SOUTHEAST DISTRICT PERMIT PROCESSING WORKSHEET

LOGGING

NAME OF PROJECT North Broward Resource Recovery Inc. (Ash Conditioner)

PROJECT LOG NO. AC 06-186998 COUNTY Broward

DATE APPLICATION RECEIVED 9/27/90 30-DAY (HW 60-DAY) DATE 10/26/90

(Rec# 15985 $ 200.00)

AMOUNT OF FEE PAID $200.00 COPIES OF PLANS _____

COPIES OF APPLICATION 4 COPIES OF SPECIFICATIONS _____

COPIES TO: CORPS __; LOCAL PROGRAM ✓; TALLAHASSEE __; DNR __; OTHER _____

9/27/90 (Cover Letter only)

PERMIT REVIEW

PERMIT ASSIGNED TO Sittig, M. AMOUNT OF FEE REQ'D $_____

DISCHARGE TO OR LOCATED IN AQUATIC PRESERVE: Yes __ No __ N/A ___

PERMIT STATUS AND CHRONOLOGY

DATE	REVIEWER'S INITIALS	COMMENTS

(continue on reverse side)

FIELD INSPECTION BY: _____ DATE _____; N/A _____

WATER MANAGEMENT COMMENTS (DATE) _____; N/A _____

LOCAL PROGRAM APPROVAL (DATE) _____; N/A _____

GPSI, APIS, OR PWS UPDATE DRAFTED: Yes _____ ; N/A _____

PUBLIC NOTICE LETTER ISSUED/PUBLISHED (DATES) _____ ; N/A _____

APPLICATION COMPLETION DATE _____ > DEFAULT DATE _____

>> D.A.S. 90+ DAYS INACTIVITY AUTHORIZATION: _____OK ____DENY <<

COMMENTS: _____

PERMIT, EXEMPTION, DENIAL DRAFTED BY: _____ DATE: _____

INTENT: PROGRAM HEAD _____ PROGRAM ADM. _____

FINAL DRAFT REVIEWED BY: _____ DATE: _____

FINAL DRAFT APPROVED BY: _____ DATE: _____

****

STATE OF FLORIDA

DEPARTMENT OF ENVIRONMENTAL REGULATION

AC 06/186998

APPLICATION TO OPERATE/CONSTRUCT AIR POLLUTION SOURCES

SOURCE TYPE: Refuse-to-Energy Facility [X] New[1] [ ] Existing[1]

APPLICATION TYPE: [X] Construction [ ] Operation [ ] Modification

COMPANY NAME: Wheelabrator North Broward Inc. COUNTY: Broward

Identify the specific emission point source(s) addressed in this application (i.e., Lime Kiln No. 4 with Venturi Scrubber; Peaking Unit No. 2, Gas Fired) Lime Silo Vent Filter

SOURCE LOCATION: Street 2700 Hilton Road (NW 48th Street) City Pompano Beach

UTM: East 583.900 meters North 2,907.600 meters

Latitude 26 ° 17 ' 14 "N Longitude 80 ° 9 ' 35 "W

APPLICANT NAME AND TITLE: Wheelabrator North Broward Inc.

APPLICANT ADDRESS: 4400 S. State Road 7, Fort Lauderdale, FL 33314

SECTION I: STATEMENTS BY APPLICANT AND ENGINEER

A. APPLICANT

I am the undersigned owner or authorized representative* of Wheelabrator North Broward Inc.

I certify that the statements made in this application for a construction permit are true, correct and complete to the best of my knowledge and belief. Further, I agree to maintain and operate the pollution control source and pollution control facilities in such a manner as to comply with the provision of Chapter 403, Florida Statutes, and all the rules and regulations of the department and revisions thereof. I also understand that a permit, if granted by the department, will be non-transferable and I will promptly notify the department upon sale or legal transfer of the permitted establishment.

*Attach letter of authorization

Signed: J R Wiegner

James R. Wiegner, Project Manager

Name and Title (Please Type)

Date: 9/26/90 Telephone No. (305) 581-6606

B. PROFESSIONAL ENGINEER REGISTERED IN FLORIDA (where required by Chapter 471, F.S.)

This is to certify that the engineering features of this pollution control project have been designed/examined by me and found to be in conformity with modern engineering principles applicable to the treatment and disposal of pollutants characterized in the permit application. There is reasonable assurance, in my professional judgement, that

[1]See Florida Administration Code Rule 17-2.100(57) and (104)

the pollution control facilities, when properly maintained and operated, will discharge an effluent that complies with all applicable statutes of the State of Florida and the rules and regulations of the department. It is also agreed that the undersigned will furnish, if authorized by the owner, the applicant a set of instructions for the proper maintenance and operation of the pollution control facilities and, if applicable, pollution sources.

Signed Kennard F. Kosky

Kennard F. Kosky
Name (Please Type)

KBN Engineering and Applied Sciences, Inc.
Company Name (Please Type)

1034 NW 57th Street, Gainesville, FL 32605
Mailing Address (Please Type)

Florida Registration No. 14996 Date: June 5, 1990 Telephone No. (904) 331-9000

SECTION II: GENERAL PROJECT INFORMATION

A. Describe the nature and extent of the project. Refer to pollution control equipment, and expected improvements in source performance as a result of installation. State whether the project will result in full compliance. Attach additional sheet if necessary.

A vent filter will be installed on the lime silo to control dust during truck unloading of pebble lime.

B. Schedule of project covered in this application (Construction Permit Application Only)

Start of Construction August 1, 1990 Completion of Construction August 1, 1991

C. Costs of pollution control system(s): (Note: Show breakdown of estimated costs only for individual components/units of the project serving pollution control purposes. Information on actual costs shall be furnished with the application for operation permit.)

$15,000

D. Indicate any previous DER permits, orders and notices associated with the emission point, including permit issuance and expiration dates.

Power Plant Site Certification PA 86-22; PSD-FL-112

E. Requested permitted equipment operating time:[1] hrs/day ____; days/wk ____; wks/yr 52;
If power plant, hrs/yr _____; if seasonal, describe: _____

F. If this is a new source or major modification, answer the following questions. (Yes or No)

1. Is this source in a non-attainment area for a particular pollutant? NA[2]
   a. If yes, has "offset" been applied? _____
   b. If yes, has "Lowest Achievable Emission Rate" been applied? _____
   c. If yes, list non-attainment pollutants. _____
2. Does best available control technology (BACT) apply to this source? If yes, see Section VI. Yes[3]
3. Does the State "Prevention of Significant Deterioration" (PSD) requirement apply to this source? If yes, see Sections VI and VII. Yes[4]
4. Do "Standards of Performance for New Stationary Sources" (NSPS) apply to this source? No
5. Do "National Emission Standards for Hazardous Air Pollutants" (NESHAP) apply to this source? No

H. Do "Reasonably Available Control Technology" (RACT) requirements apply to this source? No
   a. If yes, for what pollutants? _____
   b. If yes, in addition to the information required in this form, any information requested in Rule 17-2.650 must be submitted.

Attach all supportive information related to any answer of "Yes". Attach any justification for any answer of "No" that might be considered questionable.

[1]Air is displaced through the vent filter only when lime trucks are being pneumatically unloaded. This will not be a continuous operation. Each truck will require approximately 2½ hours to unload. Five to seven trucks will be unloaded each week.

[2]Broward County is nonattainment for ozone; the applicable pollutant is volatile organic compounds (VOCs). This source will not emit VOCs.

[3]BACT for emission type is baghouse as identified by EPA's BACT/LAER clearinghouse documents.

[4]PSD applies since the total particulate matter/PM10 emissions from the resource recovery facility are greater than the significant emission amounts. PSD modeling and BACT analysis were performed for the municipal solid-waste-fired boilers. Because the emissions from this source are extremely low and well less than the significant emission levels, modeling of this source was considered unnecessary.

