Department of Environmental Protection

Lawton Chiles
Governor

Twin Towers Office Building
2600 Blair Stone Road
Tallahassee, Florida 32399-2400

Virginia B. Wetherell
Secretary

January 3, 1997

CERTIFIED MAIL - RETURN RECEIPT REQUESTED

Mr. John D. Baker
President
Florida Rock Industries, Inc.
155 East 21st Street
Jacksonville, Florida 32206

Re: FINAL Permit No. AC01-267311, PSD-FL-288
Portland Cement Plant

Dear Mr. Baker:

Please find the enclosed two tables, Table 1-Allowable Opacity Limitations, and Table II-Allowable Emissions that pertain to the above mentioned FINAL Permit. These tables should be attached to the permit. If you have any questions please call Al Linero or Teresa Heron at (904) 488-1344.

Sincerely,

A. A. Linero, P.E.
Administrator
New Source Review Section

AAL/hh

cc: Mr. Brian Beals, EPA
Mr. John Bunyak, NPS
Mr. Chris Kirts, NED
Ms. Pat Reynolds, NEDB
Mr. Doug Beason, OGC
Ms. Mona Sullivan, Alachua Co.
Mr. John Koogler, P.E., K&A
Mr. Segundo Fernandez, O,H,F&C
Priscilla Harris, Esq. for HC

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Secretary

PERMITTEE:
Florida Rock Industries
155 East 21st Street
Jacksonville, FL 32206

Permit Number: AC01-267311
PSD-FL-228
Expiration Date: 12/31/99
County: Alachua
Project: Portland Cement Plant

This permit is issued under the provisions of Chapter 403, Florida Statutes, and Florida Administrative Code Chapters 62-4, 204, 210, 212, 296, and 297. The above named permittee is hereby authorized to construct the emission units described in the application and approved drawings, plans, and other documents attached hereto or on file with the Department and made a part hereof and specifically described as follows:

For the construction of a Portland cement manufacturing plant to be located approximately 2.5 miles Northeast of Newberry on Alachua County Road in Alachua County, Florida. The latitude and longitude are 29° 24' 21" and 82° 35' 00", respectively.

The emission unit shall be constructed in accordance with the permit application, plans, documents, amendments and drawings, except as otherwise noted in the General and Specific Conditions.

Documents and Tables made part of this permit:

1. Table I -Allowable Opacity Limitations
2. Table II-Allowable Emissions
3. BACT Determination
4. Department of Environmental Protection's Final Order dated December 12, 1996

Relevant Documents:

The documents listed below are the basis of the permit. The documents listed below are specifically related to this permitting action. These documents are on file with the Department.

1. Application received on March 17, 1995.
2. Department's letters dated April 3, April 14, June 16, June 19, July 14, August 1, 1995, March 13, and October 3, 1996.
3. Alachua County Department of Growth Management's letter to John Baker dated March 3, 1995.
4. Koogler & Associates' correspondence dated May 16, June 30, July 17, July 25, August 15, and August 24, 1995 and March 11, 1996.
5. U.S. Department of Interior's letter dated June 9, 1995.
6. U.S. EPA's letter dated June 19, 1995.
7. Haile Association's letters dated March 16, April 10, May 11, June 5, 1995 and Fax dated January 16, 1996.
8. Florida Rock Industries' letter dated September 24, 1996.
9. Oertel, Hoffman, Fernandez & Cole, PA's letters of November 1, 1995.
10. Interim Determination dated November 17, 1995.
11. Division of Administrative Hearings' Recommended Order dated July 23,1996
12. Haile Community Association petition for Exception dated August 12, 1996.
13. DEP's Order of Remand dated September 6, 1996.
14. Division of Administrative Hearings' response to Order of Remand dated October 31, 1996.

