Progress Energy

Larry E. Hatcher
Plant Manager
Crystal River Fossil Plant & Fuel Operations

October 12, 2009

Mr. Jeffrey F. Koerner, Administrator
New Source Review Section
Air Quality Division
Florida Department of Environmental Protection
2600 Blair Stone Road, MS 5000
Tallahassee, Florida 32399-2400

Re: **Final Design Notification – Limestone and Gypsum Material Handling Activities**
Progress Energy Florida, Crystal River Power Plant
Project No. 01700004-022-AC (PSD-FL-383B)

Dear Mr. Koerner:

In accordance with Emissions Unit Specific Condition No. 3.B.14 of the above referenced air permit, the Progress Energy Florida Crystal River Power Plant (Crystal River Plant) is submitting the final details for the limestone and gypsum material handling activities to be performed at the plant. As required by the permit, a description of these activities, including a process flow diagram and all control equipment specifications associated with the material handling activities is attached to this letter.

Note that this permit requirement also indicates that "it may be necessary to modify this air construction permit" depending on the content of the submitted documentation. However, this information has previously been discussed with and reviewed by Florida Department of Environmental Protection (FL DEP) staff, and in turn the current air permit (Revision #22) already reflects this.

If you have additional questions or need additional information please contact Mr. Dave Meyer in our St. Petersburg office by telephone at (727) 820-5295 or via email at dave.meyer@pgnmail.com.

Sincerely,

Larry E. Hatcher

Larry E. Hatcher
Manager, Crystal River Fossil Plant & Fuel Operations

Enclosures

Progress Energy Florida, Inc.
Crystal River Steam Plant
15760 W. Powerline Street
CN77
Crystal River, FL 34428

APPLICATION INFORMATION

Professional Engineer Certification

1. Professional Engineer Name: **Scott H. Osbourn, Senior Consultant**
   Registration Number: **57557**
2. Professional Engineer Mailing Address...
   Organization/Firm: **Golder Associates, Inc.**
   Street Address: **5100 West Lemon Street, Suite 114**
   City: **Tampa** State: **FL** Zip Code: **33609**
3. Professional Engineer Telephone Numbers...
   Telephone: **(813) 287-1717** ext. Fax: **(813) 287-1716**
4. Professional Engineer E-mail Address: **sosbourn@golder.com**
5. Professional Engineer Statement:

I, the undersigned, hereby certify, except as particularly noted herein, that:*

(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

(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.

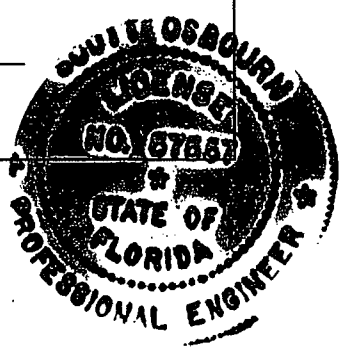
(3) If the purpose of this application is to obtain a Title V air operation permit (check here ☐, if so), I further certify that each emissions unit described in this application for air permit, when properly operated and maintained, will comply with the applicable requirements identified in this application to which the unit is subject, except those emissions units for which a compliance plan and schedule is submitted with this application.

(4) If the purpose of this application is to obtain an air construction permit (check here ☐, 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 ☐, 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.

(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 [X], 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.

Signature Date 10/8/09

(seal)



* Attach any exception to certification statement.

Attachment A
Design Specifications

SECTION – 10

DUST COLLECTION SYSTEM w/ REVERSIBLE SCREW CONVEYOR

AIRTROL
R & S P. O. No. 0710-109

Roberts & Schaefer P.O. #0710-109
Airtrol Project #9759-07

INSTALLATION, OPERATION, AND MAINTENANCE MANUAL

PROGRESS ENERGY
CRYSTAL RIVER FGD PROJECT
CRYSTAL RIVER, FLORIDA

DUST COLLECTORS AT:

