KOOGLER & ASSOCIATES
ENVIRONMENTAL SERVICES
4014 NW THIRTEENTH STREET
GAINESVILLE, FLORIDA 32609
904/377-5822 ▪ FAX 377-7158

August 15, 1995

Mr. A. A. Linero, P.E.
Administrator
New Source Review Section
FDEP-DARM-BAR

SUBJECT: K&A 187-94-02
Florida Rock Industries, Inc.
Newberry Cement Plant
Permits Nos. AC01-267311 and PSD-FL-228
Response to Request for Additional Information, dated 01-AUG-1995

Dear Mr. Linero:

Enclosed please find the requested information for the referenced project. The format of this response is as follows:

1. All questions have been reproduced, preserving original numbering.
2. Responses follow each question.

Florida Rock Industries, Inc. hereby requests that the Air Construction Permit application be deemed complete as of August 3, 1995; which was 30 days after Department receipt of the additional information requested on 16-JUN-1995. Permit processing should proceed as the information request of 01-AUG-1995 does not involve substantial new technical information.

If further information is required, please do not hesitate to call me or Steve Cullen (Project Engineer) at (904) 377-5822.

Sincerely,

John B. Koogler, Ph.D., P.E.
Koogler & Associates

copy to: Fred Cohrs, FRI

cc: T. Heron
C. Holladay
P. Reynolds, NEDB
* A. Saarinen
* P. Walthers

NED
EPA
NPS
M. Costello

RESPONSE TO REQUEST FOR ADDITIONAL INFORMATION
Florida Rock Industries, Inc. - Newberry Cement Plant
Permits Nos. AC01-267311 and PSD-FL-228

TABLE OF CONTENTS

1. **Please provide some details regarding the control of unconfined emissions during the handling of the coal ash (bottom and fly ash).**

RESPONSE:

The ash will be loaded into dump trucks at either the Gainesville Regional Utilities power plant or the Seminole (Palatka) power plant. The ash will be loaded either from open stockpiles or directly from nodulizing mixers. Both power plants add 6-8% water to the ash.

At the cement plant the dump trucks will empty the ash into the covered storage hall, from where it will be conveyed into the raw mill for drying and grinding. The ash will be combined in the raw mill with limestone and overburden from the Newberry quarry.

The moisture content of the ash will limit the generation of uncontrolled particulate matter (UPM) emissions.

2. **Iron oxide storage is shown as a pile under in a covered area. How will it be stored and fugitive emissions controlled if the final iron source chosen contains dusty components and impurities? Is slag from metal smelting under consideration?**

RESPONSE:

Florida Rock plans to use iron ore only if the power plant ash has a low iron content. Water sprays will be used on iron ore stockpiles, if necessary, to limit the generation of UPM.

Slag from metal smelting is not under consideration as an iron source, because its iron content is too low.

3. **Submit a projected chemical analysis of the raw materials and additives likely to be used at this plant.**

RESPONSE:

Appendix A contains analyses of the projected raw materials (overburden, limestone, coal ash and iron oxide). The gypsum will be nearly pure calcium sulfate ($CaSO_4 \cdot 2H_2O$).

4. **Submit a projected analysis of the cement kiln dust (CKD) based on the likely raw material sources and the process to be used at the planned facility. Indicate if and why this CKD composition may differ from CKD from other plants.**

RESPONSE:

CKD (Cement Kiln Dust) is defined in the EPA's *Report to Congress on CKD* (December 1993), as follows:

> CKD is a fine-grained solid material generated as the primary by-product of the production of cement. CKD generation results directly from [the smokestack] control of particulate matter that would otherwise be discharged. In contrast to many other residues of industrial production, CKD is essentially an off-specification product: it much more closely resembles the raw material entering and product leaving the operation than many other industrial wastes.

This definition identifies CKD as the particulate matter captured by the ESP at the Florida Rock cement plant; and further describes the CKD as resembling the raw material and product streams. The projected analysis of the CKD at this plant is therefore the projected analyses of the raw materials used (Appendix A) and cement produced (Appendix B).

