



RECEIVED

February 23, 1998

FEB 24 1998

BUREAU OF
AIR REGULATION

Mr. A. A. Linero, P.E.
Administrator, New Source Review Section
Florida Department of Environmental Protection
Bureau of Air Regulation
Twin Towers Office Building
2600 Blair Stone Rd.
Tallahassee, FL 32399-2400

Subject: Electrostatic Precipitators

Dear Mr. Linero:

In my last week's mailing of the precipitator information provided pursuant to our PSD permit, I omitted the inclusion of the proposal by Environmental Elements which underlies the purchase order you received.

This document contains greater details of the design and of the guarantees for this equipment (see section 4).

Sincerely,

A handwritten signature in cursive script that reads "Fred W. Cohrs".

Fred W. Cohrs
Vice President

FWC/bs
Enclosure



February 17, 1998

Mr. A. A. Linero, P.E.
Administrator, New Source Review Section
Twin Towers Office Building
2600 Blair Stone Rd.
Tallahassee, FL 32399-2400

RE: Final Permit No. AC01-267311, PSD-FL-288
Portland Cement Plant

Dear Mr. Linero:

Pursuant to condition No. 26 of subject permit we are herewith forwarding one (1) set of copies of the final design drawings, the pertinent specifications and the purchase order containing the manufacture's guarantees.

Further, as required by condition No. 26 please be advised that the precipitators will be supplied by Environmental Elements, and erected under its supervision. The erection contractor is The Hardaway Company / Stone & Webster Engineering Corporation J.V.. Erection will commence in August 1998 and be completed in December 1998.

Should you desire not to keep the drawings in your file please let me know so I can retrieve them.

If you require additional information, I'd be glad to provide it to you.

Sincerely,

A handwritten signature in black ink that reads "Fred W. Cohrs". The signature is written in a cursive, slightly slanted style.

Fred W. Cohrs
Vice President

Enclosure
FWC/bs

**Florida Rock Industries, Inc.
Cement Group**

Thompson S. Baker Plant

4000 N.W. C.R. 235
Newberry, FL 32669

Phone: (352) 472-4722 Fax: (352) 472-2449



IMPORTANT:		PAGE 1	OF 7
THESE NUMBERS MUST APPEAR ON ALL PAGES AND PACKAGE			
CONTRACT NO.	CODE NAME	P.O. NUMBER	REV.
7402-6823	ROCKFA	160100501	

ISSUED TO:
Environmental Elements Corporation

700 Koppers Street
Baltimore, MD 21227
Attn: David Losaw

PURCHASE ORDER
PURCHASE ORDER
CHANGE NOTICE

THIS PURCHASE ORDER MUST BE ACKNOWLEDGED PROMPTLY.
PLEASE SIGN AND RETURN ATTACHED COPY.

SHIP TO:
TO BE ADVISED

SHIP VIA Motor Frt	P.R. NUMBER 3 & 4	FREIGHT CHARGE Prepay & Add	FOB, FAS, CIF Jobsite	TERMS	SHIP DATE 4/98	TO BE INSPECTED	ISSUE DATE 9/4/97
-----------------------	----------------------	---	--------------------------	-------	-------------------	-----------------	----------------------

ITEM	POS. NUMBER	QTY	DESCRIPTION	PRICE PER	PRICE ()
			Reference Environmental Elements Corp. Proposal No. ACS-95-04-15290-R2110E-FC, dated August 11, 1997.		
1	E 19 01	1	Electrostatic Precipitator Capacity (ACFM): 200,000 194,000 Operation: Direct Compound Temp. (Deg. F): 356/300 220/205 Inlet Dust Load (GR/ACF) 18 25 Outlet Dust Load (GR/ACF) 0.007 0.007 Pressure Loss (IN. WG.) 1.0 Including the following items:		
	E 19 02	57	EI. Impulse Rappers 48 Collecting Surfaces 8 Discharge Electrodes 1 Perforated Distribution Plate		
	E 19 0301-04	4	Ground High Voltage Switch (Interlocked Grounding)		

Acct. Code: 404100

NOTICE TO VENDORS

DO NOT SUBSTITUTE OR CHANGE THIS ORDER WITHOUT PROPER AUTHORIZATION.
ADVISE IMMEDIATELY ANY ANTICIPATED DELAYS IN SHIPMENT.
VOICES TO BE RENDERED IN ORIGINAL AND THREE COPIES.
QUANTITIES, WEIGHTS, PRICES, EXTENSIONS, AND ACCOMPANIED BY BILL OF LADING.

PURCHASING MASTER

Edward R. Graham

SUED TO:
Environmental Elements Corporation

700 Koppers Street
Baltimore, MD 21227
Attn: David Losaw

**Florida Rock Industries, Inc.
Cement Group**



IMPORTANT: PAGE 2 OF 7
THESE NUMBERS MUST APPEAR ON ALL PAGES AND PACKAGE

CONTRACT NO. 7402-6823	CODE NAME ROCKFA	P.O. NUMBER 160100501	REV.
---------------------------	---------------------	--------------------------	------

EM	POS. NUMBER	QTY	DESCRIPTION	PRICE PER	PRICE ()
	E 19 0401-02	2	T-R Control Cabinets NEMA 4 Construction 2 TR Controllers with: 2 - 4-20 mA isolated voltage outputs and 2 - 4-20 mA isolated current outputs		
	E 19 05	1	Insulation (by contractor)		
	E 19 06	1	Penthouse Blower		
	E 19 07	1	Penthouse Blower Motor (1.5 HP)		
	E 19 0801-02	2	Motion Sensors Millpulse 600 2/mounting hardware		
	E 19 09	1	Rotary Air Lock (18 RPM)		
	E 19 10	1	Rotary Air Lock Motor (2 HP)		
	E 19 11	4	High Dust Alarms		
	E 19 12	4	TR Control Cabinet Trip Alarm		
	E 19 13	1	Penthouse Blower Failure Alarm		
	E 19 14	1	Rapper Failure Alarm		
	E 19 15	1	Hopper Low Temp. Alarm (Type K Thermocouple)		
	E 19 17	1	High Voltage System		
	E 19 18	1	Comp't Heater for Insulator		
	E 19 19	1	Screw Conveyor, 18" x 36', 20 RPM		
	E 19 20	1	Screw Conveyor Motor (25 HP)		

NOTICE TO VENDORS

DO NOT SUBSTITUTE OR CHANGE THIS ORDER WITHOUT PROPER AUTHORIZATION.
ADVISE IMMEDIATELY ANY ANTICIPATED DELAYS IN SHIPMENT.
COPIES TO BE RENDERED IN ORIGINAL AND THREE COPIES.
QUANTITIES, WEIGHTS, PRICES, EXTENSIONS, AND ACCOMPANIED BY BILL OF LADING.