LIMESTONE PREP BLDG 132BSR120
LIMESTONE CRUSHER BLDG 182BSRS120
TRUCK DUMP STILL SHED AT 569-FDR-0001A/ 48PSSF57
TRUCK DUMP STILL SHED AT 569-FDR-0001B/ 48PSSF57

AIRTROL, INC.
Dust Management Solutions
920 S Highway Dr. · Fenton, MO 63026
636-326-4600 · Fax 636-326-4610
Airtrol@airtrol.com · www.airtrol.com

Index

Limestone Prep Building Dust Collector Specifications:

Pulse Jet Dust Collector:

Model No:	132BSRS120
Collector Type:	Top Loading, Roof Door
Filter Bag Size:	Nominal 6" diameter x Nominal 120" long
Filter Material:	16 oz. Singed Polyester bags
Number of Filter Bags:	132
Cages:	Galvanized steel, 11 ga. wire, 12 vertical wires, 8" ring spacing with 6" venturi
Rated Volume:	10,500 ACFM
Filter Area:	2,073 ft.^{2}
A/C Ratio:	5.1: 1
Design Pressure:	+ or – 20" W.G.
Can Velocity:	277 FPM

Fan:

New York Blower, Size 245 ACF Fan, Class 4, Arr. 1W with unitary base, 10,500 ACFM, CWUB, motor position Z, 50 HP, 1800 rpm TEFC motor with 120 VAC heater, with 326T frame, 230/460/3/60 with Maxiguard A1500 Zero Speed Switch, Inlet Box and Outlet Damper

Rotary Airlock and Slide Gate:

ACS Valve 10" x 10", with replaceable polyurethane rotor tips, 20 rpm rotor, with 1 HP, 1800 rpm TEFC motor, 143TC frame, 480/3/60 with Maxiguard A1500GEC Zero Speed Switch
10" x 10" Manually operated slidegate

Screw Conveyor:

FMC Technologies 9" Diameter x 36'-0 1/8" Reversible screw conveyor with 10" x 10" outlet each end and 10" x 10" inlet, 5 HP, 1800 rpm, 184T frame, TEFC motor, 460/3/60 with Maxiguard A1500GEC Zero Speed Switch

Limestone Crusher Building Dust Collector Specifications:

Pulse Jet Dust Collector:

Model No:	182BSRS120
Collector Type:	Top Loading, Roof Door
Filter Bag Size:	Nominal 6" diameter x Nominal 120" long
Filter Material:	16 oz. Singed Polyester bags
Number of Filter Bags:	182
Cages:	Galvanized steel, 11 ga. wire, 12 vertical wires, 8" ring spacing with 6" venturi
Rated Volume:	14,750 ACFM
Filter Area:	2,859 ft.^{2}
A/C Ratio:	5.2 : 1
Design Pressure:	+ or – 20" W.G.
Can Velocity:	288 FPM

Fan:

New York Blower, Size 275 ACF Fan, Class 4, Arr. 1W with unitary base, 14,750 ACFM, CWUB, motor position Z, 60 HP, 1800 rpm TEFC motor with 120 VAC heater, with 364T frame, 230/460/3/60 with Maxiguard A1500 Zero Speed Switch, Inlet Box and Outlet Damper

Rotary Airlock and Slide Gate:

ACS Valve 10" x 10", with replaceable polyurethane rotor tips, 20 rpm rotor, with 1 HP, 1800 rpm TEFC motor, 143TC frame, 480/3/60 with Maxiguard A1500GEC Zero Speed Switch
10" x 10" Manually operated slidegate

Limestone Truck Dump Still Shed Dust Collector at 569-FDR-0001A Specifications:

Pulse Jet Dust Collector Bin Vent:

Model No:	48PSSF57
Collector Type:	Bottom Loading, Side Door
Filter Element Size:	Nominal 6" diameter x Nominal 57" long
Filter Material:	Spun bond pleated polyester with integral support core
Number of Filter Bags:	48
Rated Volume:	5,000 ACFM
Filter Area:	1,924 ft.^{2}
A/C Ratio:	2.6 : 1
Design Pressure:	+ or – 20" W.G.
Can Velocity:	288 FPM