SECTION III: AIR POLLUTION SOURCES & CONTROL DEVICES (Other than Incinerators)

A. Raw Materials and Chemicals Used in your Process, if applicable:

Description	Contaminants		Utilization Rate - lbs/hr	Relate to Flow Diagram
	Type	% Wt		
Pebble Lime			40,000 max*	Attachment C

B. Process Rate, if applicable: (See Section V, Item 1)

1. Total Process Input Rate (lbs/hr): 40,000

2. Product Weight (lbs/hr): 40,000

C. Airborne Contaminants Emitted: (Information in this table must be submitted for each emission point, use additional sheets as necessary)

Name of Contaminant	Emission[1] (**)		Allowed[2] Emission Rate per Rule 17-2	Allowable[3] Emission lbs/hr	Potential** Emission		Relate to Flow Diagram
	Maximum lbs/hr	Actual T/yr			lbs/hr	T/yr	
Particulate	0.13***	0.021	17-2.610(1)(	b) 23	25.7	4.2	C

[1]See Section V, Item 2.
[2]Reference applicable emission standards and units (e.g. Rule 17-2.600(5)(b)2. Table II, E. (1) - 0.1 pounds per million BTU heat input)
[3]Calculated from operating rate and applicable standard.

* Each truck will unload at approximately 20,000 lb/hr. Maximum rate will be 40,000 lb/hr if two trucks unload at the same time.
**Based on 5 trucks of lime being received per week with each truck requiring 2½ hours to unload.
***Based on two trucks unloading simultaneously.

D. Control Devices: (See Section V, Item 4)

Name and Type (Model & Serial No.)	Contaminant	Efficiency	Range of Particles Size Collected (in microns) (If applicable)	Basis for Efficiency (Section V Item 5)
Silo Vent Filter	Particulate	99%+	>0.3μm	Att. A
Wheelabrator Air				
Pollution Control				
Model 1016 BA-108				
Jet III				

E. Fuels

Not Applicable

Type (Be Specific)	Consumption*		Maximum Heat Input (MMBTU/hr)
	avg/hr	max./hr	

*Units: Natural Gas--MMCF/hr; Fuel Oils--gallons/hr; Coal, wood, refuse, others--lbs/hr.

Fuel Analysis:

Percent Sulfur:_____ Percent Ash:_____

Density: _____ lbs/gal Typical Percent Nitrogen:_____

Heat Capacity:_____ BTU/lb _____ BTU/gal

Other Fuel Contaminants (which may cause air pollution):_____

F. If applicable, indicate the percent of fuel used for space heating.

Annual Average _____ Maximum _____

G. Indicate liquid or solid wastes generated and method of disposal.

H. Emission Stack Geometry and Flow Characteristics (Provide data for each stack):
Downward Discharge
Stack Height: 102 ft. Stack Diameter: 32 in x 12 in

Gas Flow Rate: 1,500 ACFM _____ DSCFM Gas Exit Temperature: 40 to 100 °F.

Water Vapor Content: 60 to 95 % Velocity: 9.4 FPS
(relative humidity)

SECTION IV: INCINERATOR INFORMATION

Type of Waste	Type 0 (Plastics)	Type II (Rubbish)	Type III (Refuse)	Type IV (Garbage)	Type IV (Pathological)	Type V (Liq.& Gas By-prod.)	Type VI (Solid By-prod.)
Actual lb/hr Incinerated							
Uncontrolled (lbs/hr)							

Description of Waste _____

Total Weight Incinerated (lbs/hr) _____ Design Capacity (lbs/hr)_____

Approximate Number of Hours of Operation per day _____ day/wk _____ wks/yr._____

Manufacturer _____

Date Constructed _____ Model No. _____

	Volume $(ft)^3$	Heat Release (BTU/hr)	Fuel		Temperature (°F)
			Type	BTU/hr	
Primary Chamber					
Secondary Chamber					

Stack Height: _____ ft. Stack Diamter: _____ Stack Temp. _____

Gas Flow Rate: _____ ACFM _____ DSCFM* Velocity: _____ FPS

*If 50 or more tons per day design capacity, submit the emissions rate in grains per standard cubic foot dry gas corrected to 50% excess air.

Type of pollution control devices: [ ] Cyclone [ ] Wet Scrubber [ ] Afterburner
[ ] Other (specify)_____

Brief description of operating characteristics of control devices: _____

Ultimate disposal of any effluent other than that emitted from the stack (scrubber water, ash, etc.):

Lime dust collected in the filter will be discharged into lime silo.

NOTE: Items 2, 3, 4, 6, 7, 8, and 10 in Section V must be included where applicable.

SECTION V: SUPPLEMENTAL REQUIREMENTS

Please provide the following supplements where required for this application.

1. Total process input rate and product weight -- show derivation [Rule 17-2.100(127)]
   See Attachment A
2. To a construction application, attach basis of emission estimate (e.g., design calculations, design drawings, pertinent manufacturer's test data, etc.) and attach proposed methods (e.g., FR Part 60 Methods, 1, 2, 3, 4, 5) to show proof of compliance with applicable standards. To an operation application, attach test results or methods used to show proof of compliance. Information provided when applying for an operation permit from a construction permit shall be indicative of the time at which the test was made.
   See Attachment A
3. Attach basis of potential discharge (e.g., emission factor, that is, AP42 test).
   See Attachment A
4. With construction permit application, include design details for all air pollution control systems (e.g., for baghouse include cloth to air ratio; for scrubber include cross-section sketch, design pressure drop, etc.)
   See Attachment B
5. With construction permit application, attach derivation of control device(s) efficiency. Include test or design data. Items 2, 3 and 5 should be consistent: actual emissions = potential (1-efficiency).
   See Attachment A
6. An 8 ½" x 11" flow diagram which will, without revealing trade secrets, identify the individual operations and/or processes. Indicate where raw materials enter, where solid and liquid waste exit, where gaseous emissions and/or airborne particles are evolved and where finished products are obtained.
   See Attachment C
7. An 8 ½" x 11" plot plan showing the location of the establishment, and points of airborne emissions, in relation to the surrounding area, residences and other permanent structures and roadways (Examples: Copy of relevant portion of USGS topographic map).
   See Attachment D
8. An 8 ½" x 11" plot plan of facility showing the location of manufacturing processes and outlets for airborne emissions. Relate all flows to the flow diagram.
   See Attachment D

9. The appropriate application fee in accordance with Rule 17-4.05. The check should be made payable to the Department of Environmental Regulation.

10. With an application for operation permit, attach a Certificate of Completion of Construction indicating that the source was constructed as shown in the construction permit.

SECTION VI: BEST AVAILABLE CONTROL TECHNOLOGY

A. Are standards of performance for new stationary sources pursuant to 40 C.F.R. Part 60 applicable to the source?

[ ] Yes [X] No

Contaminant	Rate or Concentration

B. Has EPA declared the best available control technology for this class of sources (If yes, attach copy)

[X] Yes [ ] No

Contaminant	Rate or Concentration
Particulate Matter	99+ percent efficiency down to 0.01 gr/scf (see EPA BACT/LAER Clearinghouse Documents, 1985, 1986, 1987, 1988, and 1989)

C. What emission levels do you propose as best available control technology?

Contaminant	Rate or Concentration
Particulate Matter	99+ percent efficiency/0.01 gr/acf

D. Describe the existing control and treatment technology (if any).

1. Control Device/System:
2. Operating Principles:
3. Efficiency:*
4. Capital Costs:

*Explain method of determining

5. Useful Life:

6. Operating Costs:

7. Energy:

8. Maintenance Cost:

9. Emissions:

Contaminant	Rate or Concentration

10. Stack Parameters

a. Height: ft.

b. Diameter ft.

c. Flow Rate: ACFM

d. Temperature: °F.

e. Velocity: FPS

E. Describe the control and treatment technology available (As many types as applicable, use additional pages if necessary).