At many cement plants the CKD is a waste material which is not returned to the process for various process or product quality reasons, such as:

- Raw materials high in alkalis results in CKD high in alkalis, reintroduction to the process would result in off-specification product
- Raw materials high in chlorides results in CKD high in chlorides, reintroduction to the process tends to clog the ducts in the preheater
- Most wet-process kilns are unable to reintroduce the collected dust, as it is difficult to mix the hot dust with the cold slurry

The raw materials to be used at the Florida Rock cement plant are low in alkalis and chlorides, and reintroduction of the CKD into the process precludes the generation of CKD as a waste material.

5. **Storage tanks facilities meeting the applicability requirements under 40 CFR 60, NSPS Subpart Kb are subject to this regulation. Please evaluate the proposed storage tanks (capacity and emissions) at this facility to determine if they will comply with this regulation.**

RESPONSE:

NSPS Subpart Kb applies to "each storage vessel with a capacity greater than or equal to 40 cubic meters (m^3) that is used to store volatile organic liquids".

40 m^3 X 264.17 gallons/m^3 = 10,567 gallons

However, storage vessels with capacities:

1. Less than 75 m^3 (19,813 gallons), or
2. Greater than 151 m^3 (39,890 gallons) storing a liquid with a maximum true vapor pressure less than 3.5 kPa (0.5 psi), or
3. Greater than 75 m^3 (19.813 gallons) but less than 151 m^3 (39,890 gallons) storing a liquid with a maximum true vapor pressure less than 15.0 kPa (2.2 psi),

are subject only to 40CFR60.116b paragraphs (a) and (b). These paragraphs require that the owner or operator "keep readily accessible records (for the life of the source) showing the dimension of the storage vessel and an analysis showing the capacity of the storage vessel".

The only volatile organic liquid which will be stored in vessels with capacities greater than 40 m^3 will be No. 2 fuel oil with a maximum true vapor pressure of less than 0.2 kPa (0.022 psi). The No. 2 fuel oil will most likely be stored in two 12,000 gallon tanks. Any existing and proposed fuel oil storage tanks will only need readily accessible records detailing tank dimensions and capacities. The storage tanks at this plant will comply with the requirements of 40 CFR 60, NSPS Subpart Kb, if applicable.

6. **Has Florida Rock Industries applied to the Department for any other required permits (stormwater, solid waste, industrial waste, etc)? What other environment-related federal or local permits does this facility already have or need (e.g. NPDES, dredge and fill, etc.)? Is the existing mining operation in compliance with its existing permits?**

RESPONSE:

Florida Rock has identified the need for two other required permits: a water withdrawal permit and a stormwater management permit. Application has not been made for either of these permits, at this time.

The existing mining operation is in compliance with applicable regulations.

7. **Please describe your program (such as enhanced or continuous monitoring, pollution control equipment maintenance) to insure that emissions limits will be met on a continuous basis.**

RESPONSE:

Continuous Emissions Monitors (CEM) measuring stack gas opacity are required for both the clinker cooler stack and the kiln stack by 40CFR60, NSPS Subpart F. These CEMs will be installed and operated as required.

The gas which exits through the kiln/raw mill stack will also be continuously monitored for oxygen and combustibles, including carbon monoxide, for process control.

A minimum of two plant personnel will be trained in the determination of opacity of emissions, to monitor visible emissions from all dust collectors in the plant.

The dust collectors are compartmentalized to allow taking any portion of the collector out of service at any time for inspection and maintenance. During scheduled plant downtime, all of the baghouses will be inspected using ultraviolet light and dye to locate worn or broken bags. Prior to the end of the expected service life of the bags, entire compartments of bags will be replaced.

The electrostatic precipitators (ESPs) operate with automatic voltage control, which keeps the collection capacity at its peak at all times. During scheduled plant downtime, the ESPs are entered for inspection and replacement of suspect electrodes. The ESPs can also be maintained by reducing production rates and isolating single compartments for inspection and maintenance.

Process uniformity is necessary to produce consistent product quality. This process uniformity will limit emissions variability.

8. **Submit the design specification and the operating and maintenance manual for the equipment (kiln, baghouses, ESP) used at this facility.**

RESPONSE:
Design specifications were submitted for the kiln, both ESPs, and the baghouses, as part of the original application. Additional information on the baghouses was submitted on 16-May-1995, 25-July-1995, and 2-August-1995.