PURCHASING MASTER

Edward R. Graham

ISSUED TO:
Environmental Elements Corporation

700 Koppers Street
Baltimore, MD 21227
Attn: David Losaw

**Florida Rock Industries, Inc.
Cement Group**



IMPORTANT: PAGE 3 OF 7
THESE NUMBERS MUST APPEAR ON ALL PAGES AND PACKAGE

CONTRACT NO. 74 12-6823	CODE NAME ROCKFA	P.O. NUMBER 160100501	REV.
----------------------------	---------------------	--------------------------	------

EM	POS. NUMBER	QTY	DESCRIPTION	PRICE PER	PRICE ()
	E 19 30	1	Transformer Rectifiers Type: Silicon 70 KV DC Avg., 83 KV AC RMS, 118 KV DC Peak Full Wave Output		
	E 19 31	1	Transformer Rectifiers Type: Silicon 70 KV DC Avg., 83 KV AC RMS, 118 KV DC Peak Full Wave Output		
	E 19 32	1	Transformer Rectifiers Type: Silicon 70 KV DC Avg., 83 KV AC RMS, 118 KV DC Peak Full Wave Output		
	E 19 33	1	Transformer Rectifiers Type: Silicon 70 KV DC Avg., 83 KV AC RMS, 118 KV DC Peak Full Wave Output		
	E 19 40	11	Access Doors w/Key Interlock		
2	K 13 01	1	Electrostatic Precipitator Capacity: (ACFM): 160,000 Gas Temp. (Deg. F): 480 Inlet Dust Load (GR/ACF): 13 Outlet Dust Load (GR/ACF): 0.01 Moisture Content: 2% or less Pressure Loss (IN. W.G.): 1.0 Design Pressure (IN. W.G.): 25.0 Including the following items:		

NOTICE TO VENDORS

DO NOT SUBSTITUTE OR CHANGE THIS ORDER WITHOUT PROPER AUTHORIZATION.
ADVISE IMMEDIATELY ANY ANTICIPATED DELAYS IN SHIPMENT.
COPIES TO BE RENDERED IN ORIGINAL AND THREE COPIES.
QUANTITIES, WEIGHTS, PRICES, EXTENSIONS, AND ACCOMPANIED BY BILL OF LADING.

PURCHASING MASTER

Edward R. Graham

SUED TO:
Environmental Elements Corporation

00 Koppers Street
Baltimore, MD 21227
Attn: David Losaw

**Florida Rock Industries, Inc.
Cement Group**



IMPORTANT: PAGE 4 OF 7
THESE NUMBERS MUST APPEAR ON ALL PAGES AND PACKAGE

CONTRACT NO. 7402-6823	CODE NAME ROCKFA	P.O. NUMBER 160100501	REV.
---------------------------	---------------------	--------------------------	------

ITEM	POS. NUMBER	QTY	DESCRIPTION	PRICE PER	PRICE ()
	K 13 02	57	El. Impulse Rappers 48 Collecting Surfaces 8 Discharge Electrodes 1 Perforated Distribution Plate		
	K 13 0301-04	4	High Voltage Switch		
	K 13 0401-02	2	T-R Control Cabinets NEMA 4 Construction 2 TR Controllers with : 2 - 4-20 mA isolated voltage outputs and 2 - 4-20 mA isolated current outputs		
	K 13 05	1	Insulation (by contractor)		
	K 13 06	1	Penthouse Blower		
	K 13 07	1	Penthouse Blower Motor (1.5 HP)		
	K 13 0801-02	2	Motion Sensor Millpulse 600 w/Mounting Hardware		
	K 13 09	1	Double Tipping Valve w/Motor (460V, 3 ph)		
	K 13 11	4	High Dust Alarms		
	K 13 12	4	TR Control Cabinet Trip Alarm		
	K 13 13	1	Penthouse Blower Failure Alarm		
	K 13 14	1	Rapper Failure Alarm		
	K 13 15	1	Hopper Low Temp. Alarm (Type K Thermocouple)		
	K 13 17	1	High Voltage System		
	K 13 18	1	Comp't. Heater for Insulator		
	K 13 19	1	Screw Conveyor, 14" x 36', 20 RPM		

ATTENTION TO VENDORS

PURCHASING MASTER

DO NOT SUBSTITUTE OR CHANGE THIS ORDER WITHOUT PROPER AUTHORIZATION.
PLEASE ADVISE IMMEDIATELY ANY ANTICIPATED DELAYS IN SHIPMENT.
ORDERS MUST BE RENDERED IN ORIGINAL AND THREE COPIES.
WEIGHTS, PRICES, EXTENSIONS, AND ACCOMPANIED BY BILL OF LADING.

