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Tampa, Florida 33607
tel: 813 281-2900
fax: 813 288-8787

February 11, 2009

Mr. Joseph Kahn - Director
Department of Environmental Protection
Division of Air Resource Management
Mail Station #5505
2600 Blair Stone Road
Tallahassee, Florida 32399-2400

RECEIVED

FEB 12 2009

BUREAU OF AIR REGULATION

RE: Minor Modification of Permit No. 0570261-009-AC

Dear Mr. Kahn:

CDM, on behalf of Hillsborough County, FL, is requesting a minor modification to Permit No. 0570261-009-AC for the Hillsborough County Resource Recovery Facility. The request specifies a minor modification to Emission Unit 100 (Ash Handling) to include a new ventilation system in the new portion of the expanded ash handling building.

The Florida Building Code (FBC) requires additional ventilation measures, since internal combustion vehicles will be operated within the ash building. To meet the FBC requirements, Hillsborough County intends to exhaust the additional ventilation through a wet dust collection system that is designed to meet a 0.015 gr/acf emission limit at 7,000 acfm. The specifications of the wet dust collection system are attached.

The new equipment may be constructed prior to the Department's issuance of the Title V air operating permit. Therefore, a minor modification of the existing operating Title V permit is also requested from the Department.

Please contact Jason Gorrie or Robert Velasco at (813) 281-2900, if you have any questions.

Sincerely,

William R. Crellin, Jr., P.E.
Project Manager
Camp Dresser & McKee Inc.

cc: FDEP (4 copies)
Tom Smith - Hillsborough County (1 copy)
Glenn Hoag Covanta Hillsborough (3 copies)
CDM File (2 copies)

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PERMIT

APPLICATION INFORMATION

Purpose of Application

This application for air permit is being submitted to obtain: (Check one)

Air Construction Permit

- Air construction permit.
- Air construction permit to establish, revise, or renew a plantwide applicability limit (PAL).
- Air construction permit to establish, revise, or renew a plantwide applicability limit (PAL), and separate air construction permit to authorize construction or modification of one or more emissions units covered by the PAL.

Air Operation Permit

- Initial Title V air operation permit.
- Title V air operation permit revision.
- Title V air operation permit renewal.
- Initial federally enforceable state air operation permit (FESOP) where professional engineer (PE) certification is required.
- Initial federally enforceable state air operation permit (FESOP) where professional engineer (PE) certification is not required.

Air Construction Permit and Revised/Renewal Title V Air Operation Permit (Concurrent Processing)

- Air construction permit and Title V permit revision, incorporating the proposed project.
- Air construction permit and Title V permit renewal, incorporating the proposed project.

Note: By checking one of the above two boxes, you, the applicant, are requesting concurrent processing pursuant to Rule 62-213.405, F.A.C. In such case, you must also check the following box:

- I hereby request that the department waive the processing time requirements of the air construction permit to accommodate the processing time frames of the Title V air operation permit.

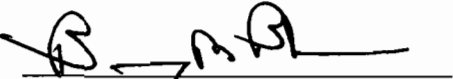
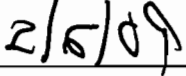
Application Comment

This submittal of supplemental information is being prepared by CDM, on the behalf of the Owner, Hillsborough County, FL in response to constructing a new air pollution control system (wet dust collection) for the new portion of the ash handling building.

APPLICATION INFORMATION

Owner/Authorized Representative Statement

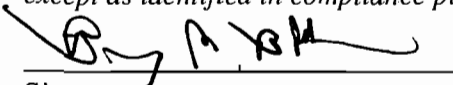
Complete if applying for an air construction permit or an initial FESOP.

1. Owner/Authorized Representative Name: Barry M. Boldissar
2. Owner/Authorized Representative Mailing Address: Organization/Firm: Hillsborough County Solid Waste Management Department Street Address: 601 E. Kennedy Boulevard City: Tampa State: Florida Zip Code: 33602
3. Owner/Authorized Representative Telephone Numbers... Telephone: (813) 272 - 5680 ext. Fax: () -
4. Owner/Authorized Representative E-mail Address:
5. Owner/Authorized Representative Statement: <i>I, the undersigned, am the owner or authorized representative of the corporation, partnership, or other legal entity submitting this air permit application. To the best of my knowledge, the statements made in this application are true, accurate and complete, and any estimates of emissions reported in this application are based upon reasonable techniques for calculating emissions. I understand that a permit, if granted by the department, cannot be transferred without authorization from the department.</i>  Signature  Date

APPLICATION INFORMATION

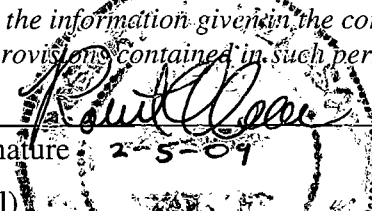
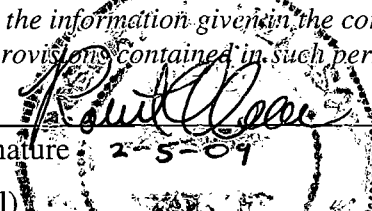
Application Responsible Official Certification

Complete if applying for an initial, revised, or renewal Title V air operation permit or concurrent processing of an air construction permit and revised or renewal Title V air operation permit. If there are multiple responsible officials, the “application responsible official” need not be the “primary responsible official.”

1. Application Responsible Official Name: Barry M. Boldissar
2. Application Responsible Official Qualification (Check one or more of the following options, as applicable): <input type="checkbox"/> For a corporation, the president, secretary, treasurer, or vice-president of the corporation in charge of a principal business function, or any other person who performs similar policy or decision-making functions for the corporation, or a duly authorized representative of such person if the representative is responsible for the overall operation of one or more manufacturing, production, or operating facilities applying for or subject to a permit under Chapter 62-213, F.A.C. <input type="checkbox"/> For a partnership or sole proprietorship, a general partner or the proprietor, respectively. <input checked="" type="checkbox"/> For a municipality, county, state, federal, or other public agency, either a principal executive officer or ranking elected official. <input type="checkbox"/> The designated representative at an Acid Rain source, CAIR source, or Hg Budget source.
3. Application Responsible Official Mailing Address... Organization/Firm: Hillsborough County Solid Waste Management Department Street Address: 601 E. Kennedy Boulevard City: Tampa State: Florida Zip Code: 33602
4. Application Responsible Official Telephone Numbers... Telephone: (813) 272 - 5680 ext. Fax: () -
5. Application Responsible Official E-mail Address: <u>boldissarb@Hillsboroughcounty.org</u>
6. Application Responsible Official Certification: <i>I, the undersigned, am a responsible official of the Title V source addressed in this air permit application. I hereby certify, based on information and belief formed after reasonable inquiry, that the statements made in this application are true, accurate and complete and that, to the best of my knowledge, any estimates of emissions reported in this application are based upon reasonable techniques for calculating emissions. The air pollutant emissions units and air pollution control equipment described in this application will be operated and maintained so as to comply with all applicable standards for control of air pollutant emissions found in the statutes of the State of Florida and rules of the Department of Environmental Protection and revisions thereof and all other applicable requirements identified in this application to which the Title V source is subject. I understand that a permit, if granted by the department, cannot be transferred without authorization from the department, and I will promptly notify the department upon sale or legal transfer of the facility or any permitted emissions unit. Finally, I certify that the facility and each emissions unit are in compliance with all applicable requirements to which they are subject, except as identified in compliance plan(s) submitted with this application.</i>  Signature _____ Date <u>2/15/09</u>

APPLICATION INFORMATION

Professional Engineer Certification

1. Professional Engineer Name: Robert A. Velasco P.E., BCEE Registration Number: 57190
2. Professional Engineer Mailing Address... Organization/Firm: CDM Street Address: 1715 N. Westshore Boulevard, Suite 875 City: Tampa State: Florida Zip Code: 33607
3. Professional Engineer Telephone Numbers... Telephone: (813) 262 - 8868 ext. Fax: () -
4. Professional Engineer E-mail Address: <u>velascora@cdm.com</u>
5. Professional Engineer Statement: <i>I, the undersigned, hereby certify, except as particularly noted herein*, that:</i> <i>(1) To the best of my knowledge, there is reasonable assurance that the air pollutant emissions unit(s) and the air pollution control equipment described in this application for air permit, when properly operated and maintained, will comply with all applicable standards for control of air pollutant emissions found in the Florida Statutes and rules of the Department of Environmental Protection; and</i> <i>(2) To the best of my knowledge, any emission estimates reported or relied on in this application are true, accurate, and complete and are either based upon reasonable techniques available for calculating emissions or, for emission estimates of hazardous air pollutants not regulated for an emissions unit addressed in this application, based solely upon the materials, information and calculations submitted with this application.</i> <i>(3) If the purpose of this application is to obtain a Title V air operation permit (check here <input checked="" type="checkbox"/>, if so), I further certify that each emissions unit described in this application for air permit, when properly operated and maintained, will comply with the applicable requirements identified in this application to which the unit is subject, except those emissions units for which a compliance plan and schedule is submitted with this application.</i> <i>(4) If the purpose of this application is to obtain an air construction permit (check here <input type="checkbox"/>, if so) or concurrently process and obtain an air construction permit and a Title V air operation permit revision or renewal for one or more proposed new or modified emissions units (check here <input checked="" type="checkbox"/>, if so), I further certify that the engineering features of each such emissions unit described in this application have been designed or examined by me or individuals under my direct supervision and found to be in conformity with sound engineering principles applicable to the control of emissions of the air pollutants characterized in this application.</i> <i>(5) If the purpose of this application is to obtain an initial air operation permit or operation permit revision or renewal for one or more newly constructed or modified emissions units (check here <input type="checkbox"/>, if so), I further certify that, with the exception of any changes detailed as part of this application, each such emissions unit has been constructed or modified in substantial accordance with the information given in the corresponding application for air construction permit and with all provisions contained in such permit.</i> Signature: <u></u> Date: <u>2-5-09</u> (seal) 

* Attach any exception to certification statement.