Operation and maintenance manuals will not be available until vendors are selected and construction has commenced. Copies of these manuals will be submitted when available, if required.

9. **Has Florida Rock Industries, or its parent company had any violations of Department regulations at any of their facilities? Please provide all documentation in relation to these violations.**

RESPONSE:

This information is not necessary for processing the Application to Construct.

10. **What will be the qualifications with respect to pollution control of personnel who will operate the Company's Newberry facility? Are any training programs planned for plant personnel in the area of pollution prevention?**

RESPONSE:

The operators will be trained by the equipment suppliers and by experienced plant operating supervisors. The contractual commitment regarding training is included as Appendix C. Personnel training will address all aspects of cement manufacturing and all equipment at the plant, including operation and maintenance of pollution control equipment.

11. **Is there potential for post combustion formation of dioxins and furans? If so, how will this be minimized?**

RESPONSE:

The BIF Rule (Burning of Hazardous Wastes in Boilers and Industrial Furnaces) discusses the post-combustion formation of chlorinated dibenzodioxins and dibenzofurans(CDD/CDF), in Part Three of the Preamble: Standards for Boilers and Industrial Furnaces Burning Hazardous Waste. The following information is excerpted from Section II - Controls for Emissions of Toxic Organic Compounds, Part E - Control of Dioxin and Furan Emissions.

> The Agency considers a facility to have the potential for significant CDD/CDF emissions if it is equipped with a dry particulate control device (e.g., fabric filter or electrostatic precipitator) with an inlet gas temperature within the range of 450 to 750°F.

At the Florida Rock cement plant, the typical inlet gas temperature to the ESP, under compound operation, will be approximately 230°F. When the kiln is in direct operation, the typical inlet gas temperature to the ESP will be approximately 430°F.

The proposed plant will not have significant potential for the post-combustion formation of dioxins or furans, based on the inlet gas temperatures to the ESP. The potential for formation of dioxins and furans will also be minimized by chlorine capture in the clinker, and by the use of a gas-conditioning spray tower when the kiln is in direct operation.

12. **Identify and address the air quality impacts on any sensitive areas in the vicinity of the cement plant (i.e., sources of drinking water, farm crops, fish ponds, livestock, etc.) that may be more susceptible to atmospheric deposition caused by the project's proposed air emissions.**

RESPONSE:

The air quality impacts from the cement plant have already been adequately addressed in the submittal of 16-May-1995. Air emissions were modeled, and projected ambient air concentrations were compared with ambient air quality standards. All modeled concentrations are less than applicable Ambient Air Quality Standards (Federal primary and secondary, and State). Further, modeled concentrations are below the Class II area PSD increments, designed to prevent significant deterioration of the air quality in a given area.

The primary air quality standards are established to protect human health, while the secondary standards are defined as follows:

> **40CFR50.2**: National secondary ambient air quality standards define levels of air quality which the Administrator judges necessary to protect the public welfare from any known or anticipated adverse effects of a pollutant.
>
> **62-275.200(3)(c), FAC**: "Secondary standard" means an ambient standard established to protect the public welfare including the protection of animal and plant life, property, visibility and atmospheric clarity, and the enjoyment of life and property.

The Florida Ambient Air Quality Standards (FAAQS) are more restrictive than the National secondary ambient air quality standards, and are established to protect human health and public welfare as defined by 62-275.200(3)(c).

Table 12-1 shows the maximum modeled ambient air concentrations of the air emissions (including the 20-D inventory and background concentrations where appropriate) as compared to the applicable FAAQS.