Fan:

New York Blower, Size 221 Fan, Class 2, Arr. 4, CCWTH, 5000 ACFM, 10 HP, 1800 rpm TEFC motor with 120 VAC heater, with 215T frame, 230/460/3/60 with Dwyer 1950-10 D.P. pressure switch on collector housing to indicate fan static pressure (fan running)

Limestone Truck Dump Still Shed Dust Collector at 569-FDR-0001B Specifications:

Pulse Jet Dust Collector Bin Vent:

Model No:	48PSSF57
Collector Type:	Bottom Loading, Side Door
Filter Element Size:	Nominal 6" diameter x Nominal 57" long
Filter Material:	Spun bond pleated polyester with integral support core
Number of Filter Bags:	48
Rated Volume:	5,000 ACFM
Filter Area:	1,924 ft.^{2}
A/C Ratio:	2.6 : 1
Design Pressure:	+ or – 20" W.G.
Can Velocity:	288 FPM

Fan:

New York Blower, Size 221 Fan, Class 2, Arr. 4, CWTH, 5000 ACFM, 10 HP, 1800 rpm TEFC motor with 120 VAC heater, with 215T frame, 230/460/3/60 with Dwyer 1950-10 D.P. pressure switch on collector housing to indicate fan static pressure (fan running)

2.0 - RECEIVING & INSTALLATION INSTRUCTIONS

2.1 Description of Operation

2.2 Receiving the Baghouse

2.3 Rotating Equipment Storage

2.4 Setting up the Baghouse

2.5 Installation of the Filter bags and Cages

2.6 Installation of the Bin Vent Element

2.7 Pulse Timer Control – Electrical

2.8 Startup Instructions

2.9 Shutdown Instructions

2.10 Maintenance Instructions

2.1 Description of Operation

PULSE JET DUST COLLECTOR
DESCRIPTION OF OPERATION

Per Exhibit A, dust laden air enters the collector under pressure or suction. The diffuser, (Q), absorbs the impact of high velocity dust particles and distributes the flow of the incoming air. The dust laden air travels upward and through the filtration bag, (A). The exterior of the bag filters the air from the particulate.

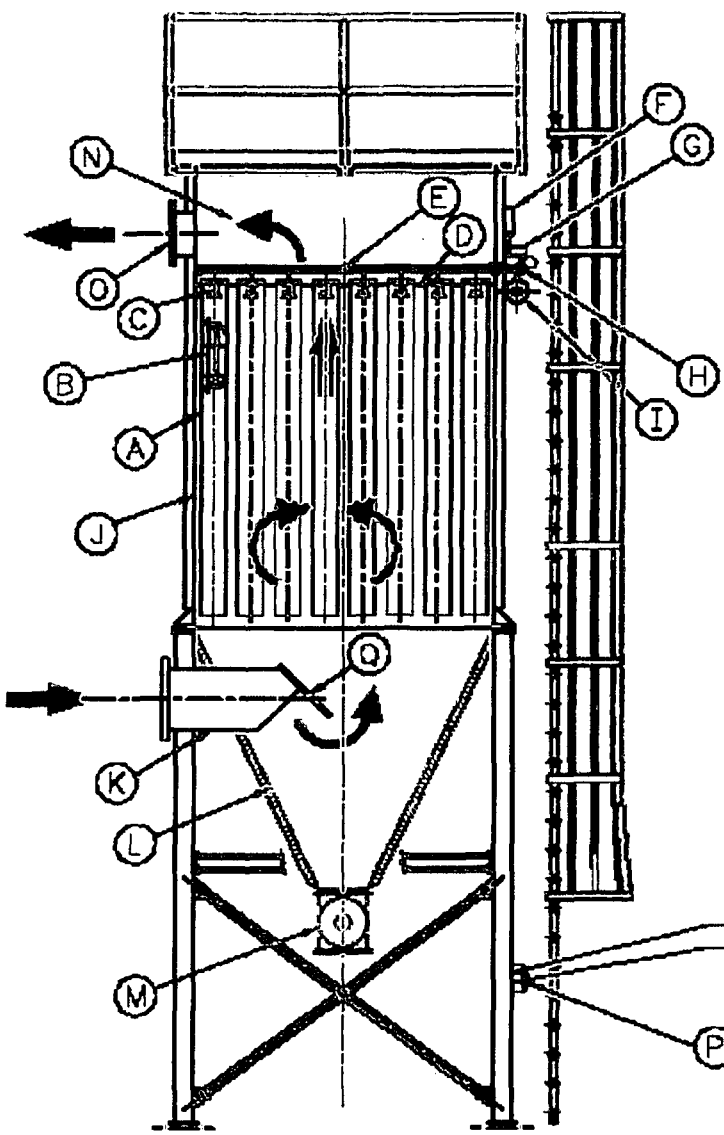
The collector housing (J) is dust tight and is divided by a cell plate/tubesheet, (D), into two plenums. The lower section/dirty air plenum contains the filter bags, discharge hopper, (L), and inlet, (K). The discharge hopper can be fitted with an airlock (M), or a 55 gallon drum assembly, to enable continuous discharge of material during the dust collecting operation.

