnished specialties; and accessories for each model indicated.
- B. Shop Drawings: Include plans, elevations, sections, and details to illustrate component assemblies and attachments.
 - 1. Show filter rack assembly, dimensions, materials, and methods of assembly of components.
 - 2. Include setting drawings, templates, and requirements for installing anchor bolts and anchorages.
 - 3. Wiring Diagrams: Detail wiring for power, signal, and control systems and differentiate between manufacturer installed and field installed wiring.
- C. Maintenance Data: For each type of filter and rack to include in the operation and maintenance manuals specified in Division 1.
- D. Start-up checklists: Submit start-up checklists as specified in Part 3.

1.4 QUALITY CONTROL

- A. Comply with NFPA 90A and NFPA 90B.
- B. ASHRAE Compliance: Comply with provisions of ASHRAE 52.2 for method of testing and rating air filter units.
- C. Comply with NFPA 70 for installing electrical components.

1.5 REDUNDANT STOCK

- A. Furnish extra materials described below that match products installed and that are packaged with protective covering for storage and identified with labels describing contents.
 - 1. Provide one complete set of filters for each filter bank.

PART 2 - PRODUCTS

2.1 AIR FILTERS, GENERAL

- A. Air Bypass: Construct filters so as to prevent the passage of unfiltered air. Provide felt, rubber or neoprene gaskets to prevent air bypass between filter frames and supporting members.
- B. Identification: Provide each filter with an identification device mounted in a location where it will be visible after installation. Show model number and all pertinent data necessary for ordering renewal media.
- C. Supports: Provide supports (screen, grid, or frame type) for filters adequate to position the media for uniform air distribution without tearing and to prevent excessive motion and deflection under varying air flow conditions.

2.2 TYPE 'A' FILTERS, PRE-FILTERS AND AFTER FILTERS

- A. Each filter shall consist of an electrostatically charged synthetic only media, with galvanized expanded metal backing and moisture resistant enclosing frame. The filter shall be 2" or 4" nominal depth as shown on the unit schedule.
- B. The filter shall be classified for flammability by Underwriters Laboratories, Standard 900 as Class 2. The filter shall have a MERV (Minimum Efficiency Reporting Value) of 8 by ASHRAE Standard 52.2.
- C. Media support grid shall be heavy duty gauge (.013 in.) expanded, electro-galvanized metal with grid members being no less than 0.25 in. wide, providing an open area of not less than 96%. The grid shall be 100% bonded to the media on the air exiting side to eliminate media vibration and pull-away. The grid shall be formed to provide a uniform V-shaped pleat with the open area on the air exiting side for maximum utilization of the media and low airflow resistance.

2.3 TYPE 'B' FILTERS, INTERMEDIATE AND FINAL FILTERS

- A. Medium and high efficiency rigid filters shall be extended media separator type rigid filters. Filter sizes and capacities shall be as scheduled on the drawings.
- B. Filters shall be constructed by pleating a continuous sheet of moisture-resistant water-laid micro-fine glass media into closely spaced pleats with hemmed-edge corrugated aluminum separators. The filter pack shall be sealed into a 24 ga. steel frame with fire-retardant potted urethane elastomer sealant. The enclosing frame shall be assembled in a rigid manner.
 - 1. Full box style construction shall be provided for filters installed in upstream or downstream accessible holding frames. Double headered filters are not acceptable.
 - 2. For side access applications, single headered filters shall be provided. A polyfoam gasket shall be provided on the vertical sides to prevent leakage when installed in a side access housing.
- C. Filters shall be UL 900 Class 1 listed. Initial and final resistances shall not exceed the scheduled values. Media area must equal or exceed 110 square feet. The filter shall have a MERV (Minimum Efficiency Reporting Value) of 14 by ASHRAE Standard 52.2.

2.4 TYPE 'A' HOLDING FRAMES

- A. Permanent holding frames shall be provided for all upstream and downstream accessible pre-filters and after filters. Frames shall be constructed of 14 gauge type 304 stainless steel, with factory-drilled alignment holes on each side to facilitate field erection of the filter bank. Frames shall be furnished with welded corners and a $\frac{3}{4}$ " wide sealing surface. Multiple lances shall be provided to accommodate various fasteners. Frames shall have a polyurethane gasket to assure proper filter seating and sealing.

2.5 TYPE 'B' HOLDING FRAMES

- A. Permanent holding frames shall be provided for all upstream and downstream accessible intermediate and final filters. Frames shall be constructed of 14 gauge type 304 stainless steel, with factory-drilled alignment holes on each side to facilitate field erection of the filter bank. Depth of frame shall be 8 inches. Furnish alignment bars on bottom and two sides of the interior of the frame, and a sealing surface with $\frac{1}{4}$ " x $\frac{3}{4}$ " neoprene gasket. Furnish four stainless steel locking arm and screw assemblies, one for each corner, to support the filter and to compress its gasket properly against the sealing flange for a leak free installation. Install frames in accordance with manufacturer's written recommendations.