FACILITY INFORMATION

List of Pollutants Emitted by Facility

1. Pollutant Emitted	2. Pollutant Classification	3. Emissions Cap [Y or N]?
SO ₂	A	N
NO _x	A	N
CO	A	N
PM	A	N
PCDD/PCDF	A	N
Hg	A	N
Cd	A	N
Pb	A	N
HCl	A	N
HF	A	N
Ozone (as VOC)	A	N
SAM	A	N

FACILITY INFORMATION

C. FACILITY ADDITIONAL INFORMATION

Additional Requirements for All Applications, Except as Otherwise Stated

1. Facility Plot Plan: (Required for all permit applications, except Title V air operation permit revision applications if this information was submitted to the department within the previous five years and would not be altered as a result of the revision being sought) <input type="checkbox"/> Attached, Document ID: _____ <input checked="" type="checkbox"/> Previously Submitted, Date: <u>12/1/05</u>
2. Process Flow Diagram(s): (Required for all permit applications, except Title V air operation permit revision applications if this information was submitted to the department within the previous five years and would not be altered as a result of the revision being sought) <input type="checkbox"/> Attached, Document ID: _____ <input checked="" type="checkbox"/> Previously Submitted, Date: <u>12/1/05</u>
3. Precautions to Prevent Emissions of Unconfined Particulate Matter: (Required for all permit applications, except Title V air operation permit revision applications if this information was submitted to the department within the previous five years and would not be altered as a result of the revision being sought) <input type="checkbox"/> Attached, Document ID: _____ <input checked="" type="checkbox"/> Previously Submitted, Date: <u>12/1/05</u>

Additional Requirements for Air Construction Permit Applications

1. Area Map Showing Facility Location: <input type="checkbox"/> Attached, Document ID: _____ <input type="checkbox"/> Not Applicable (existing permitted facility)
2. Description of Proposed Construction, Modification, or Plantwide Applicability Limit (PAL): <input type="checkbox"/> Attached, Document ID: _____
3. Rule Applicability Analysis: <input type="checkbox"/> Attached, Document ID: _____
4. List of Exempt Emissions Units: <input type="checkbox"/> Attached, Document ID: _____ <input type="checkbox"/> Not Applicable (no exempt units at facility)
5. Fugitive Emissions Identification: <input type="checkbox"/> Attached, Document ID: _____ <input type="checkbox"/> Not Applicable
6. Air Quality Analysis (Rule 62-212.400(7), F.A.C.): <input type="checkbox"/> Attached, Document ID: _____ <input type="checkbox"/> Not Applicable
7. Source Impact Analysis (Rule 62-212.400(5), F.A.C.): <input type="checkbox"/> Attached, Document ID: _____ <input type="checkbox"/> Not Applicable
8. Air Quality Impact since 1977 (Rule 62-212.400(4)(e), F.A.C.): <input type="checkbox"/> Attached, Document ID: _____ <input type="checkbox"/> Not Applicable
9. Additional Impact Analyses (Rules 62-212.400(8) and 62-212.500(4)(e), F.A.C.): <input type="checkbox"/> Attached, Document ID: _____ <input type="checkbox"/> Not Applicable
10. Alternative Analysis Requirement (Rule 62-212.500(4)(g), F.A.C.): <input type="checkbox"/> Attached, Document ID: _____ <input type="checkbox"/> Not Applicable

FACILITY INFORMATION

C. FACILITY ADDITIONAL INFORMATION (CONTINUED)

Additional Requirements for FESOP Applications

1. List of Exempt Emissions Units: <input type="checkbox"/> Attached, Document ID: _____ <input type="checkbox"/> Not Applicable (no exempt units at facility)

Additional Requirements for Title V Air Operation Permit Applications

1. List of Insignificant Activities: (Required for initial/renewal applications only) <input type="checkbox"/> Attached, Document ID: _____ <input type="checkbox"/> Not Applicable (revision application)
2. Identification of Applicable Requirements: (Required for initial/renewal applications, and for revision applications if this information would be changed as a result of the revision being sought) <input type="checkbox"/> Attached, Document ID: _____ <input type="checkbox"/> Not Applicable (revision application with no change in applicable requirements)
3. Compliance Report and Plan: (Required for all initial/revision/renewal applications) <input type="checkbox"/> Attached, Document ID: _____ Note: A compliance plan must be submitted for each emissions unit that is not in compliance with all applicable requirements at the time of application and/or at any time during application processing. The department must be notified of any changes in compliance status during application processing.
4. List of Equipment/Activities Regulated under Title VI: (If applicable, required for initial/renewal applications only) <input type="checkbox"/> Attached, Document ID: _____ <input type="checkbox"/> Equipment/Activities Onsite but Not Required to be Individually Listed <input type="checkbox"/> Not Applicable
5. Verification of Risk Management Plan Submission to EPA: (If applicable, required for initial/renewal applications only) <input type="checkbox"/> Attached, Document ID: _____ <input type="checkbox"/> Not Applicable
6. Requested Changes to Current Title V Air Operation Permit: <input type="checkbox"/> Attached, Document ID: _____ <input type="checkbox"/> Not Applicable

FACILITY INFORMATION

C. FACILITY ADDITIONAL INFORMATION (CONTINUED)

Additional Requirements for Facilities Subject to Acid Rain, CAIR, or Hg Budget Program

1. Acid Rain Program Forms:

Acid Rain Part Application (DEP Form No. 62-210.900(1)(a)):

- Attached, Document ID: _____ Previously Submitted, Date: _____
 Not Applicable (not an Acid Rain source)

Phase II NO_x Averaging Plan (DEP Form No. 62-210.900(1)(a)1.):

- Attached, Document ID: _____ Previously Submitted, Date: _____
 Not Applicable

New Unit Exemption (DEP Form No. 62-210.900(1)(a)2.):

- Attached, Document ID: _____ Previously Submitted, Date: _____
 Not Applicable

2. CAIR Part (DEP Form No. 62-210.900(1)(b)):

- Attached, Document ID: _____ Previously Submitted, Date: _____
 Not Applicable (not a CAIR source)

3. Hg Budget Part (DEP Form No. 62-210.900(1)(c)):

- Attached, Document ID: _____ Previously Submitted, Date: _____
 Not Applicable (not a Hg Budget unit)

Additional Requirements Comment

All above additional requirements were previously submitted on application dated 12/1/05 and remains unchanged.

EMISSIONS UNIT INFORMATION

Section [1] of [1]

III. EMISSIONS UNIT INFORMATION

Title V Air Operation Permit Application - For Title V air operation permitting only, emissions units are classified as regulated, unregulated, or insignificant. If this is an application for an initial, revised or renewal Title V air operation permit, a separate Emissions Unit Information Section (including subsections A through I as required) must be completed for each regulated and unregulated emissions unit addressed in this application. Some of the subsections comprising the Emissions Unit Information Section of the form are optional for unregulated emissions units. Each such subsection is appropriately marked. Insignificant emissions units are required to be listed at Section II, Subsection C.

Air Construction Permit or FESOP Application - For air construction permitting or federally enforceable state air operation permitting, emissions units are classified as either subject to air permitting or exempt from air permitting. The concept of an "unregulated emissions unit" does not apply. If this is an application for an air construction permit or FESOP, a separate Emissions Unit Information Section (including subsections A through I as required) must be completed for each emissions unit subject to air permitting addressed in this application for air permit. Emissions units exempt from air permitting are required to be listed at Section II, Subsection C.

Air Construction Permit and Revised/Renewal Title V Air Operation Permit Application - Where this application is used to apply for both an air construction permit and a revised or renewal Title V air operation permit, each emissions unit is classified as either subject to air permitting or exempt from air permitting for air construction permitting purposes, and as regulated, unregulated, or insignificant for Title V air operation permitting purposes. A separate Emissions Unit Information Section (including subsections A through I as required) must be completed for each emissions unit addressed in this application that is subject to air construction permitting and for each such emissions unit that is a regulated or unregulated unit for purposes of Title V permitting. (An emissions unit may be exempt from air construction permitting but still be classified as an unregulated unit for Title V purposes.) Emissions units classified as insignificant for Title V purposes are required to be listed at Section II, Subsection C.

If submitting the application form in hard copy, the number of this Emissions Unit Information Section and the total number of Emissions Unit Information Sections submitted as part of this application must be indicated in the space provided at the top of each page.

EMISSIONS UNIT INFORMATION

Section [1] of [1]

A. GENERAL EMISSIONS UNIT INFORMATION

Title V Air Operation Permit Emissions Unit Classification

1. Regulated or Unregulated Emissions Unit? (Check one, if applying for an initial, revised or renewal Title V air operation permit. Skip this item if applying for an air construction permit or FESOP only.)
- The emissions unit addressed in this Emissions Unit Information Section is a regulated emissions unit.
- The emissions unit addressed in this Emissions Unit Information Section is an unregulated emissions unit.

Emissions Unit Description and Status

1. Type of Emissions Unit Addressed in this Section: (Check one)
- This Emissions Unit Information Section addresses, as a single emissions unit, a single process or production unit, or activity, which produces one or more air pollutants and which has at least one definable emission point (stack or vent).
- This Emissions Unit Information Section addresses, as a single emissions unit, a group of process or production units and activities which has at least one definable emission point (stack or vent) but may also produce fugitive emissions.
- This Emissions Unit Information Section addresses, as a single emissions unit, one or more process or production units and activities which produce fugitive emissions only.

2. Description of Emissions Unit Addressed in this Section:

Air pollution control system (wet dust collector) to control particular matter in the new ash building.

3. Emissions Unit Identification Number:

4. Emissions Unit Status Code: C	5. Commence Construction Date:	6. Initial Startup Date:	7. Emissions Unit Major Group SIC Code: 49
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8. Federal Program Applicability: (Check all that apply)

- Acid Rain Unit
- CAIR Unit
- Hg Budget Unit

9. Package Unit: Whirl/Wet Dust Collector

Manufacturer: Tri-Mer Corporation

Model Number: Size 70, Model H

10. Generator Nameplate Rating: Not applicable

11. Emissions Unit Comment:

EMISSIONS UNIT INFORMATION

Section [1] of [1]

Emissions Unit Control Equipment/Method: Control dust in the new ash building.

1. *Control Equipment/Method Description:*

The proposed air pollution control system will consist of duct system, an ID fan, wet dust collector, vent stack and miscellaneous support steel. This unit will be constructed and operated similar to the current baghouse in the existing ash handling building.

2. Control Device or Method Code: 001 (wet dust collector)

EMISSIONS UNIT INFORMATION

Section [1] of [1]

B. EMISSIONS UNIT CAPACITY INFORMATION
(Optional for unregulated emissions units.)

Emissions Unit Operating Capacity and Schedule

1. Maximum Process or Throughput Rate: 7,000 acfm
2. Maximum Production Rate: Not applicable
3. Maximum Heat Input Rate: Not applicable
4. Maximum Incineration Rate: Not applicable
5. Requested Maximum Operating Schedule: 24 hrs per day
6. Operating Capacity/Schedule Comment: The above information is for a wet dust collection system.

EMISSIONS UNIT INFORMATION

Section [1] of [1]

C. EMISSION POINT (STACK/VENT) INFORMATION
(Optional for unregulated emissions units.)

Emission Point Description and Type

1. Identification of Point on Plot Plan or Flow Diagram: see attached		2. Emission Point Type Code: 1	
3. Descriptions of Emission Points Comprising this Emissions Unit for VE Tracking:			
4. ID Numbers or Descriptions of Emission Units with this Emission Point in Common:			
5. Discharge Type Code: R	6. Stack Height: N/A	7. Exit Diameter: N/A	
8. Exit Temperature: Ambient temperature	9. Actual Volumetric Flow Rate: N/A	10. Water Vapor: N/A	
11. Maximum Dry Standard Flow Rate: N/A		12. Nonstack Emission Point Height: 18-inches	
13. Emission Point UTM Coordinates... N/A Zone: East (km): North (km):		14. Emission Point Latitude/Longitude... N/A Latitude (DD/MM/SS) Longitude (DD/MM/SS)	
15. Emission Point Comment: The emission point will be installed through a building roof vent.			