1.

a. Control Devices:

b. Operating Principles:

c. Efficiency:[1]

d. Capital Cost:

e. Useful Life:

f. Operating Cost:

g. Energy:[2]

h. Maintenance Cost:

i. Availability of construction materials and process chemicals:

j. Applicability to manufacturing processes:

k. Ability to construct with control device, install in available space, and operate within proposed levels:

2.

a. Control Device:

b. Operating Principles:

c. Efficiency:[1]

d. Capital Cost:

e. Useful Life:

f. Operating Cost:

g. Energy:[2]

h. Maintenance Cost:

i. Availability of construction materials and process chemicals:

[1]Explain method of determining efficiency.
[2]Energy to be reported in units of electrical power - KWH design rate.

j. Applicability to manufacturing processes:

k. Ability to construct with control device, install in available space, and operate within proposed levels:

3.

a. Control Device:

b. Operating Principles:

c. Efficiency:[1]

d. Capital Cost:

e. Useful Life:

f. Operating Cost:

g. Energy:[2]

h. Maintenance Cost:

i. Availability of construction materials and process chemicals:

j. Applicability to manufacturing processes:

k. Ability to construct with control device, install in available space, and operate within proposed levels:

4.

a. Control Device:

b. Operating Principles:

c. Efficiency:[1]

d. Capital Cost:

e. Useful Life:

f. Operating Cost:

g. Energy:[2]

h. Maintenance Cost:

i. Availability of construction materials and process chemicals:

j. Applicability to manufacturing processes:

k. Ability to construct with control device, install in available space, and operate within proposed levels:

F. Describe the control technology selected:

1. Control Device:

2. Efficiency:[1]

3. Capital Cost:

4. Useful Life:

5. Operating Cost:

6. Energy:[2]

7. Maintenance Cost:

8. Manufacturer:

9. Other locations where employed on similar processes:

a. (1) Company:

(2) Mailing Address:

(3) City:

(4) State:

[1]Explain method of determining efficiency.
[2]Energy to be reported in units of electrical power - KWH design rate.

(5) Environmental Manager:

(6) Telephone No.:

(7) Emissions:[1]

Contaminant	Rate or Concentration

(8) Process Rate:[1]

b. (1) Company:

(2) Mailing Address:

(3) City: (4) State:

(5) Environmental Manager:

(6) Telephone No.:

(7) Emissions:[1]

Contaminant	Rate or Concentration

(8) Process Rate:[1]

10. Reason for selection and description of systems:

[1]Applicant must provide this information when available. Should this information not be available, applicant must state the reason(s) why.

SECTION VII - PREVENTION OF SIGNIFICANT DETERIORATION

Not Applicable

A. Company Monitored Data

1. _____ no. sites _____ TSP _____ ( ) SO^{2*} _____ Wind spd/dir

Period of Monitoring _____/_____/_____ to _____/_____/_____
month day year month day year

Other data recorded _____

Attach all data or statistical summaries to this application.

*Specify bubbler (B) or continuous (C).

2. Instrumentation, Field and Laboratory

a. Was instrumentation EPA referenced or its equivalent? [ ] Yes [ ] No

b. Was instrumentation calibrated in accordance with Department procedures?

[ ] Yes [ ] No [ ] Unknown

B. Meteorological Data Used for Air Quality Modeling

1. _____ Year(s) of data from _____/_____/_____ to _____/_____/_____
month day year month day year

2. Surface data obtained from (location)_____

3. Upper air (mixing height) data obtained from (location) _____

4. Stability wind rose (STAR) data obtained from (location) _____

C. Computer Models Used

1. _____ Modified? If yes, attach description.

2. _____ Modified? If yes, attach description.

3. _____ Modified? If yes, attach description.

4. _____ Modified? If yes, attach description.

Attach copies of all final model runs showing input data, receptor locations, and principle output tables.

D. Applicants Maximum Allowable Emission Data

Pollutant	Emission Rate	
TSP	_____	grams/sec
SO^2	_____	grams/sec

E. Emission Data Used in Modeling

Attach list of emission sources. Emission data required is source name, description of point source (on NEDS point number), UTM coordinates, stack data, allowable emissions, and normal operating time.

F. Attach all other information supportive to the PSD review.

G. Discuss the social and economic impact of the selected technology versus other applicable technologies (i.e, jobs, payroll, production, taxes, energy, etc.). Include assessment of the environmental impact of the sources.

H. Attach scientific, engineering, and technical material, reports, publications, journals, and other competent relevant information describing the theory and application of the requested best available control technology.

ATTACHMENT A

LIME SILO VENT FILTER
AIR PERMIT CALCULATIONS

A. Calculate lb/hr particulate emission using 0.01 grain/ACF and assuming two trucks maximum unloading pneumatically at 750 ACF/min each (1500 ACFM total).

1500 ACF/min X 0.01 gr/acf / 7000 gr/lb X 60 min/hr = 0.13 lb/hr

B. Calculate tons/year (t/yr) particulate emissions Using 1,493 lb/hr normal lime usage (from WAPC mass balances) for three boilers.

1493 lb/hr X 24 hr/day X 7 days/week / 2000 lb/ton = 125 tons/week lime usage

Using 25 ton capacity trucks

125 tons/week / 25 tons/truck = 5 trucks/week

Using 750 ACF/min per truck and 2.5 hours to unload each truck

750 ACF/min X 0.01 gr/acf / 7000 gr/lb X 150 min/truck = 0.16 lb/truck

0.16 lb/truck X 5 trucks/week X 52 weeks/yr / 2000 lb/ton = 0.021 tons/yr

C. Calculate lb/hr potential (uncontrolled) emissions using 2.0 grain/ACF and assuming two trucks maximum unloading pneumatically at 750 ACF/min each (1500 ACFM total).

1500 ACF/min X 2.0 gr/acf / 7000 gr/lb X 60 min/hr = 25.7 lb/hr

D. Calculate tons/year (t/yr) uncontrolled particulate emissions using 750 ACF/min per truck and 2.5 hours to unload each truck

750 ACF/min X 2.0 gr/acf / 7000 gr/lb X 150 min/truck = 32.1 lb/truck

32.1 lb/truck X 5 trucks/week X 52 weeks/yr / 2000 lb/ton = 4.2 tons/yr

E. Calculate exit velocity for 12" X 32" downward discharge

12" X 32" / 144sq in. per sq. ft= 2.67 ft2
1500 ft3/min / 2.67 ft2 / 60 sec/min = 9.4 ft/sec

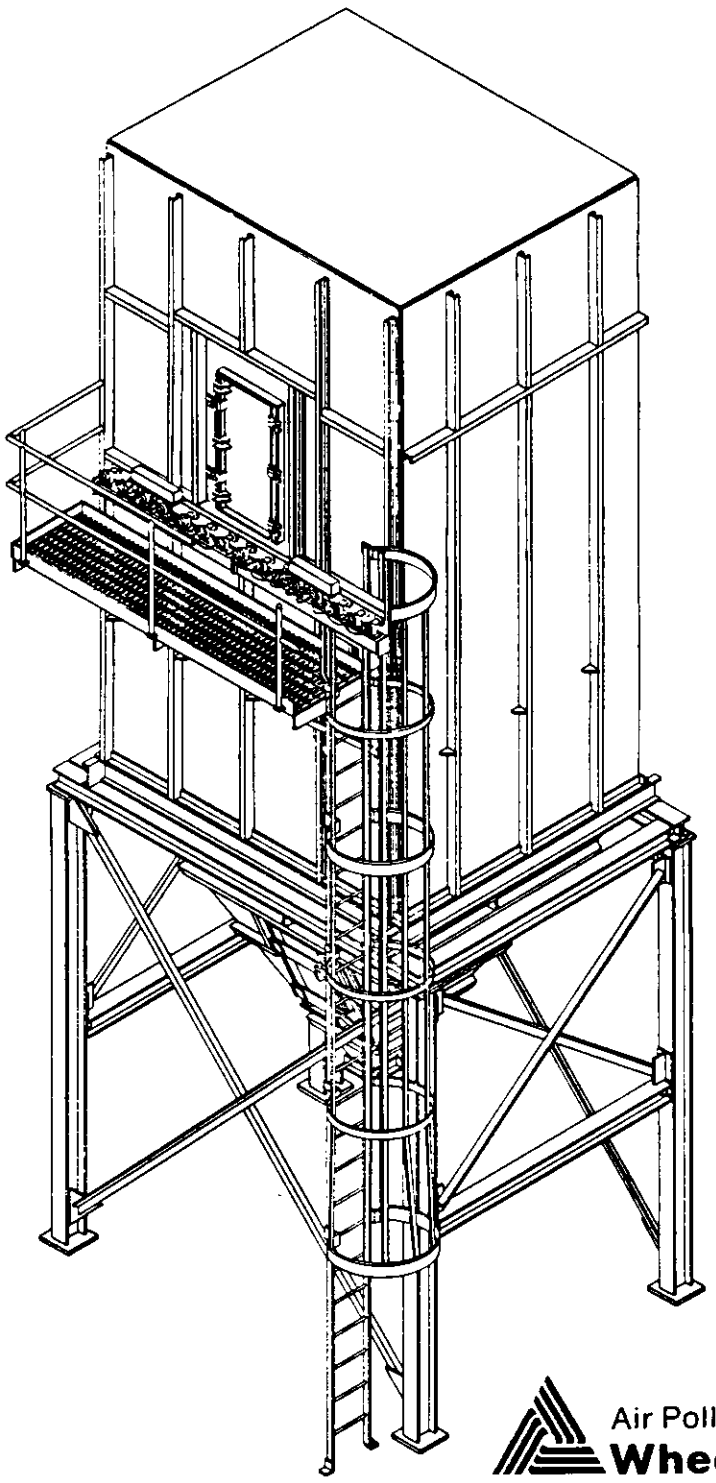
By:
Checked:

ATTACHMENT B

1-22-82

JET III™

THE NEW GENERATION OF DUST COLLECTORS



Air Pollution Control Division
Wheelabrator-Frye Inc.

JET III

The new generation of dust collectors

Someday, all dust collectors may offer the benefits of JET III:

- High collection efficiencies
- Low first cost
- Low maintenance cost
- Low operating cost

Why wait for someday?

JET III is a wholly-new design in pulse-jet dust collectors, offering the high collection efficiencies required by increasingly stringent environmental regulations, plus true economy for the plant owner. Economy is achieved by a new, state-of-the-art system designed to reduce maintenance, labor, parts and energy costs.

Available in a full range of standard cloth areas, JET III also offers flexible sizing and efficient, space-saving installation. Variation of the tube sheet/bag length can be tailored to a particular application and dust condition. This flexibility enables a relatively small-sized housing to be employed on large-volume jobs, lowering capital costs. Smaller modules (1,140 to 5,570 ft^2 of cloth area) are square in plan, and large-volume modules (4,910 to 12,800 ft^2 of cloth area) are rectangular. Both designs feature specially-designed inlet connections for efficient gas flow and long filter bag life.

Access to the unit is provided by an integral, full-height, weather-proof, walk-in, clean air plenum. Where heat or other factors present special problems, or where bags in excess of 144 inches long are used, manually operated, hinged roof doors are available.

JET III housings are constructed of 10-gauge hot rolled sheet steel stiffened for 20" WG. All JET III units are completely fabricated before shipment for easy, economical field erection. Square modules are shipped as assembled, one-piece units, complete with flanged inlet and outlet connections. Due to restrictions in certain geographic areas, the air header and valve assemblies may be shipped as a sub-assembly for field installations. The large-volume modules are shipped in three, pre-matched sections for easy job-site completion.

3 important ways better

While sizing, access and housing construction of a dust collector are important, the critical features are the internals. Inside, JET III shows its superiority in these exclusive areas:

1. Tube sheet and bag attachment
2. Venturi and cage
3. Pulse cleaning system

The following pages describe these exclusive features of JET III that yield real benefits in operation and economy for you.

JET III — 3 important ways better

#1 — Tube Sheet & Bag Attachment

- Die-formed cups for added strength
- Positive seal against dust leakage
- Fast bag attachment..without tools
- Simple. one-step bagging
- Improves clean-side work area

Tube Sheet:

JET III uses the Wheelabrator-Frye drawn-cup tube sheet. previously available only in higher-priced collectors. The bag cups are drawn, eliminating welds which could fail or leak. The tube sheet is seal-welded into the housing to effect a positive seal against dust penetration. Also. the tube sheet's flat. smooth upper surface simplifies maintenance and housekeeping.

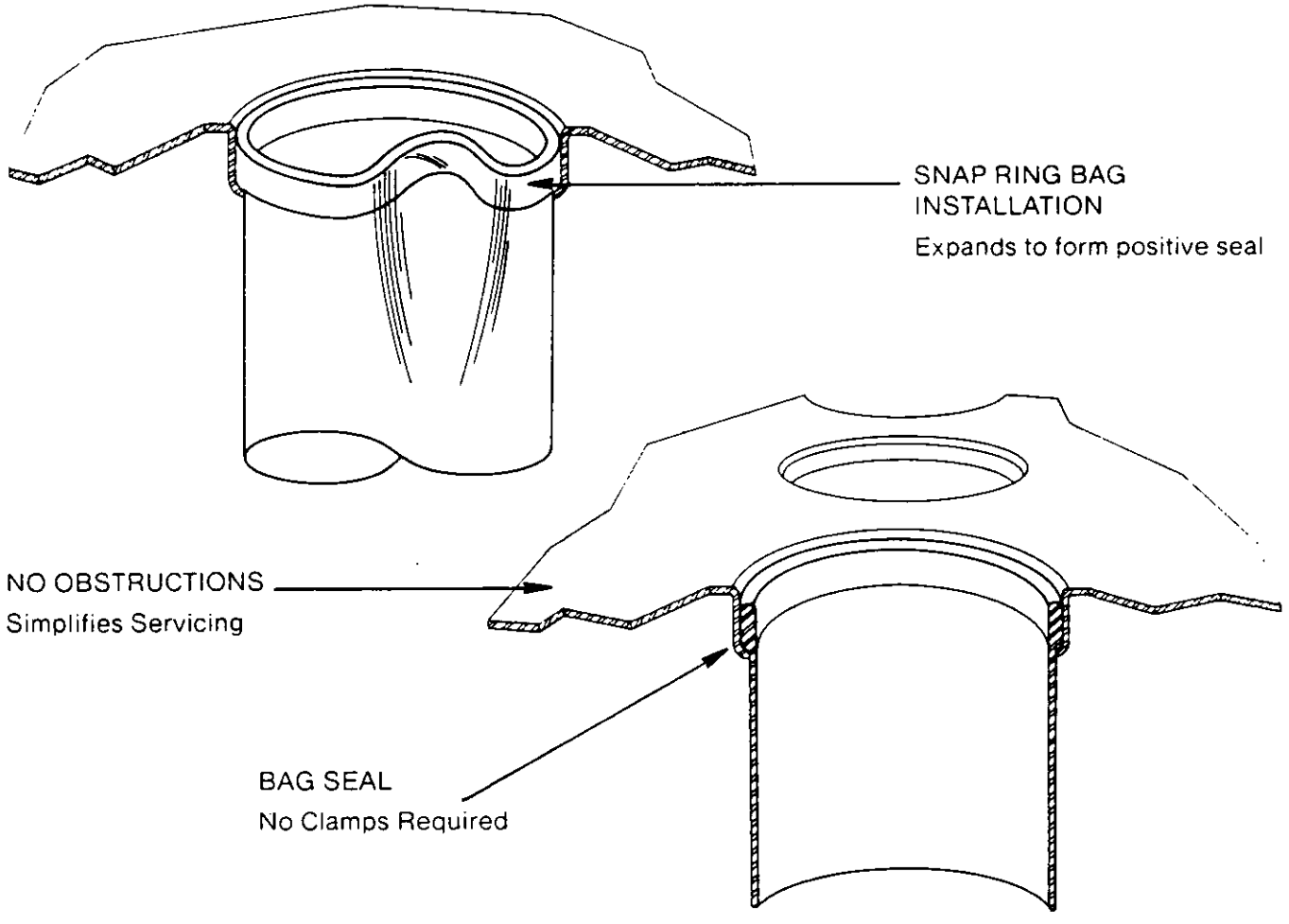
Bag Attachment:

JET III tube sheet features patented Wheelabrator-Frye "snap-ring" bag sealing.

Unlike other designs where bag installation often is a two-man. two-step operation external to the filter. JET III offers a fast. one-man. one-step process. Our tube sheet. acting as a natural bagging fixture. allows cage insertion directly into the tube sheet and bags.