2.6 SIDE ACCESS FILTER HOUSINGS

- A. Two stage side access filter housing shall be a factory assembled housing with upstream and downstream outwardly-turned flanges for installation in the ductwork. Housing must be capable of accepting primary filters without the use of frames or fasteners. Housing shall be suitable for operation between -4.0 in. w.g. and +3.0 in. w.g internal static pressure. Leakage rate shall not exceed 0.5% of air flow at 6.0 in w.g. internal static pressure.

- B. Housing construction shall be 16 ga. aluminum with "Z" channel vertical support members on all four corners. Metal to metal joints shall be sealed with silicone compound for a leak free design. Housing shall be double walled constructed with 2" insulation.
- C. Filter tracks shall be extruded aluminum and incorporate a replaceable polypropylene pile gasket to insure sealing of filters to the track. Pre-filter track shall be an integral part of the assembly.
- D. Leakage shall be prevented between filters and access doors by factory installed polyfoam gasketing. Access doors shall be double wall insulated construction and shall have continuous neoprene gasketing on the perimeter and be equipped with positive pressure adjustable latches and easy grip knobs.

2.7 GAS PHASE FILTERS

- A. Gas phase modules shall be provided for either upstream or downstream access as indicated on drawings. Modules shall be provided with permanent stainless steel housing. Each housing shall be 24" H x 24" W x 14-5/8" D. Each housing shall contain two (2) disposable carbon media filters. Each filter shall be 12" H x 24" W x 12" D. Each filter shall contain a 50/50 blend of potassium permanganate and standard activated carbon.
- B. Gas Phase Module Housing shall be constructed of 14 gauge, galvaneal. Each housing shall be 24" H x 24" W x 14-5/8" D. Housing shall be welded and caulked for a leak free design. It shall be painted with a white powder coat finish inside and out. Guide angles shall be welded to the vertical supports for proper alignment of carbon filters. Sealing surfaces shall be provided on all surfaces to provide a positive seal between the carbon filters and the housing. A locking mechanism shall be provided to secure the carbon filters in place.
- C. Carbon filters shall be of the disposable type. Each filter shall be 12" H x 24" W x 12" D (nominal dimensions). Each filter shall be filled with a 50/50 blend of potassium permanganate and activated carbon. Filters shall be constructed of 24 gauge perforated metal face screens, and 22 gauge side panels. Maximum design velocity shall be 250 fpm. At this velocity each filter shall provide a capacity of 500 cfm with an initial pressure drop of 0.85" w.g. and a residence time of 0.12 seconds. Each filter shall contain approximately 0.5 cubic feet of blended media.

2.8 MEDIA SPECIFICATIONS

- A. Potassium permanganate shall be spherical pellets of activated alumina impregnated with potassium permanganate. The chemical media is designed for the removal of gaseous vapors such as hydrogen sulfide, mercaptans, sulfur dioxide, and other malodorous and corrosive contaminants. The media specification shall be:
 - 1. Leach test- 180 minutes.
 - 2. Potassium permanganate content- 4% minimum.
 - 3. Moisture content- 20% maximum.
 - 4. Bulk density- 50 lbs./ft³.
 - 5. Crush strength-40% to 60% maximum.
 - 6. Abrasion- 4.0% maximum.
 - 7. Nominal pellet size- 1/8" -3/16" diameter spheres.

8. Contaminant removal capacity (as hydrogen sulfide) shall be 10% by weight. This is determined by passing a moist (85% r.h.) stream of air containing 1% by volume H₂S through a one-inch diameter tube with 9-inch deep bed of closely packed pellets at a rate of 1450 cc/minute and monitoring to a 50 ppm breakthrough. The results are reported as grams of H₂S adsorbed per gram of media. A copy of the test data must be provided at time of shipment.
- B. Activated carbon shall granular chemical media designed for the removal of gaseous vapors such as volatile organic compounds (VOC's). Typical VOCs controlled include benzene, ethyl benzene, toluene, and xylene, as well as dimethyl sulfides and methyl mercaptans. The media specification shall be:
 - a. Ash content- 2.0% to 3.0%.
 - b. Percent CTC- 35% to 70%.
 - c. Bulk density- 31 lbs/ft³.
 - d. Mesh size- 4x8 and 4x6, U.S. Mesh, ASTM D-2862.
 - e. Hardness factor- 95.
 - f. Contaminant removal capacity (as toluene) shall be 60-70% by weight. This is determined by passing a moist (85% r.h.) stream of air containing 1% by volume H₂S through a one-inch diameter tube with 9-inch deep bed of closely packed pellets at a rate of 1450 cc/minute and monitoring to a 50 ppm breakthrough. The results are reported as grams of toluene adsorbed per gram of media. A copy of the test data must be provided at time of shipment.
- C. Media testing shall be provided each quarter for the life of the media. This testing shall be conducted by a qualified laboratory and shall include percent remaining moisture, percent remaining potassium permanganate, total life prediction, and projected replacement date. A report shall be provided after each test. Any media depleted for testing shall be replaced. A schedule shall be determined at time of start-up and shall be provided to manufacturer for subsequent testing.