EMISSIONS UNIT INFORMATION

Section [1] of [1]

D. SEGMENT (PROCESS/FUEL) INFORMATION

Segment Description and Rate: Segment 1 of 1

1. Segment Description (Process/Fuel Type): Ash Handling Building		
2. Source Classification Code (SCC): 30510199		3. SCC Units: Tons transferred or handled
4. Maximum Hourly Rate: 30 TPH	5. Maximum Annual Rate: 100,000 TPY	6. Estimated Annual Activity Factor: N/A
7. Maximum % Sulfur: N/A	8. Maximum % Ash: ≈97%	9. Million Btu per SCC Unit: N/A
10. Segment Comment: N/A		

Segment Description and Rate: Segment __ of __

1. Segment Description (Process/Fuel Type):		
2. Source Classification Code (SCC):		3. SCC Units:
4. Maximum Hourly Rate:	5. Maximum Annual Rate:	6. Estimated Annual Activity Factor:
7. Maximum % Sulfur:	8. Maximum % Ash:	9. Million Btu per SCC Unit:
10. Segment Comment:		

EMISSIONS UNIT INFORMATION

Section [] of []

D. SEGMENT (PROCESS/FUEL) INFORMATION (CONTINUED)

Segment Description and Rate: Segment __ of __

1. Segment Description (Process/Fuel Type):		
2. Source Classification Code (SCC):		3. SCC Units:
4. Maximum Hourly Rate:	5. Maximum Annual Rate:	6. Estimated Annual Activity Factor:
7. Maximum % Sulfur:	8. Maximum % Ash:	9. Million Btu per SCC Unit:
10. Segment Comment:		

Segment Description and Rate: Segment __ of __

1. Segment Description (Process/Fuel Type):		
2. Source Classification Code (SCC):		3. SCC Units:
4. Maximum Hourly Rate:	5. Maximum Annual Rate:	6. Estimated Annual Activity Factor:
7. Maximum % Sulfur:	8. Maximum % Ash:	9. Million Btu per SCC Unit:
10. Segment Comment:		

**F1. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION –
POTENTIAL, FUGITIVE, AND ACTUAL EMISSIONS**
(Optional for unregulated emissions units.)

Complete a Subsection F1 for each pollutant identified in Subsection E if applying for an air construction permit or concurrent processing of an air construction permit and a revised or renewal Title V operation permit. Complete for each emissions-limited pollutant identified in Subsection E if applying for an air operation permit.

Potential, Estimated Fugitive, and Baseline & Projected Actual Emissions

1. Pollutant Emitted: PM	2. Total Percent Efficiency of Control: 99%+
3. Potential Emissions: 0.9 lb/hour 3.9 tons/year	4. Synthetically Limited? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
5. Range of Estimated Fugitive Emissions (as applicable): Not applicable	
6. Emission Factor: Not applicable Reference:	7. Emissions Method Code: 0
8.a. Baseline Actual Emissions (if required): Not applicable	8.b. Baseline 24-month Period: From: To:
9.a. Projected Actual Emissions (if required): Not applicable	9.b. Projected Monitoring Period: <input type="checkbox"/> 5 years <input type="checkbox"/> 10 years
10. Calculation of Emissions: $\frac{0.015 \text{ gr}}{\text{dscf}} \times \frac{7,000 \text{ dscf}}{\text{min}} \times \frac{60 \text{ min}}{\text{hr}} \times \frac{1 \text{ lb}}{7,000 \text{ gr}} \approx \frac{0.9 \text{ lb}}{\text{hr}}$ $\frac{0.9 \text{ lb}}{\text{hr}} \times \frac{4.38 \text{ tons/yr}}{\text{lb/hr}} \approx \frac{3.9 \text{ tons}}{\text{yr}}$	
11. Potential, Fugitive, and Actual Emissions Comment: The potential emissions are based on estimated emission rate of 0.015 gr/dscf.	

**F2. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION -
 ALLOWABLE EMISSIONS**

Complete Subsection F2 if the pollutant identified in Subsection F1 is or would be subject to a numerical emissions limitation.

Allowable Emissions Allowable Emissions __ of __

1. Basis for Allowable Emissions Code:	2. Future Effective Date of Allowable Emissions:
3. Allowable Emissions and Units:	4. Equivalent Allowable Emissions:
5. Method of Compliance: USEPA Method 9	
6. Allowable Emissions Comment (Description of Operating Method):	

Allowable Emissions Allowable Emissions __ of __

1. Basis for Allowable Emissions Code:	2. Future Effective Date of Allowable Emissions:
3. Allowable Emissions and Units:	4. Equivalent Allowable Emissions: lb/hour tons/year
5. Method of Compliance:	
6. Allowable Emissions Comment (Description of Operating Method):	

Allowable Emissions Allowable Emissions __ of __

1. Basis for Allowable Emissions Code:	2. Future Effective Date of Allowable Emissions:
3. Allowable Emissions and Units:	4. Equivalent Allowable Emissions: lb/hour tons/year
5. Method of Compliance:	
6. Allowable Emissions Comment (Description of Operating Method):	

EMISSIONS UNIT INFORMATION

Section [1] of [1]

G. VISIBLE EMISSIONS INFORMATION

Complete Subsection G if this emissions unit is or would be subject to a unit-specific visible emissions limitation.

Visible Emissions Limitation: Visible Emissions Limitation 1 of 1

1. Visible Emissions Subtype: VE5	2. Basis for Allowable Opacity: <input checked="" type="checkbox"/> Rule <input type="checkbox"/> Other
3. Allowable Opacity: Normal Conditions: 5 % Exceptional Conditions: % Maximum Period of Excess Opacity Allowed: min/hour	
4. Method of Compliance: USEPA Method 9, USEPA Method 22 annually	
5. Visible Emissions Comment: Due to the expense and complexity of conducting a stack test on a minor source of particulate matter, the applicant requests a visible emission limitation not to exceed an opacity of 5% in lieu of a particulate stack test under Rule 62-296.711, F.A.C.	

Visible Emissions Limitation: Visible Emissions Limitation __ of ____

1. Visible Emissions Subtype:	2. Basis for Allowable Opacity: <input type="checkbox"/> Rule <input type="checkbox"/> Other
3. Allowable Opacity: Normal Conditions: % Exceptional Conditions: % Maximum Period of Excess Opacity Allowed: min/hour	
4. Method of Compliance:	
5. Visible Emissions Comment:	

EMISSIONS UNIT INFORMATION

Section [1] of [1]

H. CONTINUOUS MONITOR INFORMATION

Complete Subsection H if this emissions unit is or would be subject to continuous monitoring.

Continuous Monitoring System: Continuous Monitor 1 of 1

1. Parameter Code:	2. Pollutant(s):
3. CMS Requirement:	<input type="checkbox"/> Rule <input type="checkbox"/> Other
4. Monitor Information... Manufacturer: Model Number: Serial Number:	
5. Installation Date:	6. Performance Specification Test Date:
7. Continuous Monitor Comment: Section H is not applicable	

Continuous Monitoring System: Continuous Monitor ___ of ___

1. Parameter Code:	2. Pollutant(s):
3. CMS Requirement:	<input type="checkbox"/> Rule <input type="checkbox"/> Other
4. Monitor Information... Manufacturer: Model Number: Serial Number:	
5. Installation Date:	6. Performance Specification Test Date:
7. Continuous Monitor Comment:	

EMISSIONS UNIT INFORMATION

Section [] of []

H. CONTINUOUS MONITOR INFORMATION (CONTINUED)

Continuous Monitoring System: Continuous Monitor ___ of ___

1. Parameter Code:	2. Pollutant(s):
3. CMS Requirement:	<input type="checkbox"/> Rule <input type="checkbox"/> Other
4. Monitor Information... Manufacturer: Model Number: Serial Number:	
5. Installation Date:	6. Performance Specification Test Date:
7. Continuous Monitor Comment:	

Continuous Monitoring System: Continuous Monitor ___ of ___

1. Parameter Code:	2. Pollutant(s):
3. CMS Requirement:	<input type="checkbox"/> Rule <input type="checkbox"/> Other
4. Monitor Information... Manufacturer: Model Number: Serial Number:	
5. Installation Date:	6. Performance Specification Test Date:
7. Continuous Monitor Comment:	

EMISSIONS UNIT INFORMATION

Section [1] of [1]

I. EMISSIONS UNIT ADDITIONAL INFORMATION

Additional Requirements for All Applications, Except as Otherwise Stated

<p>1. Process Flow Diagram: (Required for all permit applications, except Title V air operation permit revision applications if this information was submitted to the department within the previous five years and would not be altered as a result of the revision being sought)</p> <p><input checked="" type="checkbox"/> Attached, Document ID: <u>see attached</u> <input type="checkbox"/> Previously Submitted, Date _____</p>
<p>2. Fuel Analysis or Specification: (Required for all permit applications, except Title V air operation permit revision applications if this information was submitted to the department within the previous five years and would not be altered as a result of the revision being sought)</p> <p><input type="checkbox"/> Attached, Document ID: <u>see attached</u> <input type="checkbox"/> Previously Submitted, Date <u>N/A</u></p>
<p>3. Detailed Description of Control Equipment: (Required for all permit applications, except Title V air operation permit revision applications if this information was submitted to the department within the previous five years and would not be altered as a result of the revision being sought)</p> <p><input checked="" type="checkbox"/> Attached, Document ID: <u>see attached</u> <input type="checkbox"/> Previously Submitted, Date _____</p>
<p>4. Procedures for Startup and Shutdown: (Required for all operation permit applications, except Title V air operation permit revision applications if this information was submitted to the department within the previous five years and would not be altered as a result of the revision being sought)</p> <p><input type="checkbox"/> Attached, Document ID: _____ <input type="checkbox"/> Previously Submitted, Date _____</p> <p><input checked="" type="checkbox"/> Not Applicable (construction application)</p>
<p>5. Operation and Maintenance Plan: (Required for all permit applications, except Title V air operation permit revision applications if this information was submitted to the department within the previous five years and would not be altered as a result of the revision being sought)</p> <p><input type="checkbox"/> Attached, Document ID: _____ <input checked="" type="checkbox"/> Previously Submitted, Date <u>12/1/05</u></p> <p><input type="checkbox"/> Not Applicable</p>
<p>6. Compliance Demonstration Reports/Records:</p> <p><input type="checkbox"/> Attached, Document ID: _____ Test Date(s)/Pollutant(s) Tested: _____</p> <p><input type="checkbox"/> Previously Submitted, Date: _____ Test Date(s)/Pollutant(s) Tested: _____</p> <p><input type="checkbox"/> To be Submitted, Date (if known): _____ Test Date(s)/Pollutant(s) Tested: _____</p> <p><input checked="" type="checkbox"/> Not Applicable</p> <p>Note: For FESOP applications, all required compliance demonstration records/reports must be submitted at the time of application. For Title V air operation permit applications, all required compliance demonstration reports/records must be submitted at the time of application, or a compliance plan must be submitted at the time of application.</p>
<p>7. Other Information Required by Rule or Statute:</p> <p><input type="checkbox"/> Attached, Document ID: _____ <input checked="" type="checkbox"/> Not Applicable</p>

**EQUIPMENT
DESCRIPTION & SPECIFICATIONS**

I. Background

The ash building is currently being expanded to provide sufficient residue and ferrous storage (based upon a density of 70 lbs/cubic foot) for all existing Units Nos. 1 to 3 and the proposed Unit #4. The existing ash building shall be expanded to the north to provide additional capacity. Sections 502.14 and 403 of the Florida Building Code requires all mechanical buildings in which vehicles operate are required to be ventilated continuously with 100% outside air at a rate of 1.5 cfm per square foot of floor area. The existing building has a floor area of 8,364 square feet, which requires 12,546 cfm of ventilation airflow and slightly undersized to meet the current code requirements. The new building extension has a floor area of 4,284 square feet, which requires additional ventilation airflow of 6,426 cfm. Therefore, the existing ventilation system is inadequate to meet the current code requirements.