The filter bags, (A), fit around and are supported by wire cages; (B). For side bag removal design, the filter bags and wire cages as units are clamped to special Venturi shaped nozzles, (C). For top bag removal design, the bag and cage assembly are secured to the tube sheet, (D). A pulse pipe with multiple orifices, (E), is located above each row of filter bags so an orifice is directly above the throat of each venturi in that row.

The upper/clean air plenum, (N), houses the blow pipes and supports the air header, solenoid valves, diaphragm valves and provides an exhaust outlet, (O), for the filtered air or gas stream.

Per Exhibit B, the cleaning sequence is as follows:

The solid state cyclic timer (F), actuates the normally closed solenoid or pilot valve (G), causing it to open. The diaphragm valve (H), opens as a result of the decrease in pressure from the opening of the solenoid valve. A momentary inrush of high pressure 90-100 psig clean and dry compressed air flows from the air header, (I), to the pulse pipe, down through each venturi, and into each filter bag. Thus all the bags in a single row are cleaned simultaneously. This cleaning process is repeated for each row of bags. The time between pulses and the duration of the pulse is adjustable. A magnehelic gauge, (P), shows the pressure drop across the collector and is a good indication of the collector performance. A differential pressure switch can be supplied to initiate the cleaning sequence based upon the pressure drop of the dust collector.