Edward R. Graham

ORDERED TO:
Environmental Elements Corporation

700 Koppers Street
Baltimore, MD 21227
Attn: David Losaw

**Florida Rock Industries, Inc.
Cement Group**



IMPORTANT: PAGE 5 OF 7
THESE NUMBERS MUST APPEAR ON ALL PAGES AND PACKAGE

CONTRACT NO. 7402-6823	CODE NAME ROCKFA	P.O. NUMBER 160100501	REV.
---------------------------	---------------------	--------------------------	------

EM	POS. NUMBER	QTY	DESCRIPTION	PRICE PER	PRICE ()
	K 13 20	1	Screw Conveyor Motor (25 HP)		
	K 13 30	2	Transformer Rectifiers		
	K 13 31		Type: Silicon 70 KV DC Avg., 83 KV AC RMS, 118 KV DC Peak Full Wave Output		
	K 13 32	2	Transformer Rectifiers		
	K 13 33		Type: Silicon 70 KV DC Avg., 83 KV AC RMS, 118 KV DC Peak Full Wave Output		
	K 13 40	11	Access Doors w/Key Interlocks		
<p>ATTACHMENTS:</p> <ol style="list-style-type: none"> 1. Requirements for Engineering Data and Design (REDD) Form. 2. General Specifications for Quotations and Purchase Orders. 3. Surface Preparation and Painting. 4. Specification for Electrostatic Precipitator, Specification No. 7402-6823-3. 5. Specification for Electrostatic Precipitator, Specification No. 7402-6823-4. 6. The attached Florida Rock Industries' Terms and Conditions, with clarifications and modifications, shall be an integral part of this purchase order. <p>NOTES:</p> <ol style="list-style-type: none"> 1. DOCUMENTATION - All documents contained herein form an integral part of this Purchase Order. 					

NOTICE TO VENDORS

DO NOT SUBSTITUTE OR CHANGE THIS ORDER WITHOUT PROPER AUTHORIZATION.
ADVISE IMMEDIATELY ANY ANTICIPATED DELAYS IN SHIPMENT.
QUOTATIONS TO BE RENDERED IN ORIGINAL AND THREE COPIES.
DELIVERING WEIGHTS, PRICES, EXTENSIONS, AND ACCOMPANIED BY BILL OF LADING.

PURCHASING MASTER

Edward R. Graham

SUED TO:
Environmental Elements Corporation

700 Koppers Street
Baltimore, MD 21227
Attn: David Losaw

Florida Rock Industries, Inc.
Cement Group



IMPORTANT: PAGE 6 OF 7
THESE NUMBERS MUST APPEAR ON ALL PAGES AND PACKAGE

CONTRACT NO.	CODE NAME	P.O. NUMBER	REV.
7402-6823	ROCKFA	160100501	

EM	POS. NUMBER	QTY	DESCRIPTION	PRICE PER	PRICE ()
			<p>2. TAGGING, MARKING INSTRUCTIONS - Equipment shall be tagged and marked with the corresponding POS Number where shown for each item.</p> <p>Vendor shall supply a Detailed Tagging List and Packing List (detailed instructions and blank forms supplied by Polysius). All documentation shall be submitted by telefax message to the attention of Mr. Jeff Baker at a minimum of two (2) weeks prior to shipping.</p> <p>Vendor shall supply Bill of Lading, FEDEX Tracking Number, UPS Tracking Number, etc., after shipping to the attention of Mr. Jeff Baker.</p> <p>This Purchase Order will not be considered complete and payment of invoices will not be due until all specified documents and information have been received by Polysius Corp.</p> <p>3. DRAWINGS - Vendor shall comply with the instructions and schedule in the "Requirements for Engineering Data and Design (REDD) Form."</p> <p>Drawings shall be per the attached "REDD" document and forwarded to the attention of Mr. Jeff Baker as follows:</p> <p>Polysius Corp. 180 Interstate North, Suite 500 Atlanta, GA 30339 Attn: Mr. Jeff Baker</p> <p>Drawings for approval shall be supplied on/or before 9/19/97.</p> <p>4. Delivery: 4/98 FOB: Jobsite - Freight shall be at cost</p>		

NOTICE TO VENDORS

DO NOT SUBSTITUTE OR CHANGE THIS ORDER WITHOUT PROPER AUTHORIZATION.
ADVISE IMMEDIATELY ANY ANTICIPATED DELAYS IN SHIPMENT.
COPIES TO BE RENDERED IN ORIGINAL AND THREE COPIES.
WEIGHING WEIGHTS, PRICES, EXTENSIONS, AND ACCOMPANIED BY BILL OF LADING.

PURCHASING MASTER

Edward R. Graham

SUED TO:
Environmental Elements Corporation

700 Koppers Street
Baltimore, MD 21227
Attn: David Losaw

**Florida Rock Industries, Inc.
Cement Group**



IMPORTANT: PAGE 7 OF 7
THESE NUMBERS MUST APPEAR ON ALL PAGES AND PACKAGE

CONTRACT NO.	CODE NAME	P.O. NUMBER	REV.
7402-6823	ROCKFA	160100501	

EM	POS. NUMBER	QTY	DESCRIPTION	PRICE PER	PRICE ()
			NOTE: Vendor shall proceed immediately with engineering, drawings and manufacture of equipment. 5. Technical Contact: Mr. Oleg Geskin at (770) 980-5072.		
Total:					1,414,000.00

NOTICE TO VENDORS

DO NOT SUBSTITUTE OR CHANGE THIS ORDER WITHOUT PROPER AUTHORIZATION.
ADVISE IMMEDIATELY ANY ANTICIPATED DELAYS IN SHIPMENT.
COPIES TO BE RENDERED IN ORIGINAL AND THREE COPIES.
DIMINISHING WEIGHTS, PRICES, EXTENSIONS, AND ACCOMPANIED BY BILL OF LADING.

PURCHASING MASTER

Edward R. Graham

**Florida Rock Industries, Inc.
Cement Group**

Thompson S. Baker Plant

4000 N.W. C.R. 235 P.O. Box 459
Newberry, FL 32669

Phone: (352) 472-4722 Fax: (352) 472-2449



IMPORTANT: PAGE 1 OF 1
THESE NUMBERS MUST APPEAR ON ALL PAGES AND PACKAGE

CONTRACT NO. 7402-6823	CODE NAME ROCKFA	P.O. NUMBER 160100501	REV. 1
---------------------------	---------------------	--------------------------	-----------

ISSUED TO:
Environmental Elements Corporation

3700 Koppers Street
Baltimore, MD 21227
Attn: David Losaw

PURCHASE ORDER
PURCHASE ORDER
CHANGE NOTICE

THIS PURCHASE ORDER MUST BE ACKNOWLEDGED
PROMPTLY.
PLEASE SIGN AND RETURN ATTACHED COPY.