A new ventilation system is proposed to meet the air ventilation requirements of the new ash building extension and the overall ash handling building. A supplemental wet dust collection system is proposed using an additional continuous, 100% outside airflow volume requirements of Florida Building Code and control the fugitive dust emissions in the new building extension similar to that of the existing dust collection installed at the existing facility. The proposed wet dust collection system is similar to the equipment installed in the ash building and scalper building at the McKay Bay Refuse-to-Energy Facility in Tampa, Florida. This equipment was permitted under 0570127-003-AC/PSD-FL-086A. The equipment is currently permitted with a 5% opacity requirement under Title V permit 0570127-005-AV.

II. Basis of Design

Equipment

The wet dust collector shall be a 7000 cfm Whirl/Wet Model H, size W/W-70, constructed of polypropylene to the extent possible. The unit shall be self cleaning by means of a timed drain valve.

The collector is expected to be erected in the Residue Building on elevated support steel and platforms. The unit is expected to be located between the eddy current separator (ECS) and the rear push wall area. The final location must be evaluated based upon the location, size and load bearing capability of existing conveyor structural steel, which should be incorporated into the equipment support system if feasible.

The collection system shall be provided with a vendor furnished induced draft exhaust fan. The fan shall be mounted at the same elevation as the collector and interconnect with the duct work system.

The particulate captured shall be discharged from the hopper of the dust collector by an automatically timed drain valve to a purchaser installed drain system. The drain valve shall be a solenoid actuated butterfly type, furnished, installed, and wired by the vendor, back to the vendor supplied control panel. Epoxy paint shall be used for all painted carbon steel components of the collector, fan and support steel.

Ductwork

The duct shall be installed to collect fugitive at key locations to minimized dust exposure. Ductwork in the ash building shall be corrosion resistant (i.e. FRP, polypropylene, or other suitable material). Hanger supports for the ducts shall be constructed of corrosion resistant materials, or properly coated for corrosion resistance.

Ventilation registers and ductwork shall be located in the building extension area of the Residue Building for which this system is being furnished. It shall be designed to ventilate the air space at the top of the ash building extension. The discharge duct from the dust collector exhaust fan shall be through the roof of the new ash building extension.

The ventilation registers shall be sized for 500 fpm inlet velocity. Ductwork to the dust collector shall be sized for 3,000 fpm, and exhaust ductwork for 2,000 fpm. If total duct and register pressure drop exceeds 4" wg., the fan static pressure needs to be adjusted from the manufacturer's standard.

Any roof mounted equipment or duct penetrations visible from adjacent roadways shall be located a minimum of ten feet from road visible roof parapets.

Water Supply and Drainage

Service water shall be supplied to the wet dust collector from the local service water distribution system in the Residue Building. The makeup water to the dust collector shall be controlled by a solenoid valve controlled by a Dwyer photohelic level gage. The discharge water shall be conveyed to a drain line to the settling basin sump system. The amount of water discharged is proportional to the amount of solids captured. The discharge is intermittent and controlled by automatically timed opening and closing of the solenoid operated drain valve from the vendor's control panel.

Louvers

Adjustable louvers for intake air shall be located along west wall of the Residue Building in the siding above the block wall. The louvers shall be sized to accommodate the air flow requirements of both the existing 12,000 cfm ventilation system and the new 7,000 cfm ventilation system. The louvers should be sized on the basis of approximately 750 feet per minute (FPM) through the louver free area and shall have approximately 50% free area in accordance with Covanta's standard sizing criteria.

Electrical and Controls

The induced draft exhaust fan shall be driven by a TEFC severe duty IEEE 841 motor. The fan motor starter shall be remotely located in MCC 4B-1 in the North Electrical Room. A spare motor starter should available in MCC 4B-1 for this purpose. The solenoid actuated drain valve shall have a NEMA 4 X 120 VAC solenoid.

A NEMA 12 relay control panel furnished by the wet dust collector supplier shall be remotely located in the Eddy Current Separator control enclosure opposite new residue conveyor control panel furnished by residue conveyor supplier. The panel shall include all necessary fan and solenoid valve control switches, relays, lights, etc., and dry contacts to provide signals to start and stop the residue conveyor system. The start permissive and trip functions of the existing bag house collection system (affecting operation of the residue conveyors) must be replicated in the wet system controls. The two conveyor panels furnished by Wolf and the wet dust collector panel shall be shipped separately and installed in the field.

The relay control panel shall be by Allen Bradley or Square D. The photohelic level gage shall be furnished by Dwyer, and the level switches for high and low level alarms shall be by GEMS.

The Residue Building is considered a corrosive area, therefore all electrical conduit, junction boxes, control devices, etc. located in that building, shall be NEMA 4X PVC coated steel.

III. Design Parameters

- A. Process Description..... Particulate matter consisting of fly ash and lime dust
- B. Process Outlet Flow, acfm @ 70 F7000
- C. Pressure Drop8.0" WG
- D. Estimated External, "SPWG..... 4.0"
- E. Total Process Pressure, " SPWG..... 12
- F. Environmental Conditions
 - Geographical..... Florida
 - Elevation..... sea level
- G. Application / Performance Data
 - Performance of the WHIRL/WET® Wet Dust Collector is as follows:

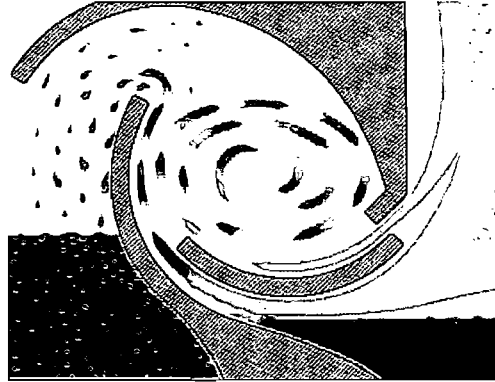
- ≥ 1.0 micron particles by 83.0%
- ≥ 2.0 micron particles by 95.0%
- ≥ 3.0 micron particles by 97.0%
- ≥ 5.0 micron particles by 98.0%
- ≥ 10.0 micron particles by 99.0%

IV. System Operation

The Whirl/Wet employs a unique process to create intensive mixing of the dust particles and water. To infuse dust particles with water droplets, the mixture is passed with high velocity through a fixed-position dual opposed blade system. The mixing of the dust-laden airstream and liquid takes place and, to increase turbulence,

a tangential airstream is injected through a linear slot in the lower blade assembly. Rotation is accelerated, droplets in the airstream are eliminated through a mist eliminator located downstream, and particulate material is deposited on the bottom of the unit for recovery or disposal. Water level is maintained automatically and make-up water is only necessary to compensate for evaporation or sludge removal. Whirl/Wet operates in the 99%+ efficiency range for a wide variety of applications and over a wide range of micron sizes.

The whirl chamber performs the most critical function in a Whirl Wet's operation. This chamber causes water and particulate to combine, resulting in high-efficiency dust collection.



V. Component Specifications

A. Whirl/Wet® Wet Dust Collector:

1. Collector Model..... 70-H
2. Collector Size 70.5" L x 88" W x 117" H
3. Material of Construction..... Polypropylene
4. Mist Eliminator Chevron Type 99.0% 20 micron water droplets
5. Inlet/Outlet 18"Ø with 1½" Flange
6. Drain Size..... 3"Ø 150 lbs. Flange
7. Plant Water Feed Piping Schedule 80 PVC with 150# Flanged Connection
8. Solenoid Valves..... 316 S. S. Construction by ASCO
9. Fasteners 316 Stainless Steel Type
10. Gaskets PVC foam type
11. Inspection Ports..... Minimum of two (2) with Reid knobs and handle
12. Hydrogen Release Ports..... Yes No

B. Exhaust Fan Assembly

1. Fan Model BISW-182
2. Airflow 7000 CFM @ 72°F
3. SPWG Estimated
 - Internal..... 8.0"
 - External..... 4.0"
4. Rotation..... Clockwise

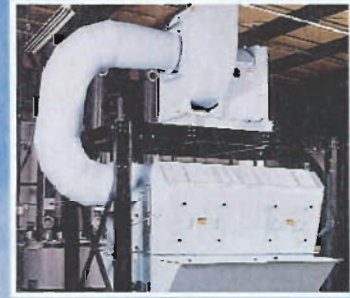
- 5. Discharge Upblast
- 6. Housing..... Mild Steel
- 7. HP 25 (Premium Efficiency Severe Duty Type)
- 8. RPM 3300
- 9. BHP 19.2
- 10. Electrical 480v/3ph/60hz
- 11. Inlet and Outlet..... Flanged
- 12. Base Arrangements 1, 9 or 10 as required with guards painted

C. Electrical Control Panel

- a. Enclosure type..... NEMA 12
- b. Electrical design..... 120 VAC
- c. Pushbuttons and controls as required
- d. Continuous duty application
- e. Photohelic gauge by Dwyer for maintaining optimal operating liquid level and internal pressure monitoring.
- f. GEMS liquid level switches for Hi/ Lo liquid level alarms only.

WHIRL WET CATALOGUE
Model Size 70 – Model H

Tri-Mer® Whirl Wet®



***High Efficiency Wet Dust Collection
with Low Maintenance and
Operating Costs***



Concept and Operation

Tri-Mer's Whirl Wet is a time-proven "workhorse" designed for continuous, predictable dust collection. It has **no moving parts** and none of the traditional "high maintenance"

components such as spray nozzles, pumps or bags that can disrupt production. Instead, the Whirl Wet employs a unique process to create intensive mixing of the dust particles and water.

In order to infuse dust particles with water droplets, the mixture is passed under high velocity through a fixed-position dual opposed blade system. The mixing of the dust-laden airstream and liquid takes place and, to increase turbulence, a tangential airstream is injected through a linear slot in the lower blade assembly. Rotation is accelerated, droplets in the airstream are eliminated through a mist eliminator located downstream, and particulate material is deposited on the bottom of the unit for recovery or disposal. Water level is maintained automatically and make-up water is only necessary to compensate for evaporation or sludge removal.



The whirl chamber under operating conditions. Note the energy-activated water coming off the top blade section.

Whirl Wet operates in the 99% efficiency range for a wide variety of applications and over a wide range of micron sizes. These efficiencies are significantly higher than those that can be achieved with cyclones or wet plate scrubbers. It is equally effective for both soluble and insoluble particles. Applications, including dye manufacturing and food processing, are ideally suited to the Whirl Wet. Energy generated inside the unit will not allow the system to clog under any operating

conditions; **therefore, the agglomeration and sticky residues that often plug dry collectors are not a problem with the Whirl Wet.**

Whirl Wet is a frequently specified dust collection system for the collection of coal, aluminum, fertilizer and sugar dust, and is widely used for the dust elimination requirements of the **foundry shakeout industry, lead particulate in the battery industry** and virtually every sector of the **process industries**. Dust collection from **grinding processes and food spices** are excellent applications for the Whirl Wet. Hydrogen venting is provided for applications generating hazardous quantities of hydrogen gas. It is becoming the leading dust collection alternative for plants where metal or plastic finishing generates dust as small as one micron.

Whirl Wet is particularly advantageous wherever materials recovery is desirable. Processes that were not formerly candidates for materials recovery have become good candidates as a result of the Whirl Wet, yielding significant economic benefits for the processor.



The whirl chamber performs the most critical function in a Whirl Wet's operation. This chamber causes water and particulate to combine, resulting in high-efficiency dust collection.