This simple. one-step attachment creates the only seal necessary. eliminating the need for secondary seals such as "O" rings or gaskets. In fact. it would be difficult to install a bag which did not seal properly. On major change-outs. bags can be dropped to the dirty side hopper below. to maintain a true. clean-side work environment.

JET III filter bags are supplied by Wheelabrator-Frye's own W.W. Criswell Division. A complete range of high-quality bags is available in all popular synthetic fibers. including high-temperature fabrics.



JET III—3 important ways better

#2—Venturi and Cage

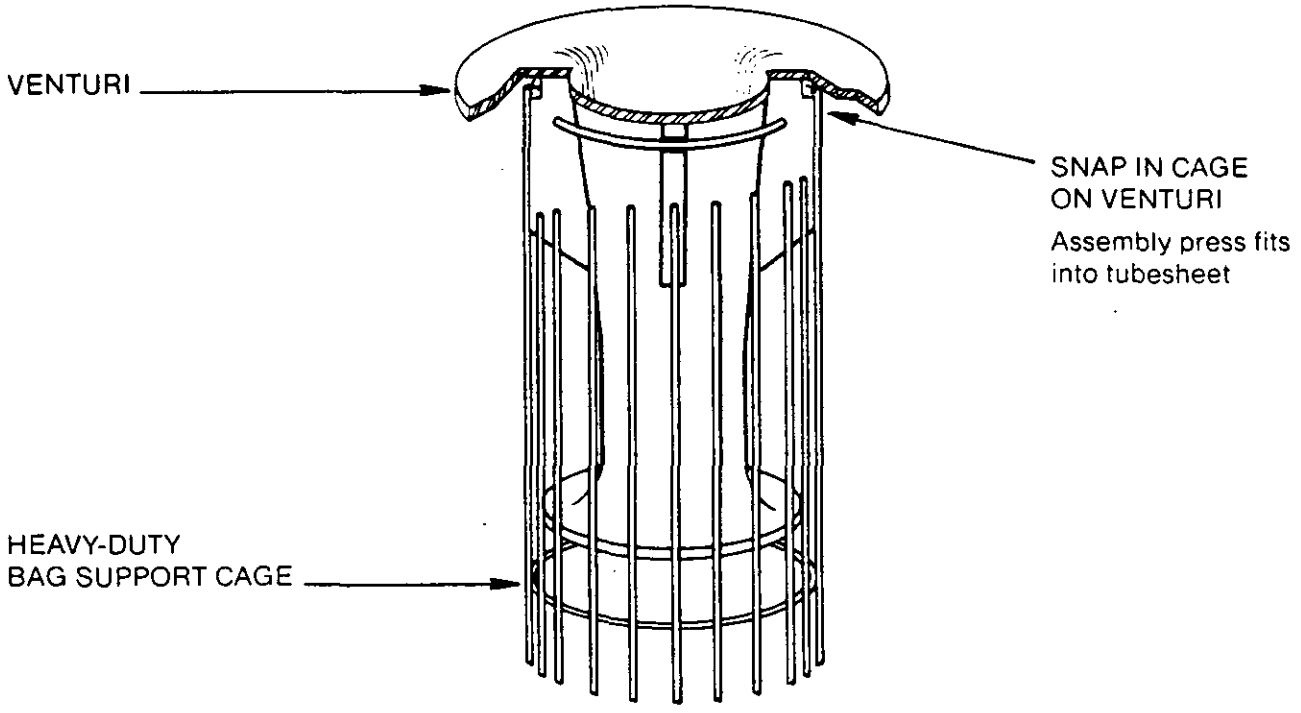
- Designed to save compressed air costs
- Venturi self-aligns for easy installation and efficient pulse cleaning
- Simple interlock for rapid assembly
- Quality bag support cages

The high-gain throat of JET III's newly-designed venturi is capable of cleaning more surface area of filter media with less compressed air. This provides effective cleaning of JET III's 6" diameter bags up to 14' long while the collector is on stream. JET III's venturi may be supplied in aluminum or cast iron. The venturi is self-aligning in the bag support cage and tube sheet for easy installation and maximum cleaning efficiency. No fittings, clamps, gaskets or attachments are required to secure the assembly.

JET III features the industry's simplest yet most effective venturi and cage assembly. Assembly requires only a single snap interlock of the venturi within the cage. The weight of the cage is then supported by the venturi flange.

The standard bag support cage is made of heavy-gauge wire to provide maximum support for long filter bag life. This rugged construction maintains alignment and critical dimensional relationship between bag and cage.

Cages are specifically designed to withstand rough handling during installation and subsequent bag change-outs. Carbon steel is standard. Stainless steel cages and corrosion-resistant coatings are available for special applications.



JET III—3 important ways better

#3—Pulse Cleaning System

- Simple design uses few parts
- Easy to maintain
- Saves energy costs

JET III features a uniquely designed pulse-jet cleaning system. Resulting from extensive research, JET III's pulse cleaning hardware is designed to clean with minimum air consumption and maximum energy savings. More filter cloth area is cleaned per horsepower than in previous designs. Field tested on critical industry applications, the JET III cleaning system can also contribute to prolonging filter bag life. JET III's header, air valves and manifold combine to offer a highly effective cleaning system.

1. JET III Header

The compressed air header is square in section for space saving, positive alignment and convenient bolt-on of air valves. This eliminates leakage common to other designs.

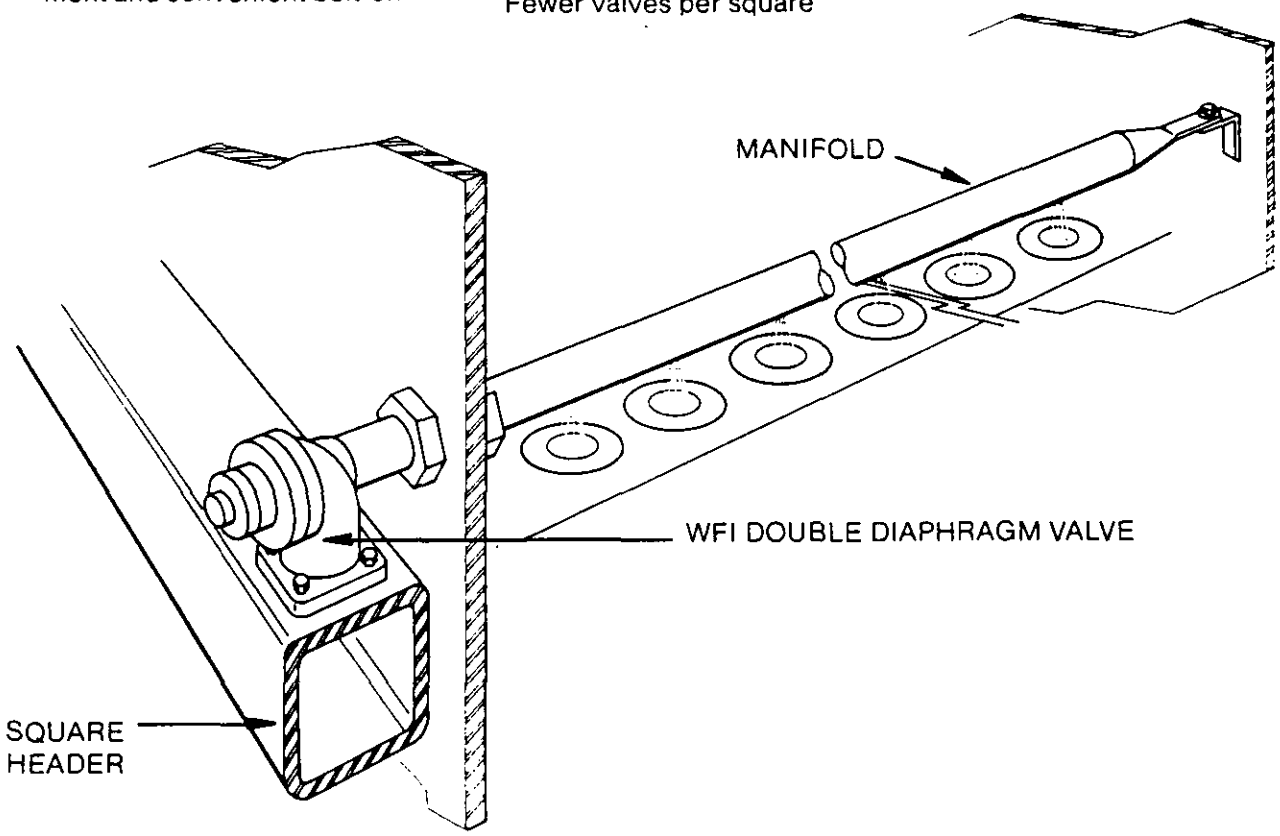
The header assemblies are sectioned to permit local isolation for maintenance without shutting down the total system. These sectioned headers provide rapid depletion of the header pressure. The system requires a maximum line pressure of 90 PSI for energy conservation.