TABLE 12-1
MAXIMUM AMBIENT CONCENTRATIONS VERSUS FAAQS

FLORIDA ROCK INDUSTRIES, INC.
NEWBERRY CEMENT PLANT
ALACHUA COUNTY, FLORIDA

POLLUTANT	AVG. PERIOD	CONCENTRATION, ug/m^3	FAAQS, υg/m^3	%/FAAQS
PM10	24-HOUR	55	150	37%
PM10	ANNUAL	31	50	62%
SO2	3-HOUR	205	1300	16%
SO2	24-HOUR	65	260	25%
SO2	ANNUAL	15	60	25%
NOx	ANNUAL	37	100	37%
CO	1-HOUR	142	40,000	0.4%
CO	8-HOUR	99	10,000	1%
LEAD	QUARTERLY	<0.01	1.5	1%

APPENDIX A

ANALYSES OF TYPICAL RAW MATERIALS

CTL Structural/Architectural Engineering,
Consulting, & Materials Technology

5420 Old Orchard Road, Skokie, Illinois 60077-1030
708/965-7500 800/522-2CTL Fax: 708/965-6541

Client:	Cohrs Company, Inc.	CTL Project No.:	000035
Project:	Chemical analysis	CTL Proj. Mgr.:	Dr. John Fraczek
Submitter:	Mr. Fred Cohrs	Analyst:	Don Broton
Date:	9/16/94	Approved:	Ella Shkolnik

REPORT OF CHEMICAL ANALYSIS

Client's Sample ID: N2 Overburden Pile
CTL Sample ID: 912597

Analyte	Weight %
SiO2	54.09
Al2O3	20.19
Fe2O3	2.96
CaO	6.09
MgO	0.43
SO3	0.09
Na2O	0.05
K2O	0.10
TiO2	0.80
P2O5	1.63
Mn2O3	0.02
SrO	0.17
LOI	12.44
Total	99.05
Alkalies as Na2O	0.11
Ca as CaCO3	10.87

Notes:
1. This analysis represents specifically the sample submitted.
2. Results reported on an oven dry (105C) basis.
3. Oxide analysis by X-ray fluorescence spectrometry. Samples fused at 1000C with Li2B4O7.
4. Elemental sulfur and sulfide sulfur may be lost during high temperature fusion.

CTL Structural/Architectural Engineering,
Consulting, & Materials Technology

5420 Old Orchard Road, Skokie, Illinois 60077-1030
708/965-7500 800/522-2CTL Fax: 708/965-6541

Client:	Cohrs Company, Inc.	CTL Project No.:	000035
Project:	Chemical analysis	CTL Proj. Mgr.:	Dr. John Fraczek
Submitter:	Mr. Fred Cohrs	Analyst:	Don Broton
Date:	9/16/94	Approved:	Ella Shkolnik

REPORT OF CHEMICAL ANALYSIS

Client's Sample ID: N3 Grey Brown Clay- Pipe Filling. North Pit, North Face
CTL Sample ID: 912598

Analyte	Weight %
SiO2	74.08
Al2O3	14.95
Fe2O3	1.61
CaO	1.21
MgO	0.28
SO3	0.06
Na2O	<.02
K2O	0.06
TiO2	0.58
P2O5	1.12
Mn2O3	0.02
SrO	0.11
LOI	6.10
Total	100.19
Alkalies as Na2O	0.04
Ca as CaCO3	2.17

Notes:
1. This analysis represents specifically the sample submitted.
2. Results reported on an oven dry (105C) basis.
3. Oxide analysis by X-ray fluorescence spectrometry. Samples fused at 1000C with Li2B4O7.
4. Elemental sulfur and sulfide sulfur may be lost during high temperature fusion.

CTL Structural/Architectural Engineering,
Consulting, & Materials Technology

5420 Old Orchard Road, Skokie, Illinois 60077-1030
708/965-7500 800/522-2CTL Fax: 708/965-6541

Client:	Cohrs Company, Inc.	CTL Project No.:	000035
Project:	Chemical analysis	CTL Proj. Mgr.:	Dr. John Fraczek
Submitter:	Mr. Fred Cohrs	Analyst:	Don Broton
Date:	9/16/94	Approved:	Ella Shkolnik

REPORT OF CHEMICAL ANALYSIS

Client's Sample ID: N4 Sand- Pipe Filling, North Pit, North Face
CTL Sample ID: 912599

Analyte	Weight %
SiO2	95.26
Al2O3	2.92
Fe2O3	0.44
CaO	0.14
MgO	<.01
SO3	0.04
Na2O	<.02
K2O	0.02
TiO2	0.22
P2O5	0.13
Mn2O3	0.01
SrO	0.03
LOI	0.91
Total	100.14
Alkalies as Na2O	0.01
Ca as CaCO3	0.26

Notes:
1. This analysis represents specifically the sample submitted.
2. Results reported on an oven dry (105C) basis.
3. Oxide analysis by X-ray fluorescence spectrometry. Samples fused at 1000C with Li2B4O7.
4. Elemental sulfur and sulfide sulfur may be lost during high temperature fusion.