CASE STUDY

Chrysler Corporation

To maintain a clean and pleasing environment on the 1,600,000 sq. ft. shop level, where the development and manufacturing of prototypes takes place, Chrysler specified dust collection that would not only satisfy strict requirements for collection efficiency, but meet stringent specifications for noise as well. Specifically, by operating at a noise level of less than 80 db at one meter, comfort and communication would both be enhanced and there would be no requirement for a monitoring program to guard against long-term hearing loss.

Equipment proposed by the architectural firm managing the project was unable to meet Chrysler's low noise specification, even when demonstrated under controlled production conditions, with special shielding. Modifications to meet the noise maximum would have involved costly total system enclosures, thus Chrysler requested proposals from other manufacturers.

After reviewing various dust collection technologies and vendors, Chrysler awarded a contract for eight wet dust collectors to Tri-Mer.

Systems are activated on an "as needed" basis; when needed, they are instantly "on" and fully operational.



Ray Gryniewicz, Technical Equipment Manager, Facilities, of Chrysler Corporation and Todd Ainsworth, Sales Engineer of Tri-Mer Corporation with one of the eight systems installed at Chrysler Tech Center.

3 Disposal Options

Whirl Wets are self-cleaning; particulates are deposited at the bottom of the unit for easy recovery.

The Model M Whirl Wet has **manual clean-out**. This is preferred wherever dust collection volume is low. Removal of particulates is done manually.

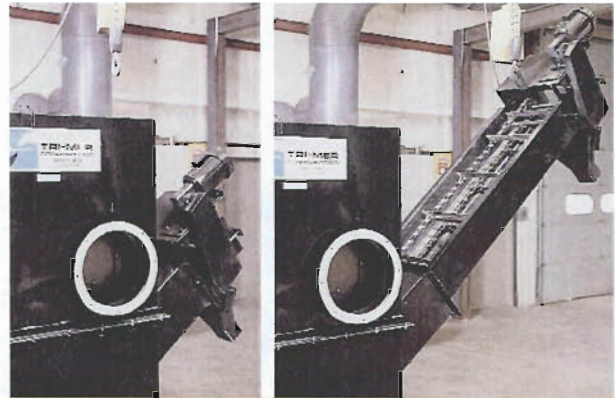
The Model H is available with an **automatically timed drain-down system with sluicing hopper**. The drain-down alternative is interfaced with an electrical control relay package that opens the drain of the Whirl Wet, closes the drain, and activates plant water feed to assure proper liquid level. This method is particularly advantageous for soluble or non-soluble dust applications. Customers preferring not to install the automatic drain can order a manual butterfly valve installed at the bottom of the Whirl Wet hopper.

The Whirl Wet "MCD" (**modular conveyor dragout**) is ideal for the heaviest dust load input applications, including grinding and foundry operations. This unique system offers a streamlined, modular design and extraordinarily low maintenance requirements.

Replacement of the drag-out unit is possible in 30 minutes or less, without disassembly. But what makes the unit truly unique is that there's **never a need to empty the scrubber or shut down the unit for conveyor maintenance**. Its modular design allows simple replacement of the conveyor while operation continues. To add to the system's flexibility, the largest Whirl Wet units

include modular interchangeable conveyors – one conveyor for each hopper bay. Spare conveyors can be stocked as a simple replacement part.

Only the Whirl Wet MCD allows continuous operation, with **never** a need to enter the unit for service. Other benefits include operation flexibility and simplified handling; this Whirl Wet consumes significantly less water than any competitive system; residue is densely packed, lesser in quantity and far easier to handle.



Modular Conveyor Drag-out unit (MCD) showing simple unitized removal of conveyor for maintenance.



Model H

CASE STUDY

Erickson Cosmetics

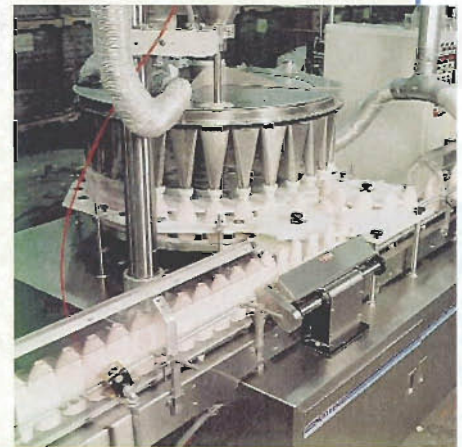
Erickson Cosmetics manufactures talc- and cornstarch-based products for the Mennen Division of Colgate-Palmolive and other companies.

Implementation of SPC/SQC heightened awareness of housekeeping, and the company was a candidate for Colgate-Palmolive's prestigious Quality Award. The award honors vendors who demonstrate excellence in both the quality of the product and the quality of the facility.

After evaluating wet dust collectors, Erickson chose a Whirl Wet. The decision weighed applicability over a range of micron sizes, water consumption, maintenance, and ease of handling collected materials. Also important: Tri-Mer's willingness to let Erickson try the system prior to purchase.

Their 2200 cfm system is 95% to 99% effective for the collection of soluble and insoluble particles above one micron.

Erickson received Colgate-Palmolive's prestigious Vendor of the Year Award, a testimonial reflecting Erickson's dedication to excellence.



Excess dust from 30-bottle materal filler ducted to mild steel Whirl Wet.

Vertical Design Alternative

Tri-Mer's top-mounted blower was designed for applications where floor space is limited or vertical integration is important to process flow. This option is available for units

exhausting up to 50,000 cfm; smaller units include a separate fan support frame while larger units support the fan directly on the Whirl Wet. The Tri-Mer top-mounted blower package includes rail-mounted rubber isolators to decrease vibration, and complete ducting from scrubber outlet to blower inlet.

Other options include remotely located blowers which can be located more than 80' from the dust collector. All blower packages are tested at the factory to insure perfect balance and operation to specifications. They are engineered for simple installation and balanced for system static pressure. Blower materials of construction include mild steel, 304 and 316L stainless steel and fiberglass.

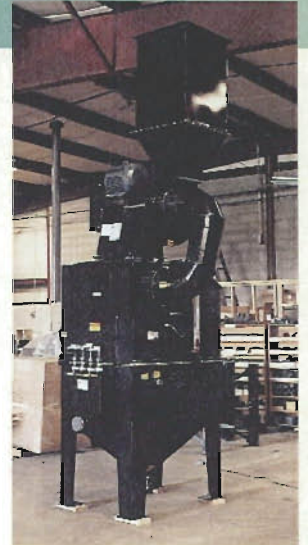


Model M

CASE STUDY

Kraft General Foods

Quaker Oats Co. and Kraft General Foods, Inc., manufacturer of Post cereal brands, have joined a fast-growing list of food and beverage makers specifying Whirl Wets to control particulate from mixing, processing and filling operations.



Model H with top-mounted blower.

Florida Tile

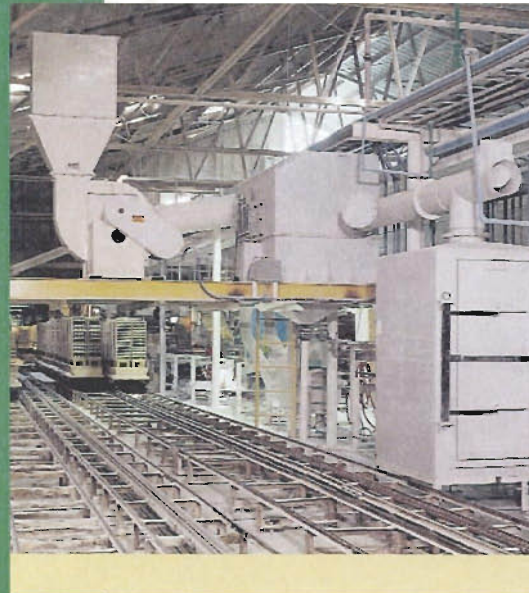
At Florida Tile, the high-weight, high-pH glaze applied to tiles after firing created an overspray that was difficult to handle.

A baghouse was installed, but the capture rate was low; it proved difficult and costly to clean and the high viscosity of the polymer-based spray caused system clogging, resulting in frequent shut-downs.

A decision was made to change to wet technology. Systems were judged on water and energy use, maintenance requirements, feasibility of materials reclamation, and ease of worker accessibility.

Two 4500 Whirl Wets were installed. The units are white polypropylene and are self-cleaning by way of an automatic timer; there is no interruption of production.

Water use is estimated at 50% that of other units the company considered; energy usage is low. According to plant operations engineers, reclamation of the glaze material is virtually 100%.



Design and Engineering

Materials

W

Whirl Wets are manufactured from mild steel, 304 and 316L stainless steels, Hastelloy® and other alloys as required. For applications where

corrosives are present in the gas stream in addition to dust, **Tri-Mer offers systems in solid polypropylene** – and is the **only** major manufacturer of dust collectors to do so! Other equipment makers suggest that their coated steel units provide an acceptable answer to corrosive applications, but no matter what it's coated **with**, steel will corrode. And potential buyers of steel equipment must factor-in periodic shut-downs for reapplication of the coating if corrosives are present.

Tri-Mer also offers PVC and other specialized options for corrosives. Caustics can be easily and automatically added to the liquid flow to scrub (or pre-scrub) high acid loading gas simultaneously with particulate.

Special conditions

Sometimes, the gas stream will have high particulate loading, high gas loading, or both. Common cases include SO₂, NO_x, HCl, Cl₂, HF; other compounds or combinations are also found. For these applications, Tri-Mer combines the Whirl Wet with its packed bed technology.

Duct design

For highest efficiency particulate collection, proper duct velocities are a must. Too slow or an improper design creates clogging and loss of air to the dust collector.

To assure optimum air movement, Tri-Mer uses an integrated, computer-engineered process that's the most advanced in the industry.

High-temperature applications achieve the highest scrubbing efficiencies with the addition of quenching equipment on the wet duct sections, ahead of the Whirl Wet.

Water use

Whirl Wet consumes less water than any wet dust collector on the market. In fact, the only make-up water required is that which is lost to evaporation or particulate removal. Water lost to particulate removal and evaporation is compensated by automatic water level controls. **Whirl Wets have no external pumps or recirculation systems to wear or cause problems in severe weather.**

Pilot plants

For applications where micron sizes are unknown, or where the suitability of Whirl Wet is not certain, Tri-Mer provides pilot Whirl Wet systems on a short-term rental basis.



These on-site trials allow the user to determine the Whirl Wet's efficiency on a given particulate, calculate water use under real-world conditions and evaluate the feasibility of a wet scrubber system in comparison to a dry system.

For many users, this trial can **also** determine the practicality of materials recovery.



Two 9000 cfm roof-mounted Whirl Wets at BASF Wyandotte, Holland, MI.

CASE STUDY

McCormick Spice

McCormick & Co., the world's largest spice company, recently upgraded dust collection at one of its processing plants. The company wanted to maximize collection efficiency and reduce the time, cost and labor required for system maintenance.

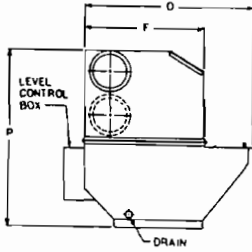


They also wanted a system that had a track record – and one that would accommodate some planned expansion. A pair of Whirl Wets, with an outboard structure, rounded corners, and an internal wash-down nozzle system that optimizes cleaning, was selected.