2. JET III Double-Diaphragm Air Valve

Special Wheelabrator-Frye double-diaphragm valves are fitted to square headers. This air dump valve, matched to the new venturi, provides the air for cleaning up to 15 bags per row. Fewer valves per square foot of cloth mean less maintenance and fewer parts in inventory. The valve also allows the convenience of remote pilot control (for low-cost electrical installation) with no loss of efficiency across the air valve. The air valve is simple to replace should this ever become necessary.

3. JET III Manifold

The 1½"-diameter manifold pipe is jig-drilled for positive alignment of the blow holes with the venturi centers to assure maximum efficiency. Fit of the manifold within the plenum is positive to maintain this alignment. For bag inspection and/or removal, the manifold can be removed with a minimum of effort and no special tools.



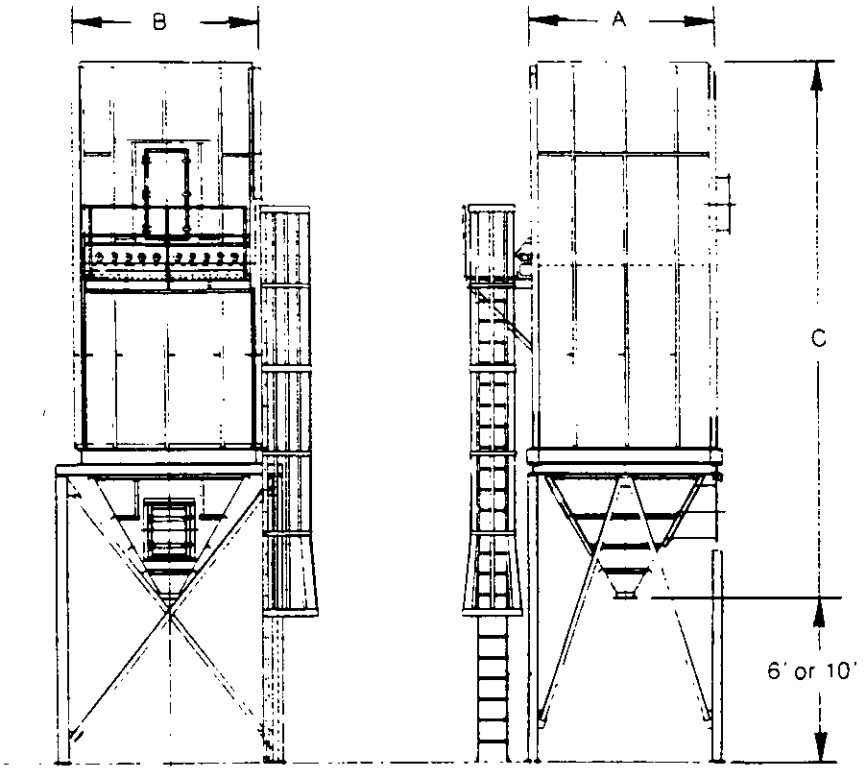
JET III

cloth areas ranging from 1,140 to 5610 square feet.

Available with full height walk-in plenums (illustrated) type 'TA' or with multiple hinged roof doors. Type 'RA'.

NOTE:

'C' dimensions for all units with bag lengths up to and including 144" include walk-in plenums. 'C' dimensions for units with bag lengths of 156" or 168" include roof doors. Dimensions subject to change without notice.



Square Modules (TA & RA) Filter Areas Sq. Ft.

Model	No. of Bags	Filter Area/Module Bag Length in Inches					
		108"	120"	132"	144"	156"	168"
99	81	1140	1270	1390	1520	—	—
1111	121	1700	1900	2080	2270	—	—
1313	169	2380	2650	2910	3170	3450	3720
1515	225	3170	3530	3880	4230	4590	4950
1715	255	3590	4000	4380	4790	5200	5610

Square Modules 'TA' Overall Dimensions

Model	'A'	'B'	'C' — Dimension Based on Bag Length In Inches					
			108	120	132	144	156	168
99	6'-5"	6'-5"	24'-0"	26'-0"	28'-0"	30'-0"	—	—
1111	7'-9"	7'-9"	25'-2"	27'-2"	29'-2"	31'-2"	—	—
1313	9'-1"	9'-1"	26'-4"	28'-4"	30'-4"	32'-4"	27'-6"	28'-6"
1515	10'-5"	10'-5"	27'-5"	29'-5"	31'-5"	33'-5"	28'-7"	29'-9"
1715	11'-8'-	10'-5"	28'-6"	30'-6"	32'-6"	34'-6"	29'-8"	30'-8"

Square Modules 'RA' Overall Dimensions

Model	'A'	'B'	'C' — Dimension Based on Bag Length In Inches					
			108	120	132	144	156	168
99	6'-5"	6'-5"	21'-2"	22'-2"	23'-2"	24'-2"	—	—
1111	7'-9"	7'-9"	22'-4"	23'-4"	24'-4"	25'-4"	—	—
1313	9'-1"	9'-1"	23'-6"	24'-6"	25'-6"	26'-6"	27'-6"	28'-6"
1515	10'-5"	10'-5"	24'-7"	25'-7"	26'-7"	27'-7"	28'-7"	29'-7"
1715	11'-8"	10'-5"	25'-8"	26'-8"	27'-8"	28'-8"	29'-8"	30'-8"

NOTE! Dimensions not to be used for construction purposes.

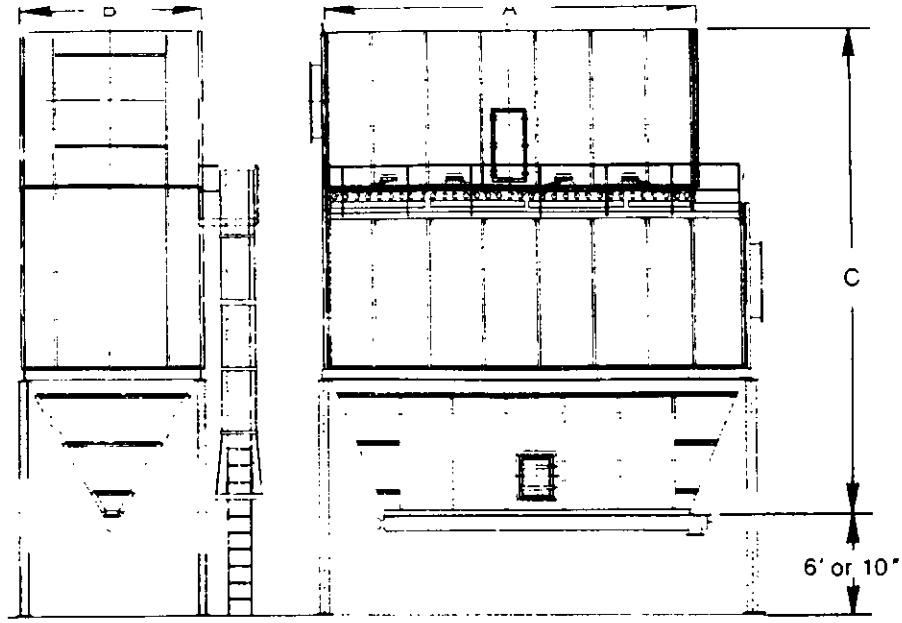
Large-Volume JET III

cloth areas ranging from 4940 to 12870 square feet.