CTL Structural/Architectural Engineering,
Consulting, & Materials Technology

5420 Old Orchard Road, Skokie, Illinois 60077-1030
708/965-7500 800/522-2CTL Fax: 708/965-6541

Client:	Cohrs Company, Inc.	CTL Project No.:	000035
Project:	Chemical analysis	CTL Proj. Mgr.:	Dr. John Fraczek
Submitter:	Mr. Fred Cohrs	Analyst:	Don Broton
Date:	9/16/94	Approved:	Ella Shkolnik

REPORT OF CHEMICAL ANALYSIS

Client's Sample ID: N5 Limestone - South Pit, Below Floor Level
CTL Sample ID: 912600

Analyte	Weight %
SiO2	1.80
Al2O3	0.34
Fe2O3	0.23
CaO	53.71
MgO	0.27
SO3	0.04
Na2O	0.04
K2O	0.01
TiO2	0.01
P2O5	0.14
Mn2O3	0.01
SrO	0.02
LOI	42.94
Total	99.57
Alkalies as Na2O	0.05
Ca as CaCO3	95.85

Notes:
1. This analysis represents specifically the sample submitted.
2. Results reported on an oven dry (105C) basis.
3. Oxide analysis by X-ray fluorescence spectrometry. Samples fused at 1000C with Li2B4O7.
4. Elemental sulfur and sulfide sulfur may be lost during high temperature fusion.

COMMERCIAL TESTING & ENGINEERING CO.
GENERAL OFFICES: 1919 SOUTH HIGHLAND AVE., SUITE 210 B, LOMBARD, ILLINOIS 60148 • TEL: 708 953-9300 FAX: 708-953-9305
SINCE 1908
Member of the SGS Group (Société Générale de Surveillance)

PLEASE ADDRESS ALL CORRESPONDENCE TO
216 OXMOOR CIRCLE, BIRMINGHAM,AL 35209
TEL: (205) 942-3120
FAX: (205) 942-0911

May 31, 1994

Gainesville Regional Utilities
P.O. Box 147117
Gainesville Florida 32614

Sample identification by
Gainesville Regional Utilities

Kind of sample reported to us: Bottom Ash - Unit 2 Boiler

Sample taken at: Deerhaven Generating Station

Sample taken by: Gainesville Regional Utilities

Date sampled: ------

Date received: May 24, 1994

Analysis Report No. 73-47377

ANALYSIS OF ASH	WEIGHT %, IGNITED BASIS
Silicon dioxide	54.77
Aluminum oxide	28.88
Titanium dioxide	1.45
Iron oxide	8.28
Calcium oxide	2.16
Magnesium oxide	0.93
Potassium oxide	2.38
Sodium oxide	0.40
Sulfur trioxide	0.17
Phosphorus pentoxide	0.26
Strontium oxide	0.15
Barium oxide	0.08
Manganese oxide	0.09
Undetermined	0.00
	100.00

Silica Value = 82.81
Base:Acid Ratio = 0.17
T_{250} Temperature = 2813 °F

Loss On Ignition = 13.50

Type of Ash = BITUMINOUS
Fouling Index = 0.07
Slagging Index = xxxxx

Respectfully submitted,
COMMERCIAL TESTING & ENGINEERING CO

John T. [illegible]

RESOURCE MATERIALS TESTING, INC.