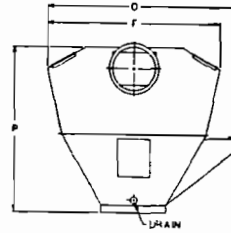
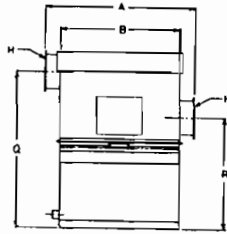
The white 12,000 cfm polypropylene Whirl Wet units at McCormick are engineered for continuous operation, and are suitable for installation outdoors. Computer controls monitor outdoor temperatures and, during the winter months, heat the unit's water to prevent a freezing condition. The heated water also helps maintain system cleanliness.

One of these systems' most important features is the design of the special hoods. Tri-Mer specified a high capture velocity on the hoods' faces, a design feature which allows dust, even twelve feet away, to be captured efficiently.

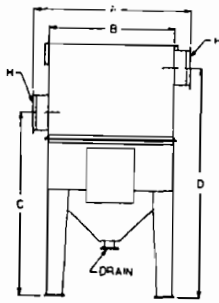
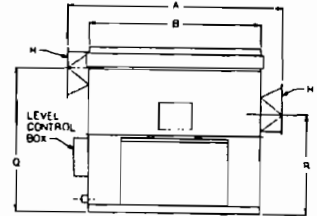
Models Available



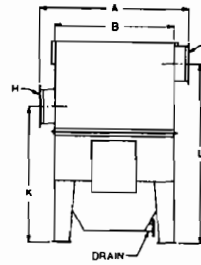
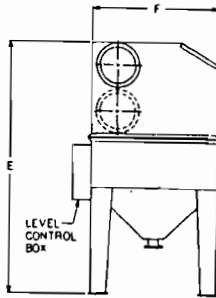
Model "M"
1000 cfm - 6000 cfm



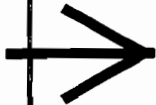
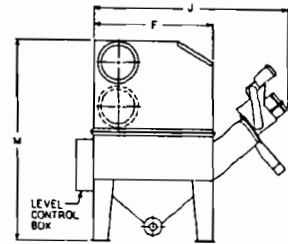
Model "M"
7000 cfm - 14,000 cfm



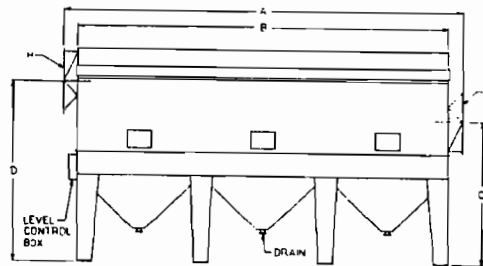
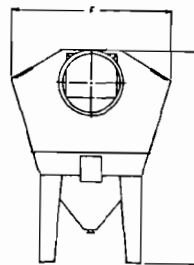
Model "H"
500 cfm - 6000 cfm



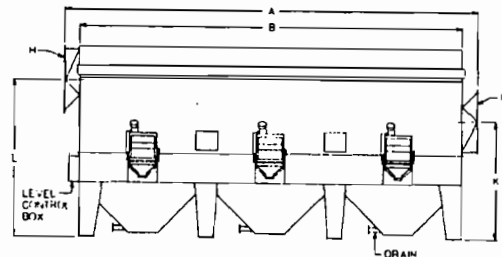
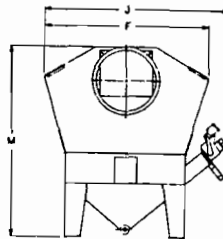
Model "MCD"
2800 cfm - 6000 cfm



Model "H"
7000 cfm - 50,000 cfm
Size 70



Model "MCD"
7000 cfm - 50,000 cfm



Technical Data

Whirl Wet Model #	Min. CFM	Std. CFM	Max. CFM	A	B	C	D	E	F	H	J	K	L	M	O	P	Q	R
W/W-5	425	500	525	18.5"	6.5"	69"	86.5"	95"	48"	5"	-	-	-	-	-	-	-	-
W/W-6	510	600	630	20"	8"	69"	86.5"	95"	48"	5"	-	-	-	-	-	-	-	-
W/W-8	630	800	840	22.5"	10.5"	69"	86.5"	95"	48"	6"	-	-	-	-	-	-	-	-
W/W-10	840	1000	1050	25"	13"	69"	86.5"	95"	48"	7"	-	-	-	-	67.5"	67"	58.5"	41"
W/W-12	1020	1200	1260	28"	16"	69"	86.5"	95"	48"	7"	-	-	-	-	67.5"	67"	58.5"	41"
W/W-15	1260	1500	1575	32"	20"	69"	86.5"	95"	48"	8"	-	-	-	-	67.5"	67"	58.5"	41"
W/W-18	1530	1800	1890	36"	24"	69"	86.5"	95"	48"	9"	-	-	-	-	67.5"	67"	58.5"	41"
W/W-22	1870	2200	2310	41"	29"	69"	86.5"	95"	48"	10"	-	-	-	-	67.5"	67"	58.5"	41"
W/W-28	2310	2800	2940	49"	37"	69"	86.5"	95"	48"	11"	90"	52"	69.5"	78"	67.5"	67"	58.5"	41"
W/W-34	2890	3400	3570	57"	45"	69"	86.5"	95"	48"	12"	90"	52"	69.5"	78"	67.5"	67"	58.5"	41"
W/W-40	3400	4000	4200	65"	53"	69"	86.5"	95"	48"	13"	90"	52"	69.5"	78"	67.5"	67"	58.5"	41"
W/W-50	4200	5000	5250	78"	66"	69"	86.5"	95"	48"	14"	90"	52"	69.5"	78"	67.5"	67"	58.5"	41"
W/W-60	5100	6000	6300	91.5"	79.5"	69"	86.5"	95"	48"	16"	90"	52"	69.5"	78"	67.5"	67"	58.5"	41"
W/W-70	5950	7000	7350	70.5"	46.5"	85"	109"	117"	88"	18"	134"	64"	88"	99"	104"	90"	81.5"	58"
W/W-80	6800	8000	8400	77"	53"	85"	109"	117"	88"	18"	134"	64"	88"	99"	104"	90"	81.5"	58"
W/W-100	8400	10000	10500	90"	66"	85"	109"	117"	88"	20"	134"	64"	88"	99"	104"	90"	81.5"	58"
W/W-120	10200	12000	12600	103.5"	79.5"	89"	117"	126"	96"	22"	142"	68"	96"	105"	112"	96"	86.5"	59"
W/W-140	11900	14000	14700	116.5"	92.5"	89"	117"	126"	96"	24"	142"	68"	96"	105"	112"	96"	86.5"	59"
W/W-170	14450	17000	17850	136.5"	112.5"	94"	124"	135"	102"	26"	148"	73"	103"	114"	-	-	-	-
W/W-200	17000	20000	20800	156.5"	132.5"	94"	124"	135"	102"	30"	148"	73"	103"	114"	-	-	-	-
W/W-240	20400	24000	25200	183"	159"	100"	132"	145"	112"	32"	158"	79"	111"	124"	-	-	-	-
W/W-280	23800	28000	29400	209.5"	185.5"	100"	132"	145"	112"	34"	158"	79"	111"	124"	-	-	-	-
W/W-320	27200	32000	33600	236"	212"	107"	150"	168"	132"	38"	178"	86"	129"	147"	-	-	-	-
W/W-360	30600	36000	37800	262.5"	238.5"	108"	152"	171"	132"	40"	178"	87"	131"	147"	-	-	-	-
W/W-400	34000	40000	42000	289"	265"	119"	163"	183"	144"	42"	190"	98"	142"	169"	-	-	-	-
W/W-450	38250	45000	47250	322"	298"	123"	169"	190"	152"	44"	198"	102"	148"	177"	-	-	-	-
W/W-500	42500	50000	52500	355"	331"	127"	174"	196"	160"	48"	206"	106"	153"	185"	-	-	-	-



Dimensions are approximate; consult Tri-Mer for exact size.

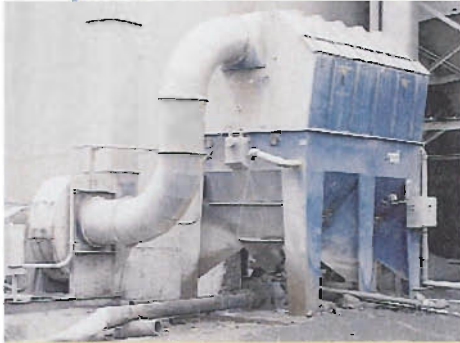
Other Case Studies

American Aggregates

American Aggregates Corp. produces pelleted material for manufacturers of glass and shingle using slag from nearby AK Steel.

Originally, a 14,000 cfm venturi collected fugitive particulate. Collection efficiency was low, however, and maintenance personnel regularly shoveled inches of uncollected dust which settled over a wide area. Alternative dust collection was evaluated and a 20,000 cfm Whirl Wet was selected.

The Whirl Wet collects a half-ton of slag dust each hour. Facility maintenance has been simplified and the quality of the workplace has been improved.



In this outdoor location, a temperature-activated heater insures 24-hour operation.

Eversharp Tool Co.

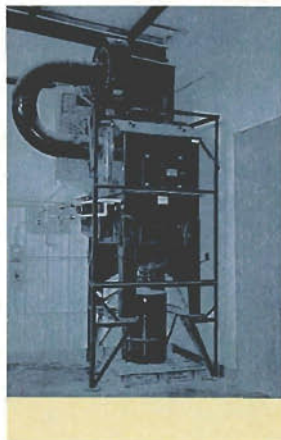
A dry bag collector caused safety and housekeeping problems for Eversharp Tool Company. Aluminum and platinum fines created by machining would short out electrical motors, contacts and breakers.

Efforts to halt the spread of the talcum-like dust fines were unsuccessful, creating housekeeping problems plant-wide. An enclosure was built around the collector and a cyclone was installed. Wall filters were also added.

Operationally, there were additional concerns. Humidity would cause the dust to stick to the bags, which would typically clog every three days. Aggressive washing of the bags would be needed to break off the accumulated crud, despite the fact that washing was contrary to manufacturer's instructions.

Eversharp, seeking a better alternative, installed a 2,800 cfm, all-polypropylene Whirl Wet. A steel frame positions the Whirl Wet above a 55-gallon drum. This allows manual release of collected material. The release is typically ten seconds in duration and is the only regular maintenance required.

The Whirl Wet system uses very little water and what water is required is recycled. The dust can now be returned to the customer for reclamation of the platinum.

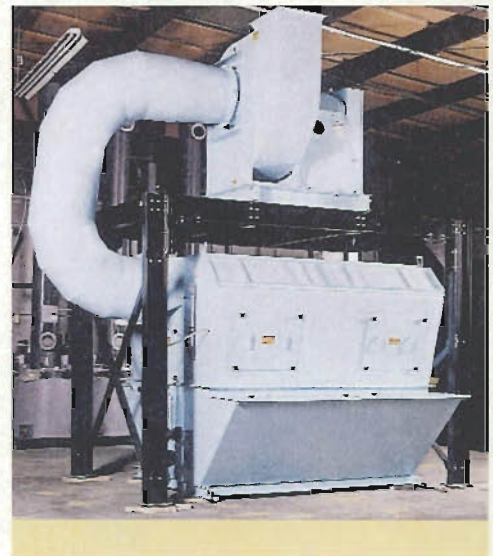


Horween Leather

For leather fines and other lightweight, porous materials, dry collection has been thought to be preferable to wet because of the material's buoyancy.