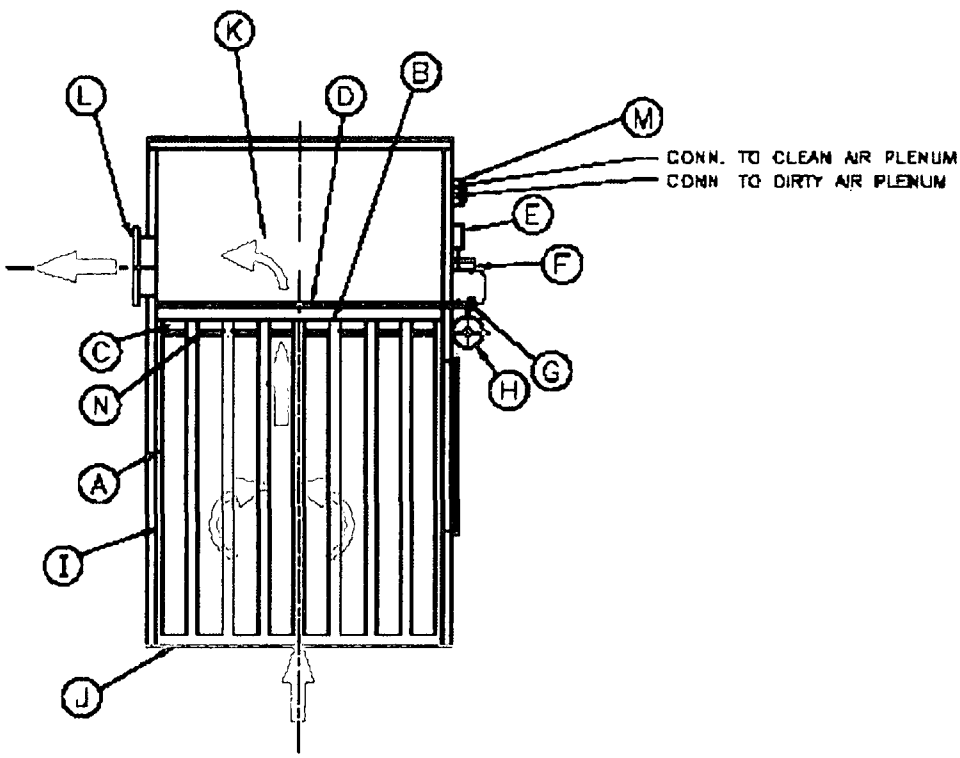
LEGEND:
A–FILTER BAG
B–CAGE
C–VENTURI
D–TUBESHEET
E–PULSE PIPE
F–TIMER
G–SOLENOID VALVE
H–DIAPHRAGM VALVE
I–AIR HEADER
J–COLLECTOR HOUSING
K–INLET
L–HOPPER
M–AIRLOCK
N–CLEAN AIR PLENUM
O–OUTLET
P–MAGNEHELIC GAGE
Q–DIFFUSER

AIRTROL, INC.