SHIP TO:
TO BE ADVISED

SHIP VIA Motor Frt	P.R. NUMBER 3 & 4	FREIGHT CHARGE --	FOB, FAS, CIF Jobsite	TERMS	SHIP DATE 4/98	TO BE INSPECTED	ISSUE DATE 9/15/97
-----------------------	----------------------	----------------------	--------------------------	-------	-------------------	-----------------	-----------------------

ITEM	POS. NUMBER	QTY	DESCRIPTION	PRICE PER	PRICE (US\$)
3		1	This revision issued to add freight charges to P.O. as requested by David Losaw, 9/12/97. Lot Freight charges per Environmental Elements Proposal ACS-95-04-15290-R2110E-FC, dated 8/11/97. ORIGINAL P.O. TOTAL NEW P.O. TOTAL All other items on this purchase order remain unchanged.		\$65,000.00 \$1,414,000.00 \$1,479,000.00

Total: \$1,479,000.00

Acct. Code: 404100

NOTICE TO VENDORS

DO NOT SUBSTITUTE OR CHANGE THIS ORDER WITHOUT PROPER AUTHORIZATION.
ADVISE IMMEDIATELY ANY ANTICIPATED DELAYS IN SHIPMENT.
INVOICES TO BE RENDERED IN ORIGINAL AND THREE COPIES.
ITEMIZING WEIGHTS, PRICES, EXTENSIONS, AND ACCOMPANIED BY BILL OF LADING.

PURCHASING MASTER

Edward R. Graham

**ENVIRONMENTAL
ELEMENTS**

CORPORATION

SINCE 1948

3700 KOPPERS STREET · BALTIMORE, MARYLAND 21227 · TELEPHONE 410-368-7000

December 1, 1997

Polysius Corporation
180 Interstate North
Atlanta, GA 30339-2194

Attention: Mr. E. Graham

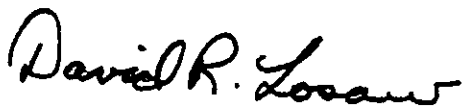
Subject: Florida Rock Industries
Thompson S. Baker Plant
Contract No. 7402-6823 (Rock - FA)
P.O. No. 160100501-R1
Electrostatic Precipitators
EEC M.O. No. 420624

Gentlemen:

As requested by Oleg Geskin, enclosed please find revised copies of data sheets included in the Technical Tabulation Section of our proposal dated August 11, 1997. Revisions are shown on pages 3:1 and 3:5.

If you need additional information please let me know.

Very truly yours,



David R. Losaw
Project Director
Environmental Elements Corporation
(410) 368-7201

DRL/sle

Enclosures

cc: Bill Arnold
Rob Kimberl

Oleg Geskin (Fax)



ENVIRONMENTAL ELEMENTS CORPORATION

ACS-95-04-15290-R2110E-FC

SECTION 33. TECHNICAL TABULATIONA. KILN MILL PRECIPITATOR1. Structural Design Parameters

a.	Structural Design	AISC Code throughout
b.	Wind Load	90 mph
c.	Live Load	50 psf on precipitator roof 100 psf on all access
d.	Seismic Zone	1
e.	Dust Bulk Density - Structural Volumetric	115 pcf 35 pcf
f.	Snow Load	Nil
g.	Temperature	750°F
h.	Pressure	±25 inches H ₂ O

2. Mechanical Design Data

a.	Number of Precipitators	1
b.	Number of Chambers	1
R-	c. Fields	4
d.	Bus Sections Per Field	1
e.	Total Number Bus Sections	4
f.	Gas Passages	23
g.	Spacing of Gas Passages	16 inches
h.	Precipitator Casing Dimensions	See Drawing 15290-D-3 Rev. 3
i.	Number & Type Hoppers	2 trough

ENVIRONMENTAL ELEMENTS CORPORATION

ACS-95-04-15290-R2110E-FC

- | | | |
|----|---|--|
| j. | Hopper Material | 1/4 inch A-36 steel |
| k. | Casing Material | 3/16 inch A-36 steel |
| l. | Distribution Plates | 12 gauge mild steel |
| 3. | <u>Collection Surface Systems</u> | |
| a. | Type of Material | Modular Roll Form
18 gauge Mild Steel |
| b. | Baffle Stiffeners | Integrally formed on
18 inch centerlines |
| c. | Number and Size of Surfaces | 96@10.625'x38' |
| d. | Total Active Collecting
Surface | 74,290 sq. ft. |
| e. | Floating Channel Support
System | Leading and trailing edges of
each mechanical field |
| 4. | <u>Discharge Electrode System</u> | |
| a. | Type | 1.5 inch diameter Rigid Tube with
emitting studs |
| b. | Effective Length Per
Electrode | 38 feet |
| c. | Number of Electrodes
Per Gas Passage | 28 |
| d. | Total Number Electrodes | 644 |
| e. | Total Effective Length | 24,472 feet |
| f. | Suspension Insulators | |
| | (1) Number and Material | 8 Alumina |
| | (2) Manufacturer | Coors |
| | (3) Dry Arc-Over K.V. RMS | 99.1 KV, 60 Cycle |
| | (4) Wet Arc-Over K.V. RMS | 97.0 KV, 60 Cycle |
| | (5) Leakage Distance | 19 3/4 inch |

ENVIRONMENTAL ELEMENTS CORPORATION

ACS-95-04-15290-R2110E-FC

5. Rapping System

- a. Quantity and Type of Rappers Electrical impulse
 - (1) Collecting Surfaces 48 Model ESI-I
 - (2) Discharge Electrodes 8 Model ESI-I
 - (3) Perforated Distribution Plates 1 Model ESI-I