Horween Leather Company challenged that assumption. Originally, two baghouse systems collected particulate, but problems arose. First, cold winter dryness caused high levels of static electricity. Resultant sparks in the ducts headed to the baghouse, creating fire risk. Worse was a problem peculiar to tanning: steel shot embedded in the hides remained through the tanning process and the use of sandpaper on the hides created another fire hazard. The danger was heightened by tanning chemicals.

Horween installed a 14,000 cfm Whirl Wet, ducting three machines to the unit. The Whirl Wet eliminated the risk of fire and explosion at the finishing stations. With dust collection efficiency of 98.6%, dust throughout the plant was eliminated and product quality improved.



1400 Monroe St. • P.O. Box 730 • Owosso, MI 48867-0730

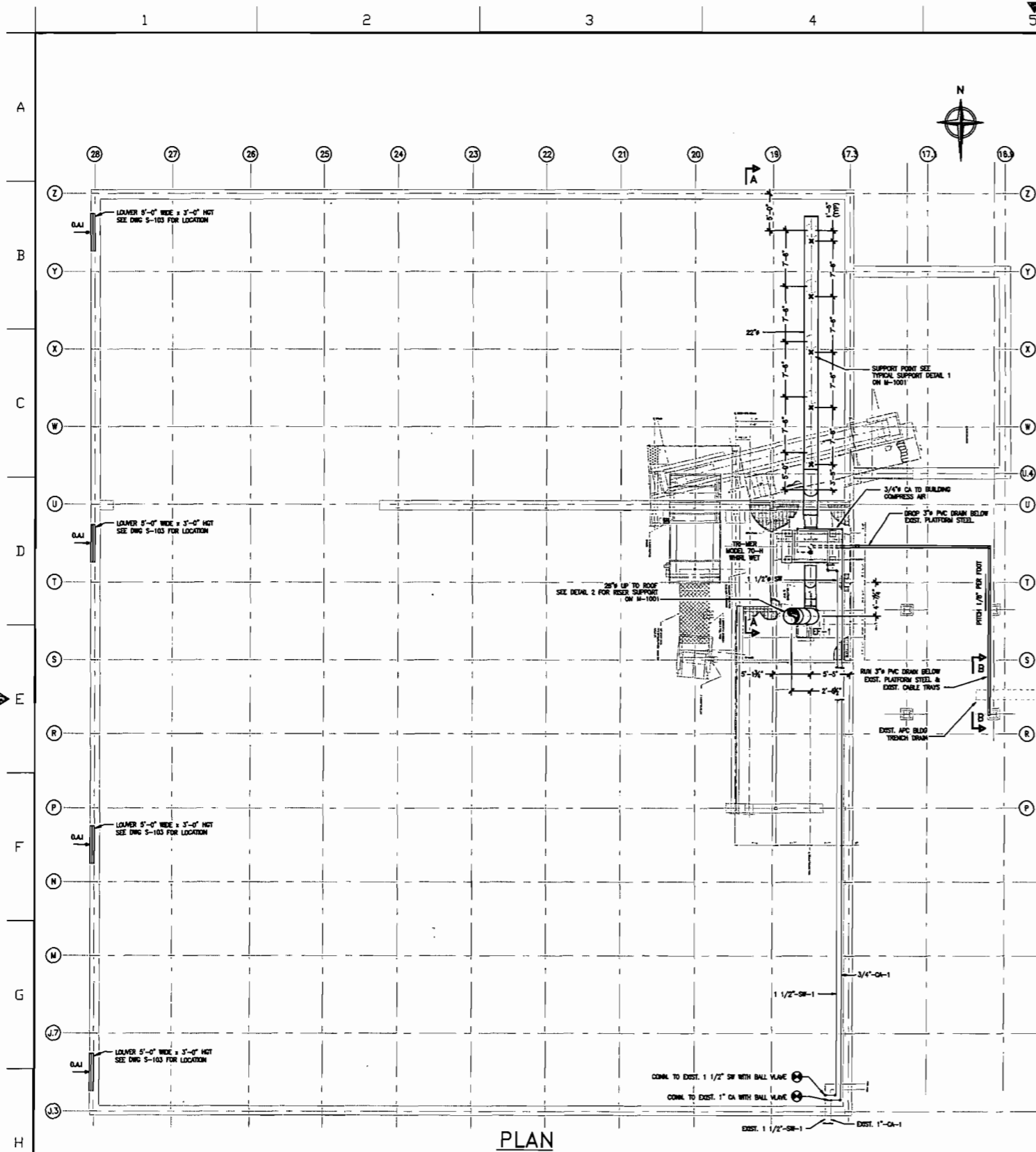
Phone (989) 723-7838 • FAX (989) 723-7844

E-mail: salesdpt@tri-mer.com

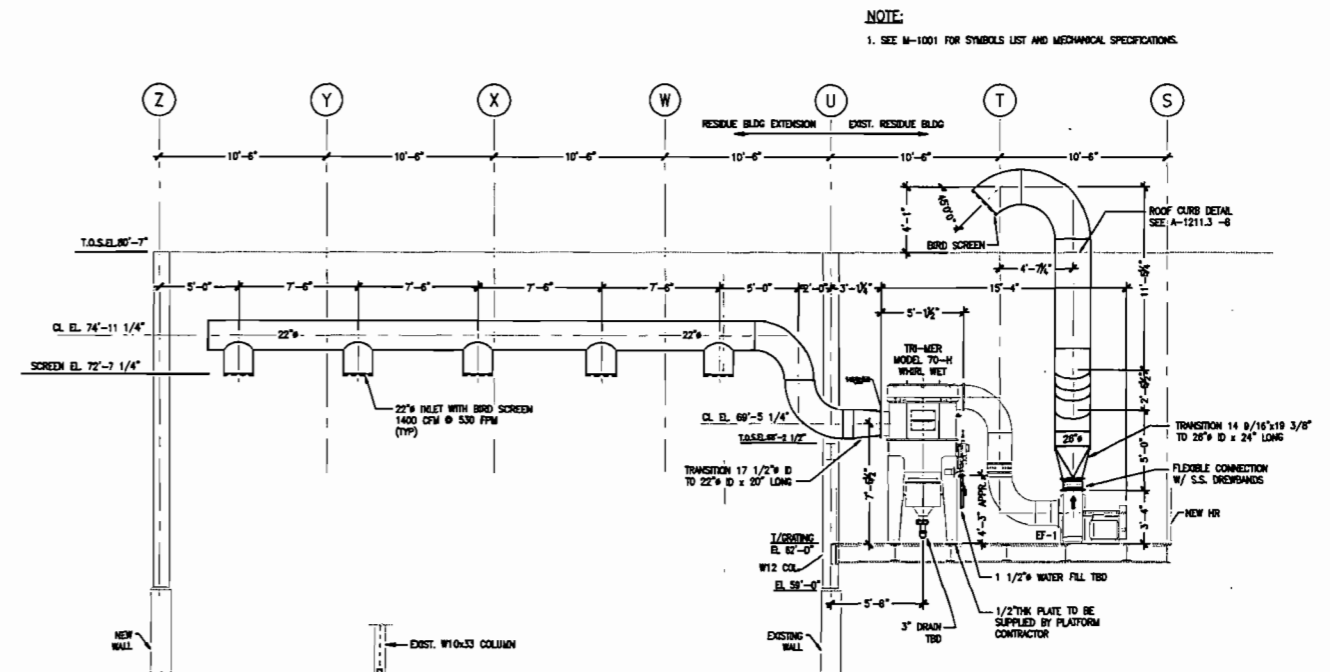
www.tri-mer.com

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 Feb 02, 2009 3:15pm

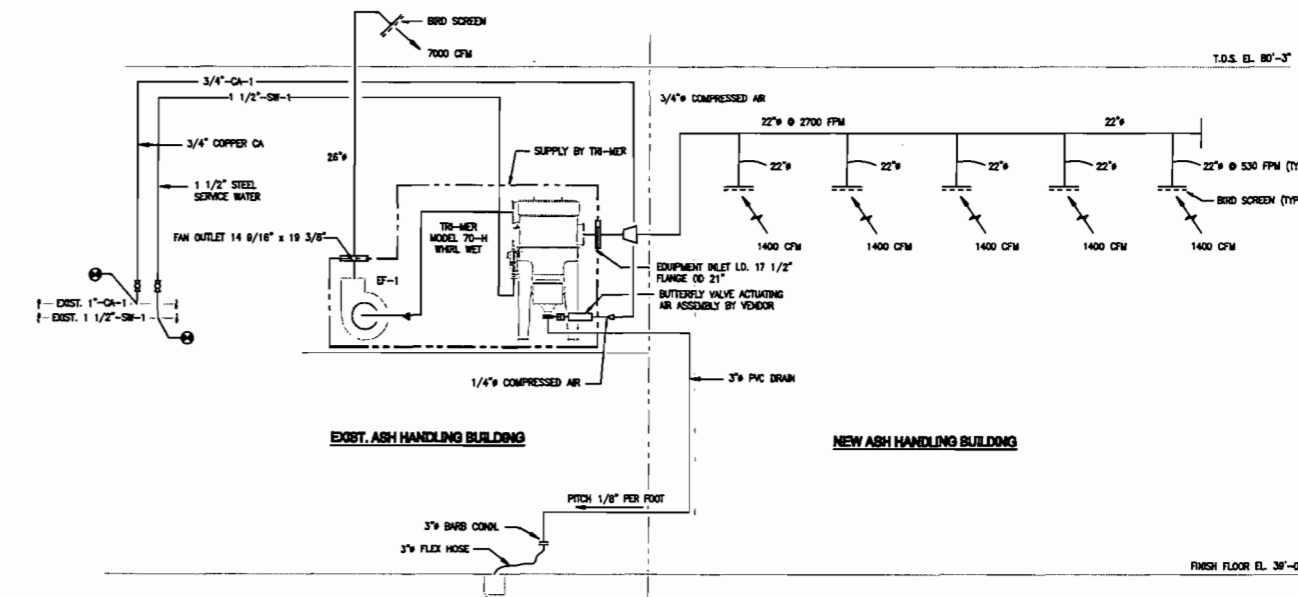


PLAN



SECTION A-A
SCALE: 3/16" = 1'-0"

SECTION B-B
SCALE: 3/16" = 1'-0"



AIR & WATER FLOW DIAGRAM
SCALE: NONE

NOTE:
1. SEE M-1001 FOR SYMBOLS LIST AND MECHANICAL SPECIFICATIONS.