Available with full height walk-in Plenums (illustrated Type "TA" or with multiple hinged roof doors type "RA"

Note:

"C" dimensions for all units with bag lengths up to and including 144" include walk-in plenums "C" dimensions for units with bag lengths of 156" or 168" include roof doors. Dimensions subject to change without notice.



Rectangular Modules — 'TA & RA' — Filter Areas in Sq. Ft.

Model	No. of Bags	Filter Area/Module Bag Lengths In Inches		
		120	144	168
2115	315	4940	5920	6930
2415	360	5650	6770	7920
2715	405	6360	7610	8910
3015	450	7060	8460	9900
3315	495	7770	9320	10890
3615	540	847	10150	11880
3915	585	9180	11000	12870

Rectangular Modules 'TA' Overall Dimensions

Module	'A'	'B'	'C' Dimension Based on Bag Length In Inches		
			120	144	168
2115	17'-4"	10'-5"	29'-1"	33'-1"	37'-1"
2415	19'-4"	10'-5"	29'-1"	33'-1"	37'-1"
2715	22'-4"	10'-5"	29'-1"	33'-1"	37'-1"
3015	24'-4"	10'-5"	29'-1"	33'-1"	37'-1"
3315	27'-4"	10'-5"	29'-1"	33'-1"	37'-1"
3615	29'-4"	10'-5"	29'-1"	33'-1"	37'-1"
3915	32'-4"	10'-5"	29'-1"	33'-1"	37'-1"

Rectangular Modules 'RA' Overall Dimensions

Model	A	B	'C' Dimension Based on Bag Length In Inches		
			120	144	168
2115	17'-4"	10'-5"	25'-5"	27'-5"	29'-5"
2415	19'-4"	10'-5"	25'-5"	27'-5"	29'-5"
2715	22'-4"	10'-5"	25'-5"	27'-5"	29'-5"
3015	24'-4"	10'-5"	25'-5"	27'-5"	29'-5"
3315	27'-4"	10'-5"	25'-5"	27'-5"	29'-5"
3615	29'-4"	10'-5"	25'-5"	27'-5"	29'-5"
3915	32'-4"	10'-5"	25'-5"	27'-5"	29'-5"

NOTE! Dimensions not to be used for construction purposes.

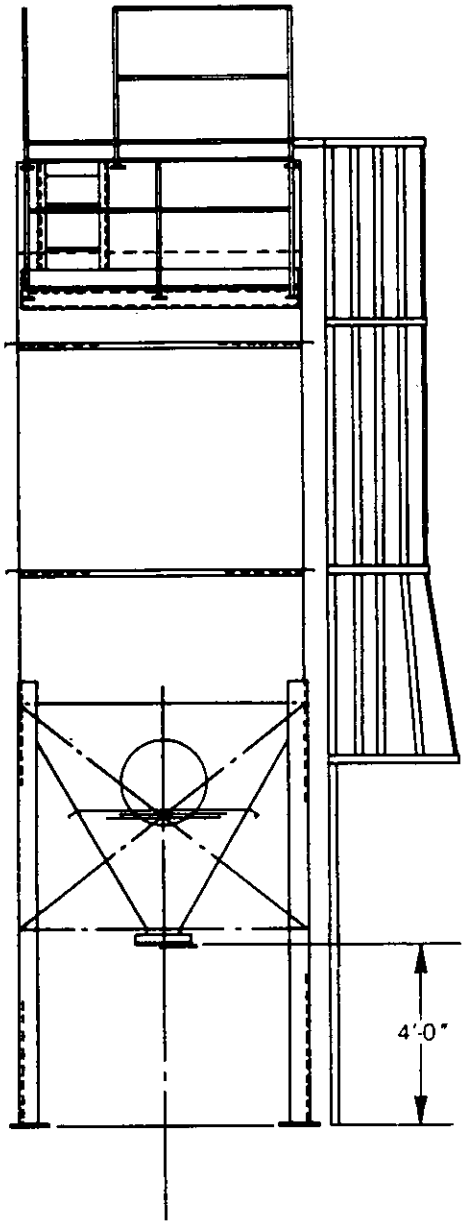
Type 1000RA (Roof Access)

The Type 1000 JET III Pulse-Jet Fabric Filter by Wheelabrator-Frye is available in six different sizes with filter areas between 226 and 1142 square feet. Type 1000 modules are sized for the smaller system volumes.

JET III is a wholly new design in fabric filters, offering high collection efficiency with true economy in terms of initial cost, operation, and maintenance.

Type 1000 collectors are square for convenience in connecting to the system ductwork. All JET III Pulse-Jet Fabric Filters provide clean side access to the filter section via hinged roof doors.

The JET III design employs a unique tubesheet, filter bag, and support cage assembly which combine to save time when servicing the filter section and to ensure a positive seal against dust penetration in operation. Rebagging is a simple, one-man operation performed outside the dust environment and without the use of special tools.



Front elevation.

Equipment Sizes

Model	No. Bags	Filter Area (sq. ft.)	Sq. Housing Size	Hopper Clearance	Overall Height* Incl. Handrailing
1016/108	16	226	36"	4'-0"	21'-0"
1025/108	25	353	44"	4'-0"	21'-6"
1036/108	36	507	52"	4'-0"	22'-2"
1049/108	49	691	60"	4'-0"	22'-10"
1064/108	64	902	68"	4'-0"	23'-5"
1081/108	81	1142	76"	4'-0"	24'-2"

*Includes support legs.

Features

Tubesheet—Wheelabrator-Frye's own integrally drawn bag colors for positive bag sealing.

Snap Ring Bag—With tubesheet, provides simple, one-step bagging operation. No additional sealing required. No tools necessary.

Venturi and Bag Support Cage—High gain throat design venturi improves cleaning efficiency and saves energy. Venturi and cage interlock for single piece assembly into the filter bag, no prior assembly of these components outside the filter housing is necessary. Venturi and cage are self-aligning within the tubesheet and bag. No clamps or hold down devices are required.

JET III Pulse Cleaning System—The square, space-saving compressed air header employs Wheelabrator-Frye's special bolt on air valves for leakproof alignment with the air distribution manifolds. JET III utilizes remote pilot valves for low-cost field wiring.

JET III Timer—The Type 1000 employs a solid state electronic timer in Nema IV enclosure with 110 volt AC solenoids.

Auxiliaries—All modules are supplied with standard access ladders, walkways, and handrail to meet OSHA requirements. A complete range of hopper valves and material handling systems are available.

Standard Construction—JET III Type 1000 modules are all welded and fabricated of 12 gauge carbon steel stiffened for 15" w.g.