ENGINEERED AIR SYSTEMS

BSRS SERIES

EXHIBIT A

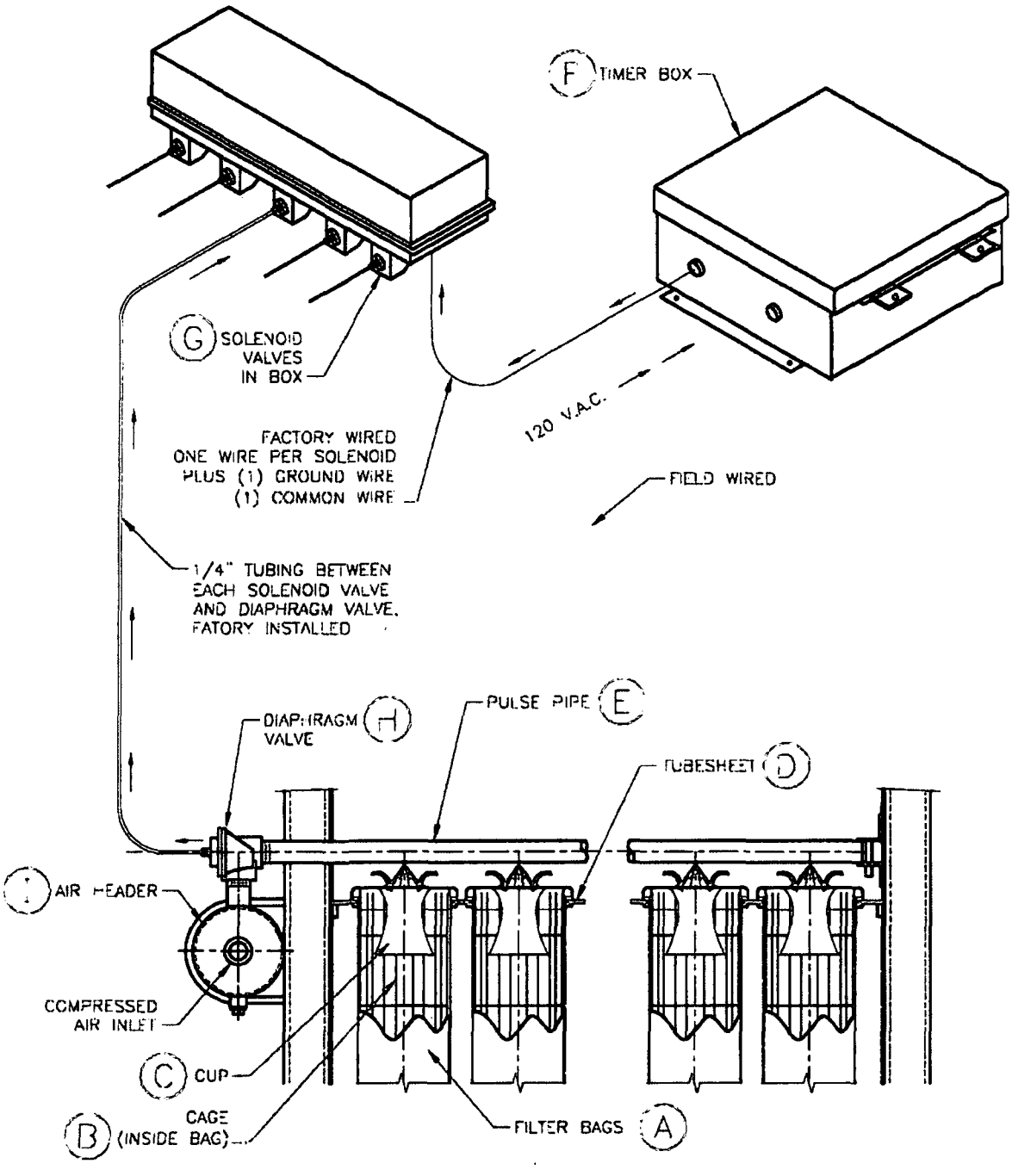
LEGEND:
A–FILTER ELEMENT
B–TUBESHEET
C–FILTER CUP
D–PULSE PIPE
E–TIMER
F–SOLENOID VALVE
G–DIAPHRAGM VALVE
H–AIR HEADER
I–COLLECTOR HOUSING
J–INLET
K–CLEAN AIR PLENUM
L–OUTLET
M–MAGNEHELIC GAGE
N–ELEMENT CLAMP