2.9 PACKAGED OUTSIDE AIR VERTICAL TUBE POURING TYPE GASEOUS FILTERS

- A. Vertical tube gaseous filters (VTG) shall be designed with a contamination control system of at least five stages for removal of particulate and contaminant gases. The VTG shall be designed to deliver the specified quantity of air within a total reduced sulphur level of 3 ppb. The capacity of the unit shall be as scheduled on the drawings.
- B. Housing shall be constructed of 16 gauge type 304 stainless steel to make the unit corrosion resistant. Hinged and gasketed access doors shall be provided for each side access filter section and fan section. Unit shall have 304 stainless steel latches with knurl knob and 304 stainless steel hinges for positive pressure seal. Unit shall be mounted on a 3" type 304 stainless channel base.
- C. Blower shall be industrial quality plenum fan with reduced width aluminum air foil fan wheel. Fan assembly shall be mounted on an epoxy coated base with spring isolation and flexible connection. A vee-belt drive shall be provided to meet the required fan rpm.
- D. The media section shall contain two (2) media beds. Each bed shall be 12" deep and shall provide 1.2 seconds superficial media residence time. Media sections shall be designed for bulk pour filling into the top of an integral hopper. Expended media will be

removed from the bottom of the unit by vacuuming through clean-out panels. Sampling ports shall be provided for each media bed. Media sections shall be constructed of type 304 perforated stainless steel. Each bed shall be separated for individual filling and removal of media. Integral hopper shall extend 10" above top of unit and provide additional media capacity for media settling. This will preclude bypass of contaminated air. The first bed in the airstream shall be filled with activated carbon meeting the requirements of Article "Media Specifications.". The second bed in the airstream shall be filled with potassium permanganate impregnated activated alumina meeting the requirements of Article "Media Specifications".

- E. A 2" Type 'A' prefilter and 12" Type 'B' cartridge filter shall be provided upstream of the fan assembly. A 2" Type 'A' after filter section shall be provided downstream of the media beds. Filter sections shall be side accessed.
- F. Magnehelic pressure gauges shall be provided across the particulate filter sections and each gas phase media section. Gauges shall be integral to the VTG unit.

PART 3 - EXECUTION

3.1 INSTALLATION

- A. Furnish filter holding frames to PDDU manufacturer for factory installation. Holding frames shall be installed according to manufacturer's written instructions.
- B. Position each filter unit with clearance for normal service and maintenance.
- C. Install filters in position to prevent passage of unfiltered air.
- D. Install filter gauge for each filter bank.
- E. Install filter gauge static-pressure tips upstream and downstream from filters to measure pressure drop through filter. Mount filter gauges on outside of filter housing or filter plenum in an accessible position. Adjust and level inclined gauges.
- F. Coordinate filter installations with duct, PDDU, and air handling unit installations.
- G. Electrical wiring and connections are specified in Division 16 Sections.

3.2 CLEANING

- A. After completing system installation and testing, adjusting, and balancing air handling and air distribution systems, clean filter housings and install new filter media.

3.3 START-UP

- A. Contractor shall develop start-up checklists incorporating manufacturer's specified procedures. Submit copies of draft start-up checklists prepared for this project and manufacturer's start-up and check out procedures to the Commissioning Authority for approval prior to start-up. Refer to Division 15, Section 15995, "Mechanical System Commissioning" for general requirements of start-up checklists and procedures.

- B. Submit copies of completed start-up checklists to the Contracting Officer and Commissioning Authority prior to verification of functional performance testing.

3.4 COMMISSIONING

- A. Refer to Division 15, Section 15995, "Mechanical System Commissioning" for commissioning requirements.
- B. For the purposes of commissioning and balancing, the VTG unit shall be considered an air handling unit.

3.5 DEMONSTRATION

- A. Engage the services of a factory authorized service representative to train Owner's maintenance personnel on procedures and schedule related to start-up and shutdown, troubleshooting, servicing, and preventive maintenance.
 - 1. Minimum training for Owner's operation and maintenance personnel will be four (4) hours.
 - 2. Review data in the operation and maintenance manuals specified in Division 1.
- B. Schedule training with the Contracting Officer with at least 7 days' advance notice.
- C. Submit a training itinerary to the Commissioning Agent 14 days in advance of the training session.

END OF SECTION 15861