"Specialists in Fly Ash Testing"

RECEIVED
AUG - 9 1994
JTM INDUSTRIES

REPORT OF FLY ASH ANALYSIS

TO: JTM Industries
Attn: Mr. Larry Perryman
1000 Cobb Place Blvd., Bldg. 400
Kennesaw, GA 30144

PROJECT NO.: RMT-169
SAMPLE NO.: 5472
DATE REC.: 7-6-94
DATE REP.: 8-8-94

PROJECT NAME: Palatka Plant Fly Ash Quality Assurance Program
SAMPLE ID: Class F Fly Ash Jun '94

CHEMICAL ANALYSES PARAMETER	RESULTS	ASTM C618 SPEC. F/C	
Silicon Dioxide, SiO2, %	48.78	---	
Aluminum Oxide, Al2O3, %	22.26	---	
Iron Oxide, Fe2O3, %	19.89	---	
Sum of SiO2, Al2O3 and Fe2O3, %	90.93	70/50	min
Calcium Oxide, CaO, %	4.19	---	
Magnesium Oxide, MgO, %	0.72	---	
Sodium Oxide, Na2O, %	---	---	
Potassium Oxide, K2O, %	---	---	
Sulfur Trioxide, SO3, %	0.72	5.0	max
Moisture Content, %	0.30	3.0	max
Loss on Ignition, %	4.73	6.0	max
Available Alkalies as Na2O, %*	0.76	1.5	max
PHYSICAL ANALYSES			
Amount Retained on No. 325 Sieve, %	14.3	34	max
Strength Activity Index			
Portland Cement at 7 days, % of Control	94	75	min
Portland Cement at 28 days, % of Control	100	75	min
Water Requirement, % of Control	98	105	max
Autoclave Expansion, %	-0.02	0.8	max
Specific Gravity	2.48	---	
Increase of Drying Shrinkage, %*	---	0.03	max
Reactivity with Cement Alkalies, %*	---	---	
Reduction of Mortar Expansion, %	---	---	
Mortar Expansion, %	---	0.020	max
Air Entrainment of Mortar, %	---	---	

*Optional requirements applicable only when requested by purchaser.
This material meets the requirements of ASTM C618 for the parameters tested, and FL DOT 929.

By Robert L Smith
Robert L. Smith, Ph.D.

5302 Cleveland Hwy, Suite 3 • Clermont, Georgia 30527 • (404) 983-1580 • FAX (404) 983-1582

JTM J

To	Fred Coors	From	Davi Marshall
o.		Co.	JTM
Dept.		Phone #	
Fax #	703-772-9468	Fax #	

LACE BOULEVARD
DING 400
GEORGIA 30144
(404) 424-1900
FAX (404) 424-9290

IRON CALCINE

Material Safety Data Sheet

(Label Name)

Iron Oxide Dust
(Common Name)
Prepared: May 29, 1992

(404) 424-1900
Information Phone Number

(800) 241-7799
Emergency Phone Number

SECTION 1 - MATERIAL IDENTIFICATION AND INFORMATION

COMPONENTS - Common Name & Chemical Name (Hazardous Components 1% or greater; Carcinogens 0.1% or greater)	%	OSHA PEL* (mg/m^3)	ACGIH TLV* (mg/m^3)
Iron Oxide (Fe_2O_3 and Fe_3O_4)	> 85	10	10

* These are atmospheric concentrations based on time weighed averages.
** Non-Hazardous Ingredients: Moisture < 15%.

SECTION 2 - PHYSICAL/CHEMICAL CHARACTERISTICS

Boiling Point	N/A +	Specific Gravity (H_2O = 1)	5.1 - 5.3
Vapor Pressure (mm Hg and Temperature	N/A	Melting Point	1600°C
Vapor Density (Air = 1)	N/A	Evaporation Rate	N/A
Solubility in Water	Insoluble	Water Reactive	Not Reactive

Appearance and Odor - Dark red - black powder, no odor.

SECTION 3 - FIRE AND EXPLOSION HAZARD DATA

Flash Point and Method Used: N/A — Auto-Ignition Temperature: N/A
Flammability Limits in Air % by Volume: N/A — LEL: N/A — UEL: N/A
Extinguisher Media: No special media required. — Special Fire Fighting Procedures: No special procedures required.
Unusual Fire and Explosion Hazards: None, this material is considered non-flammable and non-combustible.

SECTION 4 - REACTIVITY HAZARD DATA

STABILITY: Not known, considered stable.
HAZARDOUS DECOMPOSITION PRODUCTS: Not known, none expected.
HAZARDOUS POLYMERIZATION: Not known, none expected.

