

ADDENDUM TO PURCHASE ORDER
Carbon Activated Corporation

Contractor shall comply with the Detailed Specifications below, and with the Insurance and Damage to City Property provisions that follow.

I. DETAILED SPECIFICATIONS

1. REMOVAL AND DISPOSAL

The carbon in all three units shall be removed and disposed off-site in accordance with all local, state and federal regulations. Removal shall be done in accordance with the manufacturer's recommended procedure as indicated below. All hauling and disposal costs and all costs for any testing or analysis by a qualified laboratory that is necessary for disposal are included as part of this work.

Media Removal

As recommended by ENDURO COMPOSITES, the Bidder shall contact ENDURO COMPOSITES prior to performing any media removal or exchanges to ensure system warranty is maintained.

To Remove Media:

1. Make sure system fan is off.
2. Remove the media loading/unloading spin-off lids on top of the vessel.
3. Use appropriate media pneumatic vacuum system to suck media from vessel following vacuum equipment guidelines.
4. Once media is removed, inspect internal and media containment system for wear, damage or deformation. Contact ENDURO COMPOSITES if replacement is required.
5. Dispose of spent media in appropriate and approved manner.
6. Install fresh media as described above.
7. Replace lids.
8. Follow system start up procedures.

2. ACTIVATED CARBON TO BE SUPPLIED

Bidder shall supply approximately 7,600 lbs (235.6 cubic feet) of High Capacity carbon per vessel as specified. A total of 22,800 pounds shall be supplied. Each lot of carbon shall be delivered with an accompanying analysis sheet. The carbon must be manufactured to adsorb vapor phase organic and malodorous compounds of the type typically generated in municipal wastewater. This media should have a 99% removal rate of H₂S and organic sulfides at the specified inlet concentrations. The media shall remove 95% minimum of non sulfide VOC at the specified concentrations. Acceptable carbon is Jacobi Carbon AddSorb® Sulfox-HC or approved equal meeting the following specifications:

Apparent Density (g/cc):	0.39 – 0.41
Moisture:	8% max.
H2S Breakthrough Capacity (g/cc of carbon):	0.28 minimum
Mean Particle Diameter:	3.9 – 4.1 mm

Vessel Design Calculations

Air Flow:	6,150 cubic feet per minute
Vessel Diameter:	108 inches
Carbon Volume:	345.4 cubic feet
Contact Time:	3.37 seconds

Safety Precautions

It has been confirmed that wet granular activated carbon confined in vessels creates an oxygen demand, which is hazardous to human health and can cause death unless proper safety precautions are taken. Studies conducted in vessels have shown that low oxygen content exists in vessels containing wet carbon. Laboratory experiments conducted also have revealed that commercial activated carbons in a wet or moist condition will lower the oxygen content of an isolated space. Preliminary indications of this research are:

- The phenomenon occurs with wet activated carbon of all common types.
- The rate of oxygen uptake naturally varies with the degree of exposure of the wet carbon to the air. Thus it is relatively rapid in a drained enclosure.
- There is some indication of a limit to carbon’s capacity for oxygen, but until
- more is known, it would be prudent to assume that all carbon (fresh, used,
- reactivated) will also exhibit this characteristic. Similarly, although these tests were run with water, it should be assumed that the phenomenon would occur in other liquid and vapor systems.

All confined spaces, including those containing activated carbon, should be presumed to be hazardous. Appropriate safety measures should always be taken before entering, as well as when workers are in, a confined space. OSHA regulations applicable to respiratory protection in oxygen-deficient atmospheres should be strictly adhered to.

3. INSTALLATION OF CARBON

The correct amount of Carbon shall be installed into each of the three vessels, which are located on the third floor of the Solids Handling Building. Installation of the carbon shall be done in accordance with the Manufacturer’s recommended procedure.

Media Installation

Before Installation

1. Visually inspect the vessel interior and media support baskets for any visible defects. Ensure the baskets are centered and straight.
2. Visually inspect that the polypropylene screen covering the baskets is intact.

Installation

1. Media can be either dumped into the vessel directly from the sack, or can be pumped.
2. Begin by carefully loading the inner media first. Open the four inner spinoff covers and fill the media through each one spin-off maintain approximately the same level in each of the fill points.
3. Fill the media until the solid part of the basket is filled.
4. Repeat the same procedure for the outer media. Make sure that the screen stays intact and does not allow any media to fall through.