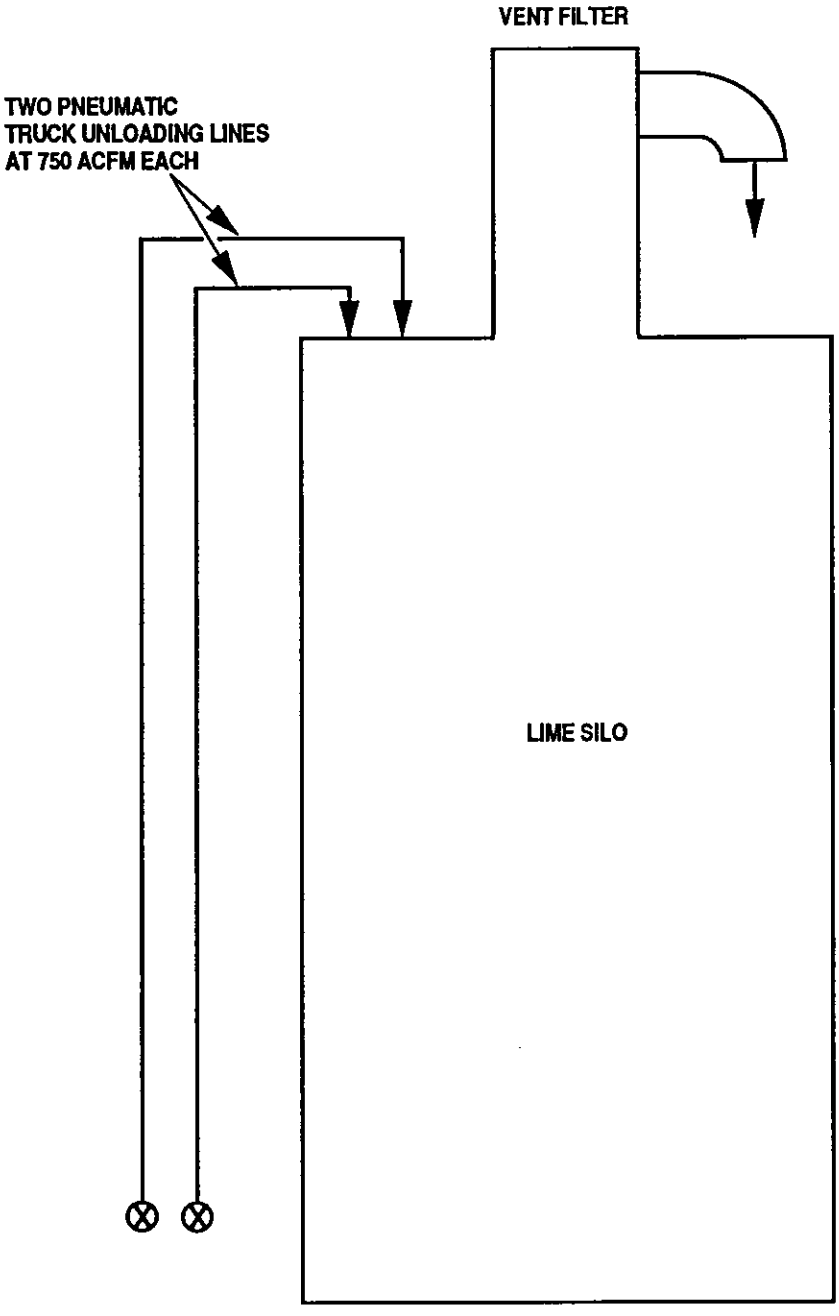
Shipment—JET III Type 1000 modules are shipped as one-piece units, including support legs, for simple, low-cost installation.

Air Pollution Control Division
Wheelabrator-Frye Inc.

600 Grant Street
Pittsburgh, PA 15219
(412) 288-7300

MEMBER
IGCI

ATTACHMENT C



TO ATMOSPHERE
1,500 ACFM MAX
0.13 LB/HR PARTICULATE

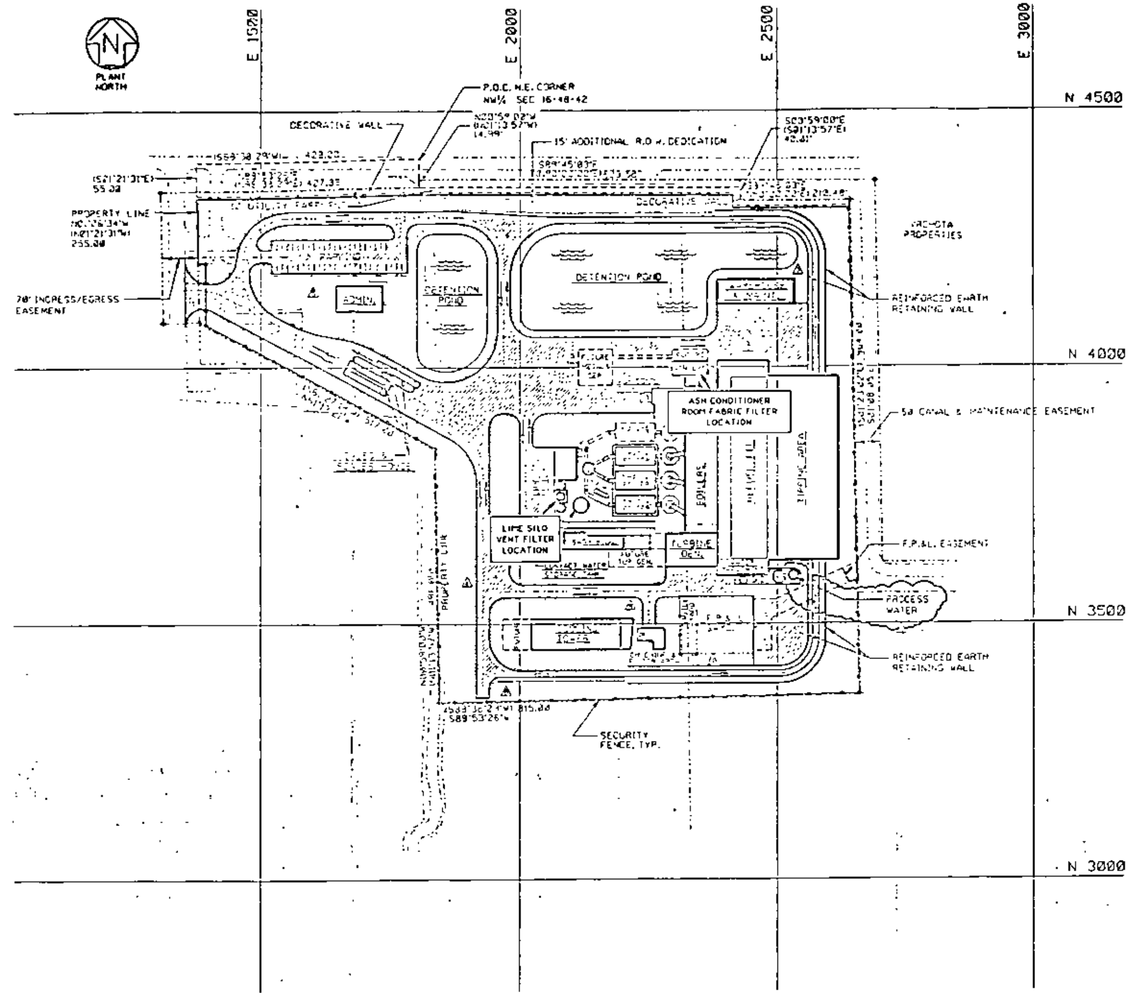
NOTE: LIME DUST COLLECTED WILL BE DISCHARGED INTO LIME SILO.

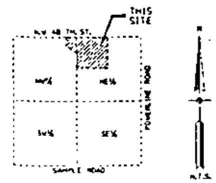
PROCESS RATE WILL BE
20,000 LB/HR PER FILL LINE
WHEN TRUCKS ARE UNLOADING.

ATTACHMENT C LIME SILO DUST CONTROL FLOW DIAGRAM

KBN

ATTACHMENT D





LOCATION MAP

PLOT PLAN LEGEND

(dashed box)	EXISTING FACILITIES
(solid box)	NEW FACILITIES
(hatched box)	NEW ROADS
(dashed box)	FUTURE FACILITIES

NOTES:

1. FOR GENERAL NOTES AND ABBREVIATIONS SEE DRAWING 01-32-201.
2. PLAT BEARINGS SHOWN IN PARENTHESES ( ) ON THE PROPERTY BOUNDARY ARE BASED ON WASTE MANAGEMENT INC. PLAT NO. 2-A, SHEET 1 OF 2 AND SHEET 2 OF 2, PLAT BOOK 139 - PAGE 14, BROWARD COUNTY RECORDS; PREPARED BY KEITH & SCHNARS, P.A., SURVEYOR'S CERTIFICATE DATED 2/4/89. OTHER BEARINGS AND ALL COORDINATES SHOWN ARE BASED ON PLANT NORTH WHICH IS ROTATED 20°14'57" CLOCKWISE FROM PLAT BEARINGS.

6	(signature)	3-16-90
5	BILL STEGALL	12-27-89
4	BILL STEGALL	10-25-89
3	W.A. RUTHERFORD	09-18-89
2	W.A. RUTHERFORD	08-23-89

RELEASED FOR CONSTRUCTION
BY R.E. McCALL DATE 05-04-89

WHEELABRATOR ENVIRONMENTAL SYSTEMS INC.
Danvers, Massachusetts

SCALE: 1"=100'

PLOT PLAN

NORTH BROWARD RESOURCE RECOVERY FACILITY

RUST International Corporation Birmingham, Alabama
Contract 21-3457

DRAWING NUMBER 01-32-200 REV. NO. 6