AIRTROL, INC.
DUST COLLECTION SOLUTIONS

TYPICAL COLLECTOR COMPONENTS

EXHIBIT A



TOP LOADING BAGS
SHOWN ON THIS DETAIL

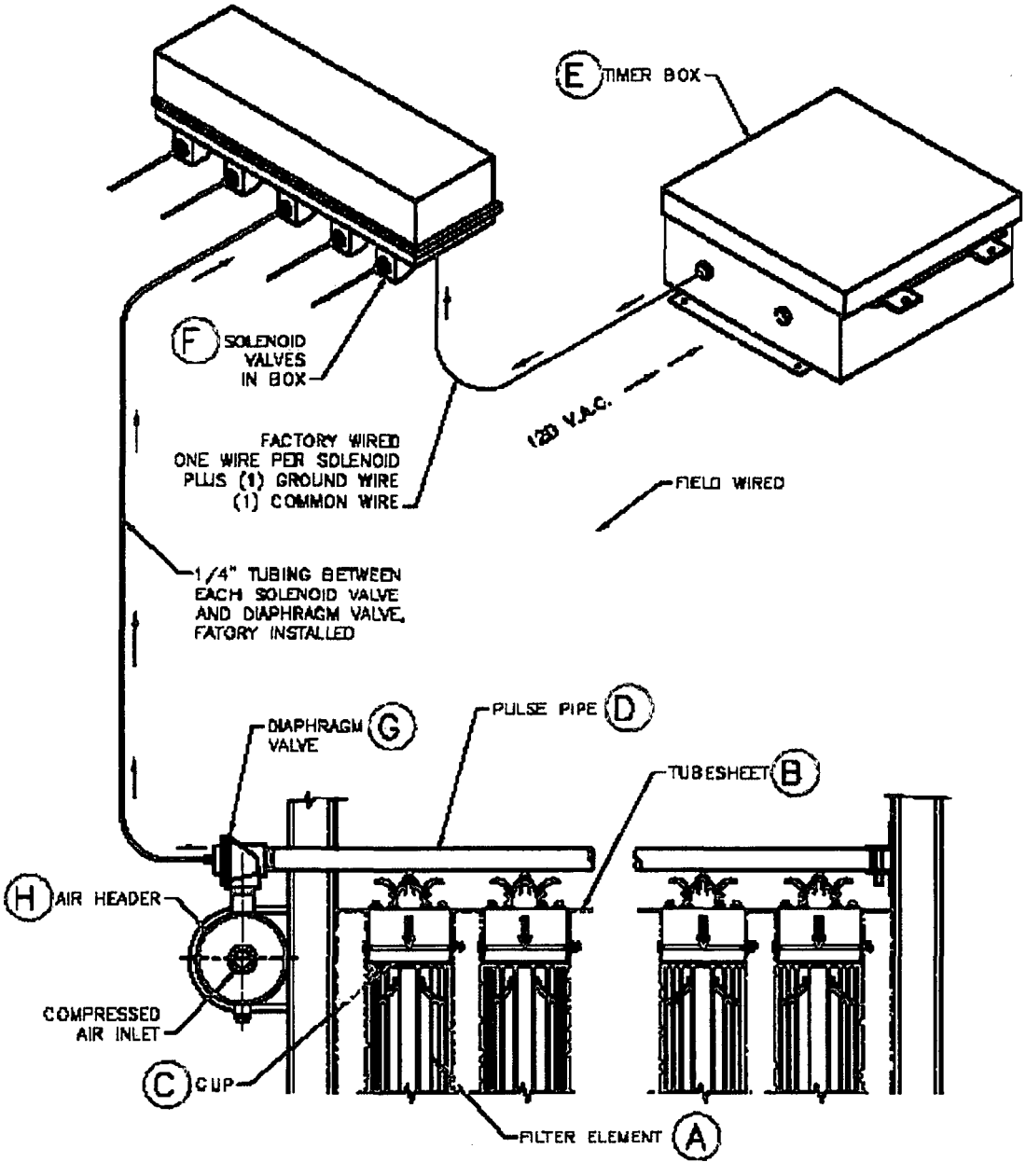
AIRTROL, INC.
3564 LaSALLE ST. LOUIS, MISSOURI 63104
(314) 776-6188
ENGINEERED AIR SYSTEMS