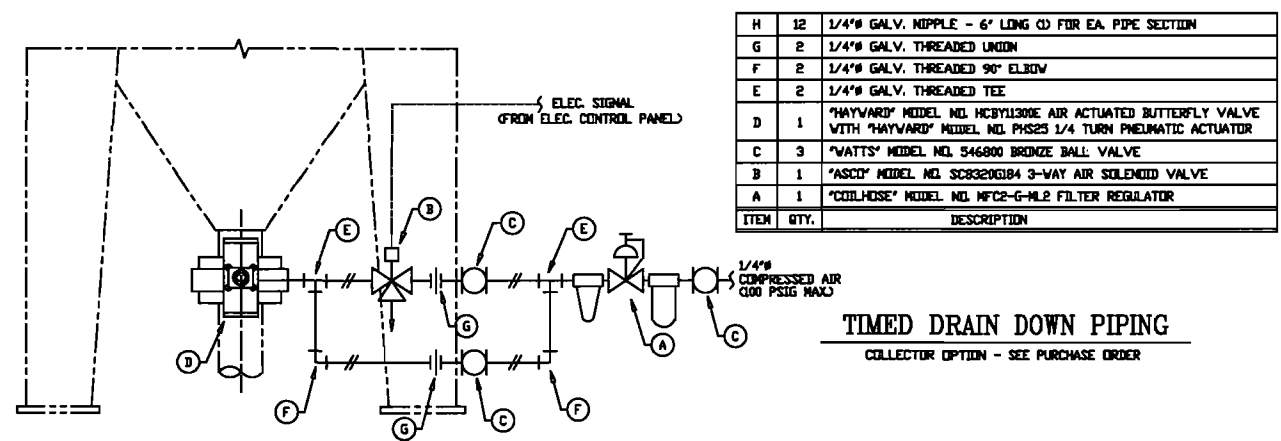
REV	DATE	BY	CHK	APPR	ISSUED FOR
D	02/02/09	DH	ML	RM	REVIEW AND COMMENTS
B	01/26/09	DH	ML	RM	REVIEW AND COMMENTS
A	01/06/09	DH	ML	RM	REVIEW AND COMMENTS

REV	DATE	BY	CHK	APPR	ISSUED FOR
					ORIGINAL ISSUED

PROJECT ENGINEER	
ENGINEER	
DATE	12/22/08
SCALE	1/8" = 1'-0"
DRAWN	D. HAN
CHECKED	M. LE
APPROVED	R. MARTINSEN
APPROVED	R. MARTINSEN



COVANTA HILLSBOROUGH, INC	
HILLSBOROUGH RESIDUE BUILDING EXPANSION VENTILATION SYSTEM	
Original Size: 24" x 36"	Document ID: M-5002
Work Order: XXXX	Sheet 1 of 1

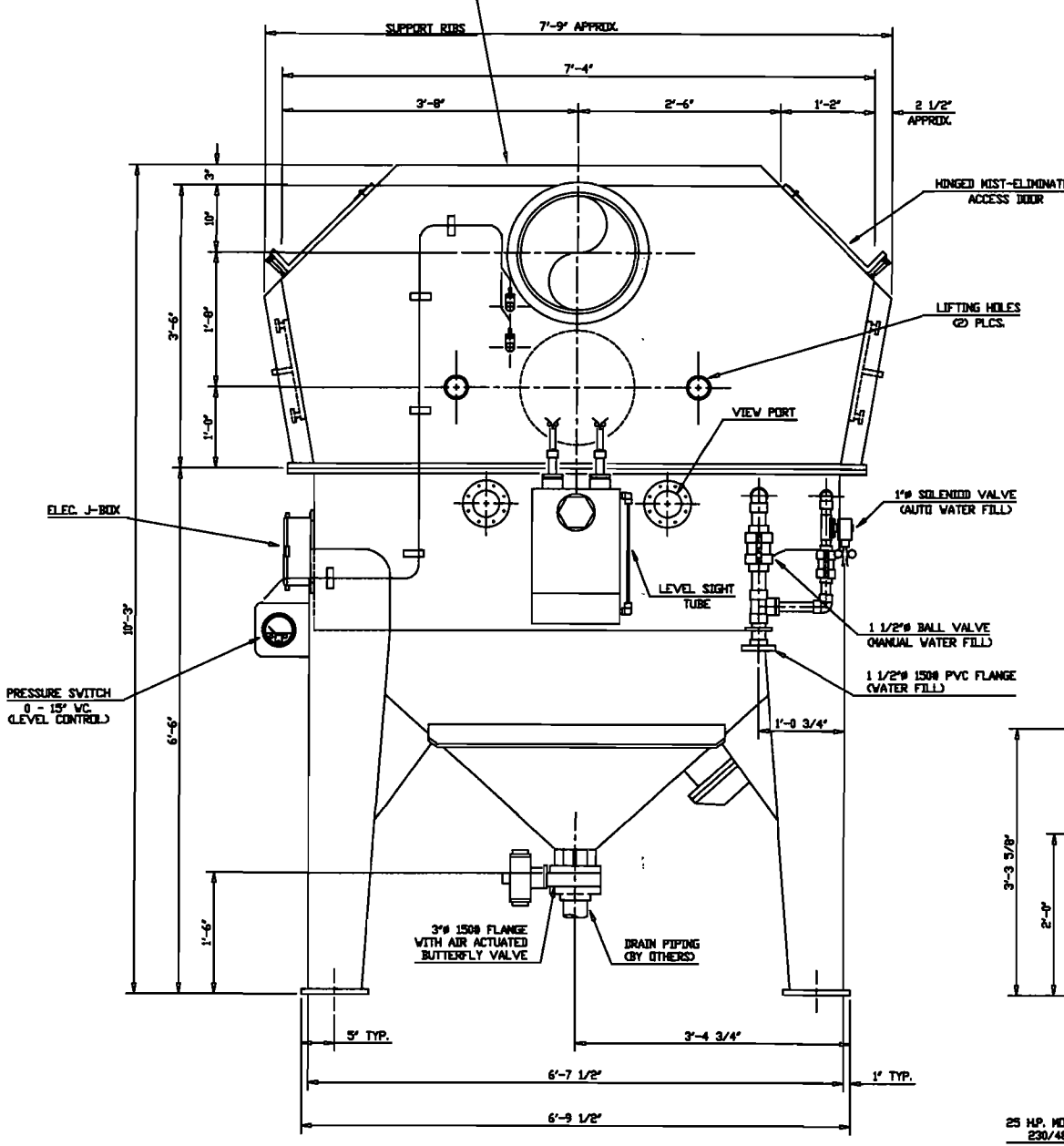


TIMED DRAIN DOWN PIPING
COLLECTOR OPTION - SEE PURCHASE ORDER

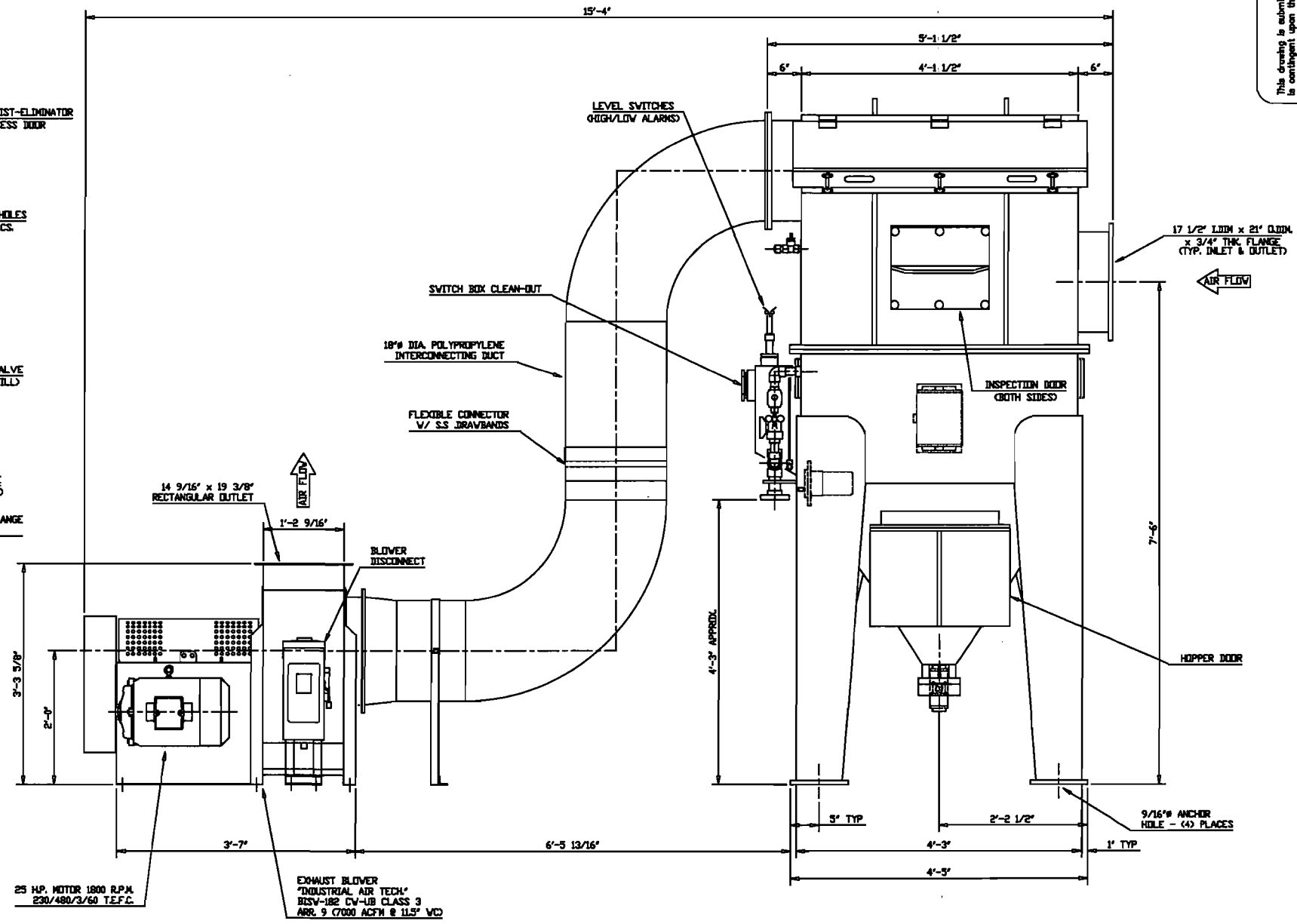
This drawing is submitted for YOUR APPROVAL. Scheduled Engineering and Production is contingent upon the return of this drawing WITHIN 5 DAYS after receipt, at which time we will proceed with the production of a final drawing for fabrication. Any changes to this drawing after the above date will be at the customer's expense and may require reworking and possibly requiring an increase in the contract price.

APPROVED _____
REQUEST REVISIONS AS NOTED _____

Authorized Signature _____ Date _____



END ELEVATION
EXHAUST BLOWER AND DUCT NOT SHOWN FOR CLARITY



MODEL 70-H WHIRL WET

7000 CFM OPERATIONAL
WHIRL WET & DUCT = UV, STABILIZED BLACK POLYPROPYLENE
EXHAUST BLOWER = CARBON STEEL CONSTRUCTION, ENAMEL PAINTED
WHIRL WET WEIGHT DRY = 1350 lbs.
WHIRL WET WEIGHT OPERATIONAL = 5200 lbs.
(C) REQUIRED

SIDE ELEVATION

NOT FOR CONSTRUCTION

CUSTOMER	COVANTA HILLSBOROUGH INC.	DWG. TITLE	ASSEMBLY: 70-H PLASTIC WHIRL WET WITH BLOWER
DRAWN BY	M. S.	SCALE	1"=1'-0"
APPROVED BY	C. C.	DWG. NO.	70-H
		DWG. LIST	1 OF 1
		DWG. DATE	12/12/08
		DWG. NO.	J 23826-01
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		REVISION 6 REVISION 5 REVISION 4 REVISION 3 REVISION 2 REVISION 1	
		D 23826-01	