- b. Weather-Proof Rapper Panels
 - (1) Material Steel - NEMA 4
 - (2) Quantity 1
 - (3) Type Solid State
 - (4) Power Transformer 15 KVA 480/240 volt

6. Electrical

a. Transformer-Rectifiers

- (1) Type Silicon
- (2) Voltage Rating 70kv (DC Avg.)
83kv (AC) RMS
118 kv (DC) Peak
- (3) Output Wave Form Full Wave

	<u>Quantity</u>	<u>KVA</u>	<u>MA</u>
1st Field	1	100.1	1000
2nd Field	1	100.1	1000
3rd Field	1	100.1	1000
4th Field	1	100.1	1000

- b. T-R Insulation Fluid Mineral Oil

- c. High Voltage Switch Type One per T-R unit, interlocked grounding switch with observation window

- d. T-R Control Cabinet One per pair of T-R's
NEMA 12 Construction

- e. Type of Control Thyristor (SCR)

- f. Maximum Ambient Temperature for Electrical Supply and Control Equipment 40°C

ENVIRONMENTAL ELEMENTS CORPORATION

ACS-95-04-15290-R2110E-FC

- g. Electrical Supply 480 Volt, 60 Hertz, 3 Phase
- h. Maximum Expected Power Consumption
- | | |
|--------------------------|----------|
| (1) Precipitator (T-R's) | 182.7 KW |
| (2) Rappers | 2.0 KW |
| (3) Insulator Heaters | 3.2 KW |
| (4) Penthouse Blowers | 1 1/2 HP |
| (5) Conveyor | 25 HP |
| (6) Dust Valve | 3 HP |
- i. Total Connected Load
(Transformer-Rectifier Units) 400.4 KVA
- j. Type of High Voltage Conductor 3/4 inch pipe in 16 inch round or square duct

7. Access Doors

Penthouse Roof	2, single door, interlocked
Precipitator Roof	4, double door, non-interlocked
Nozzles	1, double door, interlocked
Hoppers	4, double door, interlocked

8. Thermal Insulation - By Erector

Precipitator Roof	3 inch calcium-silicate block AREA = 1558 sq. ft.
Nozzles, Precipitator Sides Penthouse Sides and Hoppers	3 inch 8 PCF mineral wool AREA = 12948 sq. ft.

All lagging will be 0.032 inch ribbed aluminum on exterior surfaces.

9. Dust Removala. Hopper Conveyor Kiln ESP

(1) Quantity and Size	One 18" x 36'
(2) Type - Trough Screw	3/16" A-36 U through Full Flight
(3) Speed	20 rpm
(4) Capacity @ 46% load @ 100% load	1200 cfh 2,614 cfh
(5) Dust Density Volumetric Power	35 pcf 85 pcf
(6) Drive	25 Hp end mounted reducer
(7) Motion Sensor	By customer

ENVIRONMENTAL ELEMENTS CORPORATION

ACS-95-04-15290-R2110E-FC

b. Dust Valve Kiln ESP

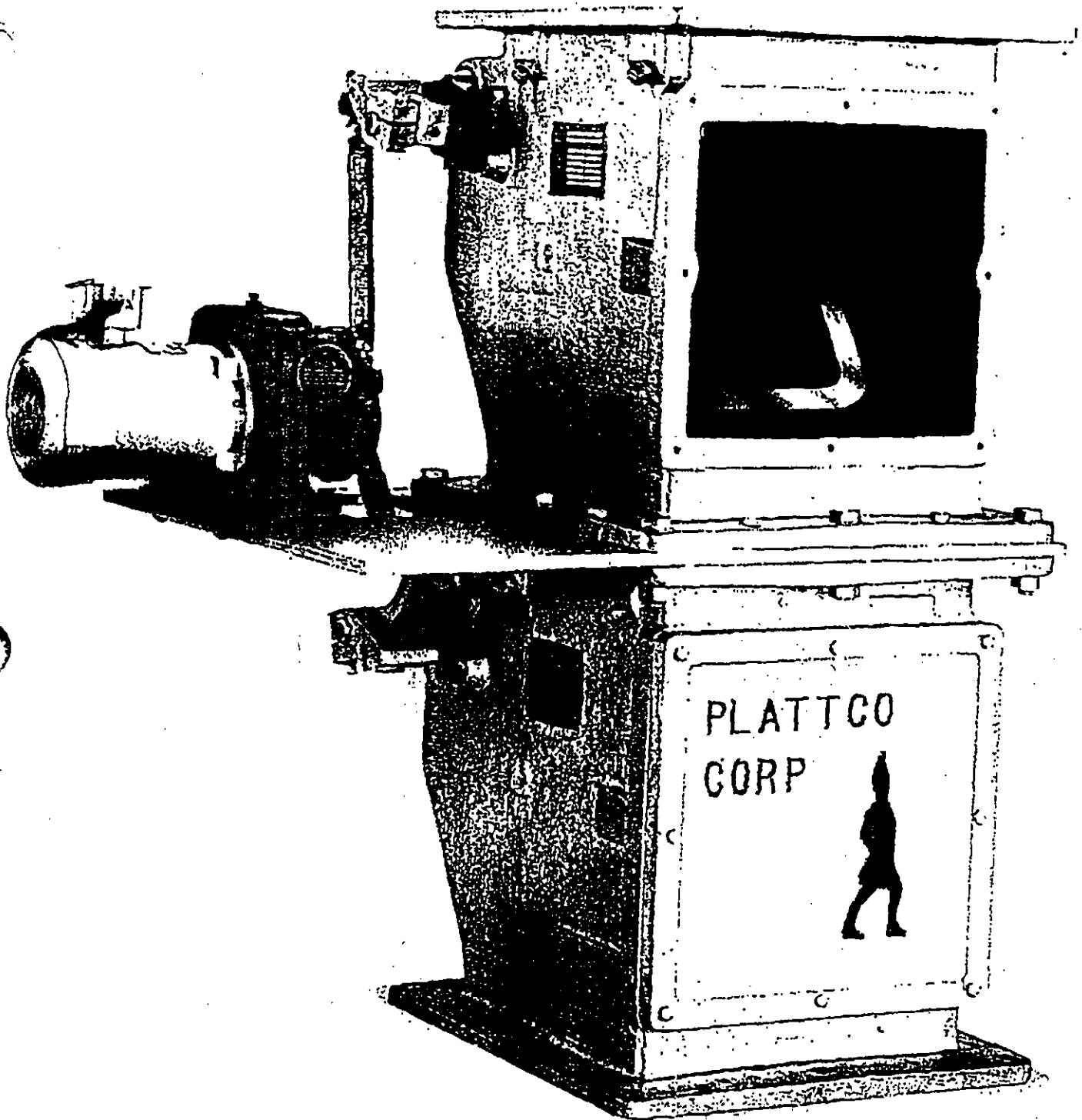
- (1) Type Sprout Bauer Rotary Valve w/Type 2 Rotar and Ni-Hard
- (2) Adjustable Tips
- (3) Quantity and Size One Size 2018
- (4) Capacity @ 80% Load 2,500 cfh
- (5) Speed 18 rpm
- (6) Drive 2 Hp
- R- (7) Motion Sensor By Customer