Please contact ENDURO COMPOSITES for media installation assistance if required.

II. INSURANCE

1. The Contractor shall procure and maintain during the life of this Purchase Order such insurance policies, including those set forth below, as will protect itself and the City from all claims for bodily injuries, death or property damage which may arise under this Purchase Order; whether the acts were made by the Contractor or by any subcontractor or anyone employed by them directly or indirectly. The Contractor shall provide the City with certificates of insurance and all endorsements necessary for Contractor to establish it has the required insurance coverage. The following insurance policies are required:

- A. Worker's Compensation Insurance in accordance with all applicable state and federal statutes. Further, Employers Liability Coverage shall be obtained in the following minimum amounts:

Bodily Injury by Accident - \$500,000 each accident
Bodily Injury by Disease - \$500,000 each employee
Bodily Injury by Disease - \$500,000 each policy limit

- B. Commercial General Liability Insurance equivalent to, as a minimum, Insurance Services Office form CG 00 01 07 98. The City of Ann Arbor shall be named as an additional insured. There shall be no added exclusions or limiting endorsements including, but not limited to: Products and Completed Operations, Explosion, or Pollution. Further, the following minimum limits of liability are required:

\$1,000,000 Each occurrence as respect Bodily Injury Liability or Property
Damage Liability, or both combined.
\$2,000,000 Per Job General Aggregate
\$1,000,000 Personal and Advertising Injury
\$2,000,000 Products and Completed Operations Aggregate

- C. Motor Vehicle Liability Insurance, including Michigan No-Fault Coverages, equivalent to, as a minimum, Insurance Services Office form CA 00 01 07 97. The City of Ann Arbor shall be named as an additional insured. There shall be no added exclusions or limiting endorsements. Coverage shall include all owned vehicles, all

non-owned vehicles and all hired vehicles. Further, the limits of liability shall be \$1,000,000 for each occurrence as respects Bodily Injury Liability or Property Damage Liability, or both combined.

- D. Umbrella/Excess Liability Insurance shall be provided to apply excess of the Commercial General Liability, Employers Liability and the Motor Vehicle coverage enumerated above, for each occurrence and for aggregate in the amount of \$1,000,000.
2. Insurance required under Paragraphs 1.B and C above shall be considered primary as respects any other valid or collectible insurance that the City may possess, including any self-insured retentions the City may have; and any other insurance the City does possess shall be considered excess insurance only and shall not be required to contribute with this insurance. Further, the Contractor agrees to waive any right of recovery by its insurer against the City.
 3. In the case of all Contracts involving on-site work, the Contractor shall provide to the City before the commencement of any work under this Contract documentation demonstrating it has obtained the above mentioned policies. Documentation must provide and demonstrate an unconditional 30 day written notice of cancellation in favor of the City of Ann Arbor. Further, the documentation must explicitly state the following: (a) the policy number; name of insurance company; name and address of the agent or authorized representative; name and address of insured; project name; policy expiration date; and specific coverage amounts; (b) any deductibles or self-insured retentions which shall be approved by the City, in its sole discretion; (c) that the policy conforms to the requirements specified. An original certificate of insurance may be provided as an initial indication of the required insurance, provided that no later than 21 calendar days after commencement of any work the Contractor supplies a copy of the endorsements required on the policies. Upon request, the Contractor shall provide within 30 days a copy of the policy(ies) to the City. If any of the above coverages expire by their terms during the term of this Contract, the Contractor shall deliver proof of renewal and/or new policies to the Administering Service Area/Unit at least ten days prior to the expiration date.
 4. Any Insurance provider of Contractor shall be admitted and authorized to do business in the State of Michigan and shall carry and maintain a minimum rating assigned by A.M. Best & Company's Key Rating Guide of "A-" Overall and a minimum Financial Size Category of "V". Insurance policies and certificates issued by non-admitted insurance companies are not acceptable unless approved in writing by the City.

III. DAMAGE TO CITY PROPERTY

The Contractor shall be responsible for all damage to property of the City caused by or resulting from the acts or omissions of the Contractor, its employees, or agents performing the delivery and/or removal of the activated high capacity carbon.