\+ Not Applicable

APPENDIX B

TYPICAL CEMENT ANALYSES

FCS

FLORIDA CRUSHED STONE COMPANY

CEMENT PLANT

Consignee:
Destination:

Date: August 8, 1995
Silo # 1

%Silicon Dioxide	(SIO2)	21.3	20.0	-
%Aluminum Oxide	(AL2O3)	4.9	-	6.0
%Ferric Oxide	(FE2O3)	3.4	-	6.0
%Calcium Oxide	(CAO)	64.3	-	-
%Magnesium Oxide	(MGO)	0.8	-	6.0
%Tricalcium Silicate	(C3S)	54	-	55
%Tricalcium Aluminate	(C3A)	7.1	-	8
When (C3A) is 8% or less:		2.8	-	3.0
When (C3A) is 8% or more:		-	-	3.5
%Alkalis (%A2O+0.658 K2O)		0.38	-	0.60
%Insoluble Residue		0.27	-	0.75
%Loss of Ignition		1.6	-	3.0
Blaine Fineness M2/KG		373	280	400
Autoclave Expansion		0.01	-	0.80
Initial (minutes):		119	60	-
Final (minutes):		215	-	600
1 Day PSI		2090	-	-
3 Day PSI		3600	1800	-
7 Day PSI		4990	2800	-
Heat of Hydration (Cal/g)		78.5	-	80
% Air Content		8.0	-	12

The data shown above is typical of the cement currently being shipped from this silo.
This cement complies with current ASTM-C150 specifications for TYPE I/II Cement, AASHTO M-85 specifications for TYPE I and TYPE II Cement.
Certain represented by this certification was furnished to the State.

O.N. Wheeler

O.N. Wheeler
Manager, Quality Control

Company: | Project #: | Signed:

P.O. BOX 1668 / 10311 CEMENT PLANT ROAD / BROOKSVILLE, FL 34605-1668 / PHONE (904) 799-7681 / FAX (904) 796-8281

FLORIDA CRUSHED STONE COMPANY

CEMENT PLANT

Consignee:
Destination:

Date: August 8, 1995
Silo # 2

%Silicon Dioxide (SIO2)	21.2	20.0	-
%Aluminum Oxide (AL2O3)	4.9	-	6.0
%Ferric Oxide (FE2O3)	3.4	-	6.0
%Calcium Oxide (CAO)	64.2	-	-
%Magnesium Oxide (MGO)	0.8	-	6.0
%Tricalcium Silicate (C3S)	54	-	65
%Tricalcium Aluminate (C3A)	7.2	-	8
When (C3A) is 8% or less:	2.6	-	3.0
When (C3A) is 8% or more:	-	-	3.5
%Alkalis (NA2O+0.658 K2O)	0.38	-	0.60
%Insoluble Residue	0.27	-	0.75
%Loss of Ignition	1.8	-	3.0
Blaine Fineness M2/KG	391	280	400
Autoclave Expansion	0.01	-	0.80
Initial (minutes):	118	60	-
Final (minutes):	216	-	600
1 Day PSI	2250	-	-
3 Day PSI	3820	1800	-
7 Day PSI	5260	2800	-
Heat of Hydration (Cal/g)	78.6	-	80
%Air Content	7.9		12

The data shown above is typical of the cement currently being shipped from this silo.
This cement complies with current ASTM-C150 specifications for TYPE I/II Cement, AASTO M85 specifications for TYPE I and TYPE II Cement.
Certain represented by this certification was furnished to the Seller.

O.N. Wheeler

O.N. Wheeler
Manager, Quality Control

Company: | Project #: | Signed:

P.O. BOX 1508 / 10311 CEMENT PLANT ROAD / BROOKSVILLE, FL 34605-1508 / PHONE (904) 799-7881 / FAX (904) 796-6251

APPENDIX C

PERSONNEL TRAINING PROGRAM

8.7 Operator Training

Polysius will provide lecturers and appropriate instruction materials to support and complement the Owner's operator training program. Instruction will be given in operation of equipment and process and in the proper maintenance procedures of the equipment, including safety precautions. The following is a description of the proposed training.