c. Hopper Conveyor Clinker Cooler ESP

- (1) Quantity and Size One 14" x 36'
- R- (2) Type-Trough 3/16" A-36 Flared Trough
- Screw Full Flight
- (3) Speed 20 rpm
- (4) Capacity @ 40% Load 510 cfh
- @100% Load 1274 cfh
- (5) Dust Density Volumetric 35 pcf
- Power 85 pcf
- (6) Drive 15 Hp end Mounted Reducer
- (7) Motion Sensor By Customer

R- d. Dust Valve Clinker Cooler ESP

- (1) Type Plattco Corp., Double Flap Value w/Cast Iron Body and Hi-Chrome Seats and Flappers
- (2) Quantity and Size One, Size H-1212
- (3) Capacity @ 40% Load 510 CFH
- (4) Speed 20 rpm
- (5) Drive 1 1/2 Hp
- (6) Motion Sensor By Customer



H-Series

Double Isolation Flap Gate

Model: 12", Electric Drive, Standard Covers

Electric drive with slip clutch and self-flushing. Floating link feature protects against surge load plugging and damage. Very easy, in-line maintenance.

- Temperatures to 1800°F (982°C)
- Pressures: Negative to 10" Mercury. Positive to 1.5" Mercury.
- Available Alloys: Cast Iron, Ni-Hard, High Chrome, Stainless Steel.
- Sizes: Pneumatic 6" to 48". Electric 6" to 48".

Series H

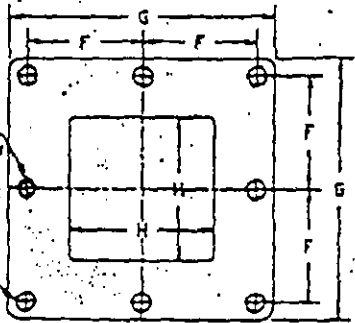
Compuerta con charnela de doble separación

Modelo: 12 pulg. (30,5 cm), con accionamiento eléctrico, cubiertas normales

Accionamiento eléctrico con embrague deslizante y corredera móvil de nivelación automática para protección contra obstrucciones y daños por oscilaciones bruscas de carga. Mantenimiento sumamente fácil en línea.

- Temperaturas hasta 1800°F (982°C)
- Presiones: Negativa hasta 10 pulgadas de mercurio. Positiva hasta 1,5 pulgadas de mercurio.
- Aleaciones disponibles: Fundición, acero duro al níquel, acero con alto contenido de cromo, acero inoxidable.
- Tamaños: Con accionamiento eléctrico, de 6 a 48 pulg. (15,2 cm a 1,22 m). Con accionamiento neumática, de 6 a 48 pulg. (15,2 cm a 1,22 m) Disponible también en dimensiones métricas.

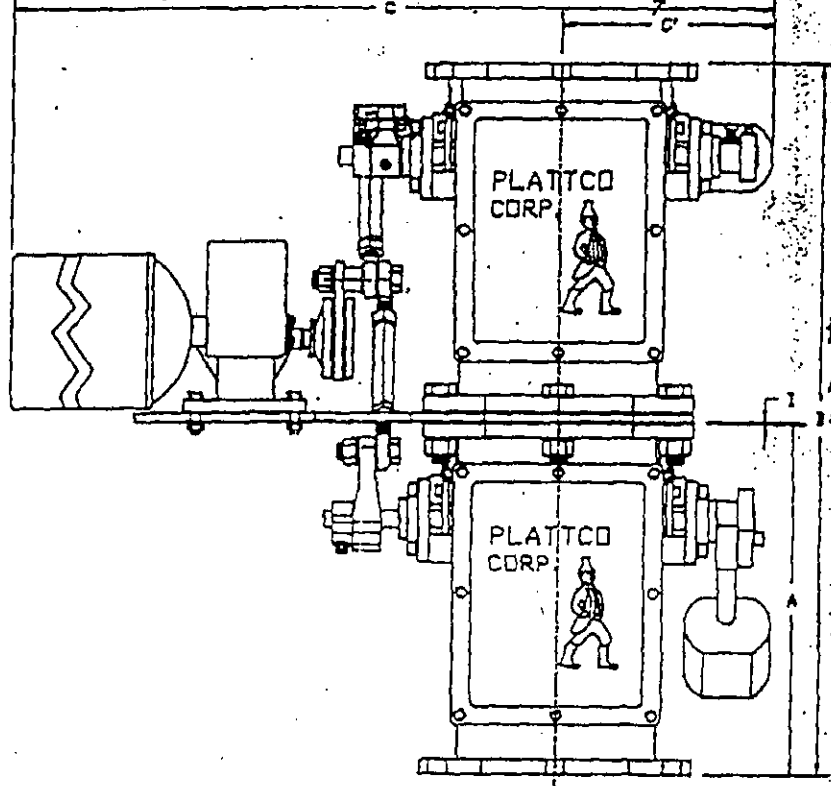
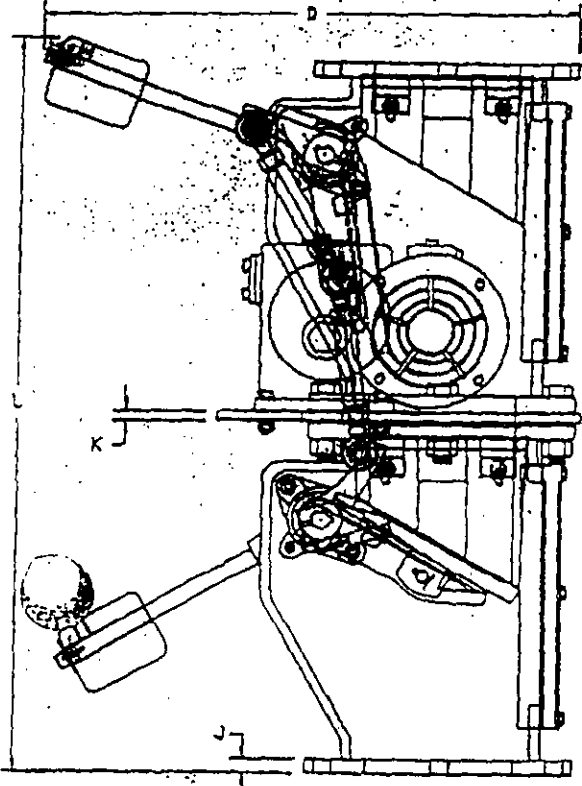
3/4" B TAP
TOP FLANGE ONLY
6" x 1/2" DIA.