DATE 10/24/94	SCALE NONE	DRAWN BY MOENSTER	APPROVED BY

TYPICAL CLEANING SEQUENCE

EXHIBIT B

DRAWING NUMBER 101894-10



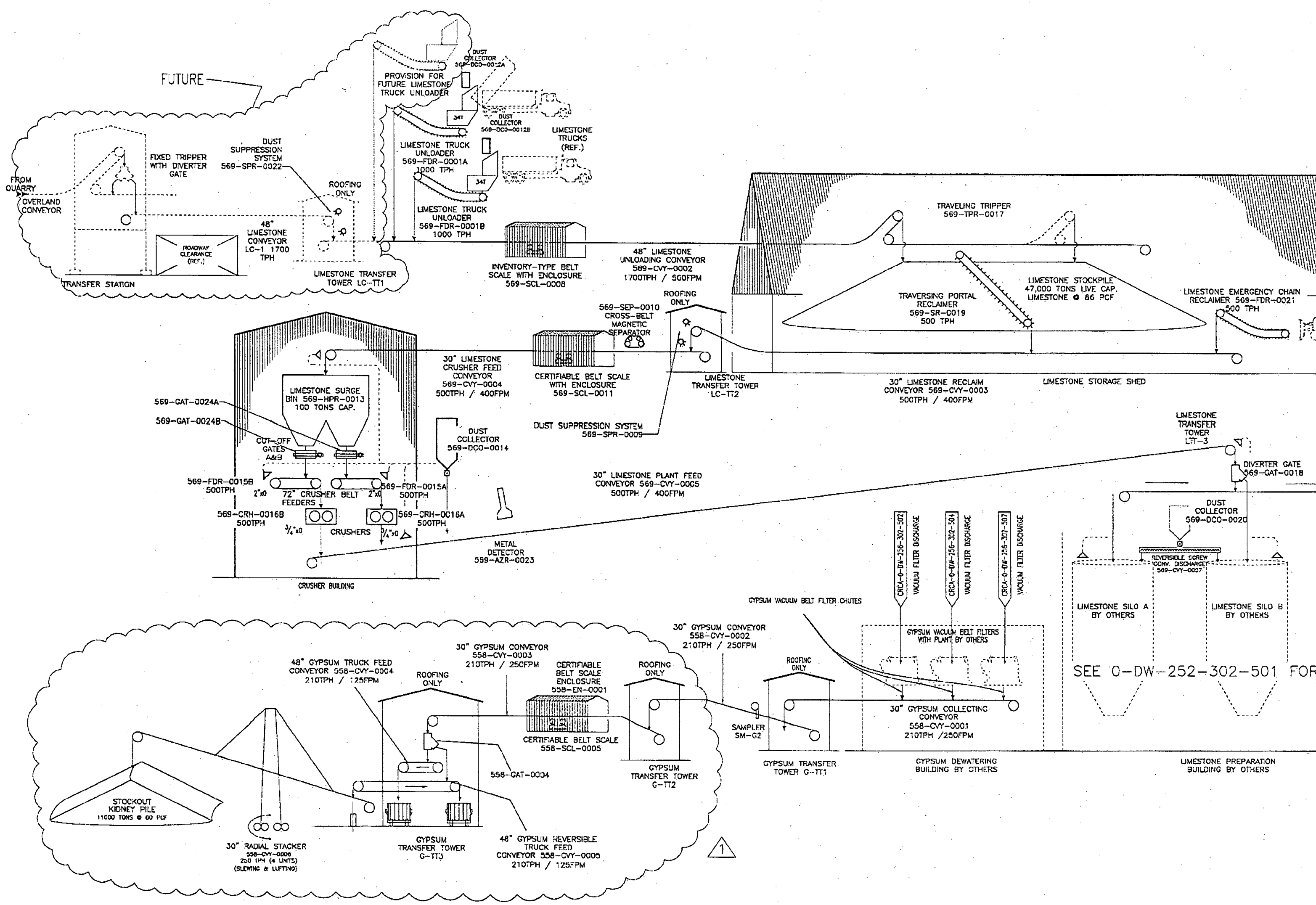
BOTTOM LOAD ELEMENTS SHOWN ON THIS DETAIL

AIRTROL, INC.

TYPICAL CLEANING SEQUENCE

EXHIBIT B

Attachment B
Process Flow Diagram



NOTES

- INDICATES DUST SUPPRESSION
- INDICATES DUST COLLECTION
- INDICATES DIVERTER GATE
- ----- INDICATES ITEM BY OTHERS

REV.	DATE	DESCRIPTION OF REVISION	REV.	DATE	DESCRIPTION OF REVISION	REV.	DATE	DESCRIPTION OF REVISION
						1	05-20-08	ADDITION OF NEW CONVEYOR AND STACKER
						0	05-21-08	ISSUED FOR CONSTRUCTION

ROBERTS & SCHAEFER Company
ENGINEERS AND CONTRACTORS
CHICAGO — SALT LAKE CITY

SYSTEM FLOW SHEET
LIMESTONE & GYPSUM HANDLING SYSTEMS
FGD PROJECT
CRYSTAL RIVER STEAM PLANT
PROGRESS ENERGY FLORIDA, Inc.

MADE BY: CRP
CHECKED BY:
DIRECTED BY:
APPROVED BY:
SCALE: NONE
DATE: 06-26-07
DRAWING No. 0710-FS-L1
REV. 1
CAD FILE NAME