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To: Krish Radhakrishnan P.E.
From: David B. Rimborg Ph.D.
Date: 2/25/03
Re: Review of Draft WTC HVAC Cleaning unit Prices

Krish:

In order to avoid any confusion or misunderstanding of the type and items to be cleaned using the unit pricing schedule, the provided UNIT PRICING menu should refer to the VENTILATION SYSTEM EVALUATION FORM. For example, if the HVAC cleaning contractor has to clean an exhaust system he must refer to **2.2 Mechanical Exhaust System Visual Inspection Form**. In this regard, the various subheadings probably should be assigned sub-group numbers such as **2.2.1 Exhaust air outlet:** and **2.2.2 Exhaust fan unit:** Unit pricing provided this way will eliminate any confusion of how extensive the system cleaning will be. This method would also enable any re-inspection to focus on a particular item number if the cleaning contractor has to return to re-clean a specific component or area. If you choose to go this route, the description of the ITEMS in his list should conform to those in the VENTILATION SYSTEM EVALUATION FORM.

According to how knowledgeable the cleaning contractor is will determine how well he can determine the cfm of a fan and ultimately the unit price to clean it.

It is confusing me to determine the cost to clean Exhaust Branch Riser. Typically, there is a portion of horizontal ductwork and vertical ductwork. Bathrooms usually have short horizontal runs ducted to vertical runs to the floor above. More details on the unit costs for these cleaning services should be detailed.

The ITEM Single Inlet Centrifugal Blower is confusing. The basic type of fan used in a HVAC system is the centrifugal fan or blower. If a Centrifugal Fan is used to exhaust corridor or hallway air, cleaning the interior housing, and impeller is difficult since there is limited access to the blower interior.

The ITEM Supply Fan is usually associated with an Air-handler, which has components such as dampers, filters, and heating/cooling coils and motor-fan assembly. All these components should be cleaned and the filters replaced. Unit costs for each of these ITEMS should be given and referred to in **2.1 Central Ventilation System**.

My suggestion for unit pricing for cleaning package unit is to use tonnage. As a rule-of-thumb, there are 400 cfm/ton.

Provide MSDS for Encapsulation ITEM

Fresh Air Plenum should be \$/ft² instead of Per cu ft.

What type of Access Hatches; Cam lock, hinged door or panel?

Once the UNIT PRICES on the ITEMS have been further detailed, these ITEMS should also be given ITEM numbers and provided in a new price list.

Have the cleaning contractor give you several Supply & Exhaust System cleaning cost estimates for several systems in order to gain familiarity with the UNIT Pricing method.

Call me on my cell if you require further assistance

David