VALVE SIZE	CAPACITY
612	60 (CU FT)
812	90 (CU FT)
1012	150 (CU FT)
1212	300 (CU FT)
1812	800 (CU FT)

CUBIC FT./HR. @ 6 CYCLES/MIN.
+ 10" DUTCHMAN
= 620 CFH

SIZE	612	812	1012	1212	1812
A	14.75	18.00	18.00	22.00	22.88
B	30.00	32.98	36.43	41.00	66.78
C	37.50	41.50	44.50	47.75	58.00
C'	8.00	12.00	13.50	13.25	24.50
D	24.75	29.00	31.00	34.25	66.75
E	.81	.81	.81	.81	.81
F	4.75	5.28	7.12	8.88	9.00
G	11.00	13.50	18.00	20.00	31.50
H	8.00	8.00	10.00	11.63	18.00
I	.06	.06	.06	.06	.13
J	.83	.89	.75	.88	1.12
K	.38	.38	.50	.50	.75
L	32.81	38.50	49.00	51.00	82.00



PUB. 54.06
ELECT. 54.63

Serie H

Doppeltrennklappschutz

Modell: 12 Zoll (30,5 cm), elektrischer Antrieb
Normalflappen

Serie H

Vanne à depot à double séparation

Modèle: 12" (30,5 cm), Mécanisme
d'entraînement électrique. Couverts standard

Serie H

**Seccinesca ribaltabile a doppio
isolamento**

Modello: 12" (30,5 cm), azionamento elettrico,
protezioni standard

Elektrischer Antrieb mit Rutschkupplung und selbstspülendem schwebenden Zwischenstück schützt gegen Versaufen und Beschädigung bei Stoßlast. Sehr leichte Instand-Wartung.

- Temperaturen bis zu 1800°F (982°C).
- Drücke: negativ bis zu 10 Zoll Hg. positiv bis zu 1,5 Zoll Hg.
- Verfügbare Legierungen: Gußeisen, Ni-Hard, nichtrostender hochlegierter Chromstahl.
- Größen: elektrisch 6 bis 48 Zoll (15,2 cm bis 1,22 m), pneumatisch 6 bis 48 Zoll (15,2 cm bis 1,22 m). In metrischen Größen erhältlich.

Mécanisme d'entraînement électrique muni d'un accouplement à glissement et d'une articulation flottante à purge automatique pour la protection contre les endommagements et les obstructions par montée subite de la charge. Extinction en ligne très facile.

- Températures jusqu'à 1800°F (982°C).
- Pressions: Négative jusqu'à 25,4 cm de mercure. Positive jusqu'à 3,8 cm de mercure.
- Alliages disponibles: Fonte, Ni-Dur (Ni-Hard), alliage riche en chrome, acier inoxydable.
- Dimensions: Électrique 6" à 48" (15,2 cm à 1,22 m), pneumatique 6" à 48" (15,2 cm à 1,22 m). Dimensions établies selon le système métrique également disponibles.

Azionamento elettrico con frizione a slittamento e connessione galleggiante con autoallineamento, che protegge contro un eventuale otturazione o danneggiamento del carico a causa di un rialzo del livello. Manutenzione in linea estremamente semplice.

- Temperature: fino a 1800°F (982°C).
- Pressione: negativa fino a 25,4 cm di mercurio. Positiva fino a 3,8 cm di mercurio.
- Leghe disponibili: ghisa; ghisa al nichel-cromo con durezza Brinell 350-650; ad alto tenore di cromo; acciaio inossidabile.
- Dimensioni: elettrica, da 6" a 48" (da 15,2 a 122 cm); pneumatica, da 6" a 48" (da 15,2 a 122 cm). Disponibile anche in dimensioni metriche.