8.7.1 Equipment Included

The program will cover the following equipment:

A. The Polysius Raw Material Roller Mill System with Integrated SEPOL® Separator.

B. The Polysius kiln and burner system.

C. The Polysius Cement Ball Mill and SEPOL® Separator.

D. Auxiliary equipment.

8.7.2 Duration

Polysius will provide five (5) days (40 classroom hours) of instruction in operation of the equipment and maintenance procedures. Included is the cost of Polysius in-house preparation of the program.

8.7.3 Location

The training program will take place at the Florida Rock Plant site. Owner will furnish suitable classroom space.

8.7.4 Owner's Personnel

A. Quantity

In order to optimize the instructor/student ratio and to provide for the most efficient use of the available classroom time it is recommended that the number of personnel be limited to:

a. Five (5) operating personnel
b. Five (5) maintenance personnel

B. Qualifications

The program will cover the theoretical, technical and practical aspects of the equipment. In selecting personnel, we assume that you will assign people who have the required education and background to qualify them for the theoretical and practical aspects of operating and maintaining the subject equipment.

C. Pre-Program Preparation

It is recommended that all personnel thoroughly familiarize themselves with the flowsheets, plot plan, layout and arrangement drawings prior to attending the program. It is also assumed that all personnel will have read and studied the operation and maintenance manuals for the equipment and auxiliary equipment, prior to classroom date.

8.7.5 Training Aids

The following training aids will be utilized in the program:

A. Owner's copies of operation and maintenance manuals.

B. Handout materials

C. Slides

D. Transparencies for overhead (opaque) projector

E. Examination of equipment in the field

8.7.6 Subject Material

The following subject material will be covered in the program.

A. Familiarization

a. Review of flowsheets

b. Review of plot plan

c. Equipment location and description

d. Material flow

- Solids
- Gases

B. Instruments and Control Equipment

a. Review of instrumentation furnished

b. Instrument identification

- Purpose of instruments (local and central)
- Location
- Interpreting read-out devices
- Calibration techniques

C. Control Concepts

a. Object of control loop

- Primary goal
- Effect on process
- Alternatives

b. Operation

c. Control methods used to accomplish goals

d. Operating problems eliminated by use of control concept employed

D. Mechanical

a. Start-up characteristics

- Start-up procedures
- Interlocks
- Pre-start checklist

b. Operating nomenclature and criteria

- Equipment description
- Purpose

c. Lubrication, cooling and control features

- Type of lubrication system
- Type of cooling system
- Instrument controls

1. Local
2. Central panel

E. Electrical Interlocks

a. Prime function for each piece

b. Physical location of equipment

c. Interlock sequence within each system

d. Normal start-up and shutdown sequence

e. Emergency shutdown sequence

f. Troubleshooting

F. Theory of Operations

a. Overview of cement technology

b. Definition of terms

c. Process discussions

G. Panel Practice

a. Organization of panel

b. Function of panel instruments

c. How to read instruments

d. Normal operating procedures

e. Abnormal operating procedures

H. Mechanical Maintenance

a. Elements of mechanics

b. Lubrication

c. Drive components

d. Bearings

e. Piping systems

f. Basic hydraulics

g. Pumps

8.7.7 Summary

Exclusions

A. Set-up of maintenance standards (target times, crew size, etc.)

B. Furnishing of slide projector, overhead (opaque) projector and screen.

C. Additional operation and maintenance manuals to those listed in the equipment supply contract.

D. Instructors from subsuppliers.

8.7.8 Owner's Responsibilities

A. Furnish suitable classroom space and facilities

B. Furnish blackboard, chalk and eraser

C. Furnish slide projector and overhead (opaque) projector to Polysius specifications

D. Furnish screen for projectors

E. Furnish all supplies (paper, pencils, blueprints, etc.) for use by Owner's personnel

F. Make available Owner's copies of operation and maintenance manuals for use by Owner's personnel

8.8 Meetings and Reports

Regular progress meeting shall be held every four (4) weeks during the engineering installation phase of the project. Monthly progress reports shall be issued to show compliance with the various schedules, identify bottlenecks and describe overall progress.

8.9 Suppliers and Subsuppliers Personnel

Polysius will submit to Owner a list of its own and of subsuppliers personnel anticipated to be on site during the project.