AIR CLEANING SYSTEMS

Recent Rock Product Precipitator Installations
Dry and Wet Process Rotary
Cement Kilns and Mills

INSTALLATION LIST

Air Cleaning Systems Group
P.O. Box 1318; 3700 Koppers Street
Baltimore, Maryland 21203
Telephone: 301-368-7222

<u>COMPANY</u>	<u>PROCESS/PLANT</u>	<u>EQUIPMENT</u>
Ash Grove Cement Company Kansas City, Missouri	Dry, Louisville, Nebraska	1 Precipitator on Grate- Preheater Kiln (1975)
Climent Quebec, Inc. St. Basil Cte Portneuf Province of Quebec, Canada	Dry St. Basil Cte Portneuf Province of Quebec, Canada	4 Precipitators on 4 stage Suspension Preheater in Circuit with Roller Mill (1981)
Dundee Cement Company Dundee, Michigan	Wet Dundee, Michigan	2 Precipitators on Kilns #1 and #2 (1972)
Empresa Industrias Guapan, S.A.Ecuador	Dry Azogues, Ecuador	1 Precipitator on 4 stage Suspension Preheater in Circuit with Roller Mill (1980)
General Portland, Inc. Dallas, Texas	Wet Paulding, Ohio	2 Precipitators on Kilns #1 and #2 (1967)
	Wet Fredonia, Kansas	2 Precipitators on Kilns #1 and #2 (1974)
	Dry New Braunfels, Texas	1 Precipitator on 4 stage Suspension Preheater with Flash calciner, in Circuit with Roller Mill (1980)
	Alkali Bypass New Braunfels, Texas	1 Precipitator (1980)

**ENVIRONMENTAL
ELEMENTS
CORPORATION**

<u>COMPANY</u>	<u>PROCESS/PLANT</u>	<u>EQUIPMENT</u>
Lehigh Portland Cement Co. Allentown, Pennsylvania	Dry Mason City, Iowa	2 Precipitators on kiln #7 (1957)
	Dry Union Bridge, Maryland	2 Precipitators each on Kilns #1, #2, and #3 (1956) 1 Precipitator following above 6 units (1974)
	Dry Mitchell, Indiana	1 Precipitator on #3 single stage Suspension Preheater Kiln (1976)
Lehigh Portland Cement Co. Allentown, Pennsylvania	Dry Leeds, Alabama	1 Precipitator on 4 stage Suspension Preheater in circuit with Roller Mill, high suction (1975)
	Calcium Aluminate Buffington, Indiana	1 Precipitator on Rotary Kiln (1970)
Lone Star Industries Greenwich, Connecticut	Wet Bonner Springs, Kansas	1 Precipitator on Kiln #4 (1969) 2 Precipitators on Kilns #1, #2, and #3 (1970)
	Dry Roanoke, Virginia	1 Precipitator each on Kilns #1 and #2 (1951) 1 Precipitator each on Kilns #3 and #4 (1953 & 1956) 1 Precipitator on Grate- Preheater Kiln #5 (1975)
	Raw Mills Roanoke, Virginia	2 Precipitators on 2 Roller mills, high suction (1975)
	Wet Pennsuco, Florida	1 Precipitator each on Kilns #1 and #2 (1969) 1 Precipitator each on kilns #3 and #4 (1975)
	Clinker Cooler Pennsuco, Florida	1 Precipitator each on Kilns #1 and #2 (1969)

<u>COMPANY</u>	<u>PROCESS/PLANE</u>	<u>EQUIPMENT</u>
Lone Star Industries Greenwich, Connecticut	Dry Davenport, California	1 Precipitator on 4 stage Suspension Preheater with Flash Calciner, in circuit with Roller Mill high suction (1980)
	Alkali Bypass Davenport, California	1 Precipitator (1980)
	Wet Neville Island, Pennsylvania	1 Precipitator on Kiln #1 (1963)
Louisville Cement Company Louisville, Kentucky	Dry Speed, Indiana	1 Precipitator on 4 stage Suspension Preheater in circuit with Roller Mill Circuit, high suction (1977)
Louisville Cement Company Louisville, Kentucky	Alkali Bypass Speed, Indiana	1 Precipitator (1977)
Medusa Cement Cleveland, Ohio	Dry Wampum, Pennsylvania	2 Precipitators on Kilns #1 and #2 (1979) Follows existing precipitators
National Cement Company Birmingham, Alabama	Dry Ragland, Alabama	1 Precipitator on Kiln #1 4 stage Suspension Preheater with flash Calciner, in circuit with Roller Mill (1977)
	Alkali Bypass Ragland, Alabama	1 Precipitator (1977)
River Cement Company St. Louis, Missouri	Dry Festus, Missouri	1 Precipitator on Kiln #2 (1968)
	Dry Festus, Missouri	2 Precipitators on Kilns #1 and #2 (1981) Follows existing precipitators

<u>COMPANY</u>	<u>PROCESS/PLANE</u>	<u>EQUIPMENT</u>
Signal Mountain Cement Co. Chattanooga, Tennessee	Wet Chattanooga, Tennessee	1 Precipitator on Kiln #5 (1964)
		1 Precipitator on Kiln #3 (1971)
SME Cement Inc. Middle Branch, Ohio	Dry Middle Branch, Ohio	1 Precipitator on Grate- Preheater Kiln
SME Cement Inc. Bessemer, Pennsylvania	Wet Bessemer, Pennsylvania	1 Precipitator each on #4 (1968) and #5 (1966) kilns.
South Dakota Cement Rapid City, South Dakota	Wet Rapid City, South Dakota	3 Precipitators on Kilns #1 #2, and #3 (1968)
Southern Province Cement Company Gizan, Saudi Arabia	Dry Gizsan, Saudi Arabia	2 Precipitators on 2-4 stage Suspension Preheaters with Flash Calciners, in circuit with Roller Mill (1980)
Southern Province Cement Company Gizan, Saudi Arabia	Alkali Bypass Gizan, Saudi Arabia	2 Precipitators on 2 Kilns (1980)
State Cement Corp. Pakistan	Dry Javedan, Pakistan	1 Precipitator on 4 stage Suspension preheater in circuit with Raw Mill (1977)
	Alkali Bypass Javedan, Pakistan	1 Precipitator (1977)
	Cement Finish Mill Javedan, Pakistan	1 Precipitator (1977)