Table I
Allowable Opacity Limitations

Stack #	Description	Emission Standard	OPACITY
Emission Unit 1: Raw Material			
Process Rate = 1,211,250 TPY Processed			
Fugitive	Material Processing		10
Fugitive	Handling and Storage		10
Fugitive	Crusher		15
Emission Unit 2: Raw Mill System			
Process Rate = 212 TPH Raw Materials			
E-28	ecycle dust + raw meal to homogenization si	0.01 gr/dscf	5
E-29	Recycle dust airlift	0.01 gr/dscf	5
G-07	ecycle dust + raw meal to homogenization si	0.01 gr/dscf	5
H-08	Raw meal + recycle dust to preheater	0.01 gr/dscf	5
Emission Unit 3: Kiln System			
Process Rate = 364 MMBTU/heat input			
E-21	Kiln Operations (ESP)		10
E-21	In-process fuel: coal		10
E-21	In-process fuel: tires		10
	Tires (30 % of total heat input)		
Emission Unit 4: Clinker Handling			
Process Rate = 95.83 TPH Clinker			
L-03	Clinker cooler to silos	0.01 gr/dscf	5
L-06	Clinker into clinker silos	0.01 gr/dscf	5
K-15	Clinker Cooler (ESP)		10
Emission Unit 5: Finish Grinding Operations			
Process Rate = 136 TPH Cement Output			
M-07	Clinker to finish mill	0.01 gr/dscf	5
M-08	Clinker to finish mill	0.01 gr/dscf	5
N-09	Finish mill air separator	0.01 gr/dscf	5
N-12	Finish mill	0.01 gr/dscf	5
N-14	Cement handling in finish mill	0.01 gr/dscf	5
Q-25	Cement storage silos	0.01 gr/dscf	5
Q-26	Cement storage silos	0.01 gr/dscf	5
Q-27	Cement storage silos	0.01 gr/dscf	5
Emission Unit 6: Cement Handling			
Process Rate = 500 TPH Cement Unloading			
Q-14	Cement silo loadout	0.01 gr/dscf	5
Q-17	Cement silo loadout	0.01 gr/dscf	5
Q-21	Cement silo loadout	0.01 gr/dscf	5
R-12	Cement bagging operation	0.01 gr/dscf	5
Emission Unit 7: Coal Handling and Grinding			
Process Rate = 14 TPH Pulverized Coal			
S-17	Coal Mill	0.01 gr/dscf	5
S-21	Pulverized coal storage bin	0.01 gr/dscf	5
Fugitive	Coal Handling & Storage		5 / 20

Table II
Allowable Emissions
Florida Rock Industries

Pollutant	Bact Emission Limit		Emission Rate *		Basis
	lb/ton clinker	lb/ton dry feed	lb/hr	ton/yr	
PM (kiln)	0.31	0.20	30.00	110.50	BACT
PM_{10} (kiln)	0.26	0.17	25.50	93.93	BACT
PM (cooler)	0.16	0.10	14.99	55.70	BACT-NSPS
PM_{10} (cooler)	0.13	0.09	12.71	47.34	BACT
SO_2 (kiln)+	0.28	0.18	28.82	108.55	BACT
NO_x (kiln)**	2.80	1.80	268.30	1018.00	BACT
H_2SO_4 (kiln)	TO BE DETERMINED BY FUTURE STACK TESTS				BACT
CO (kiln)	3.60	2.30	346.38	1288.60	BACT
VOC (kiln)	0.12	0.08	11.55	42.90	BACT
Beryllium	TO BE DETERMINED BY FUTURE STACK TESTS				BACT

Notes:

* The kiln emission rate includes fuel oil combustion emissions from the raw mill air heater.

** During the first two years after startup, the kiln shall not exceed a NO_x limit of 3.8 lb/ton clinker and 2.8 lb/ton clinker thereafter. The Department may revise the limit to less than 2.8 lb/ton clinker (30-day rolling average) based on compliance test and continuous emission monitoring data.

+ The Department may revise the SO_2 limit to less than 0.28 lb/ton clinker based on compliance test and continuous monitoring data.

STATE OF FLORIDA
DEPARTMENT OF ENVIRONMENTAL PROTECTION
NOTICE OF FINAL PERMIT

In the Matter of an
Application for Permit

John D. Baker, President
Florida Rock Industries, Inc.
155 East 21st Street
Jacksonville, Florida 32206

DEP File No. 01-267311
PSD-FL-288

Enclosed is the FINAL Permit AC01-267311 and PSD-FL-288 to construct a 2,300 ton per day (maximum TPD as clinker) dry process portland cement plant with a preheater/precalciner design pursuant to the 40 CFR 52.21-Prevention of Significant Deterioration (PSD permit) regulations. This permit is issued pursuant to Section 403, Florida Statutes.

Any party to this order (permit) has the right to seek judicial review of the permit pursuant to Section 120.68, F.S., by the filing of a Notice of Appeal pursuant to Rule 9.110, Florida Rules of Appellate Procedure, with the Clerk of the Department in the Legal Office; and by filing a copy of the Notice of Appeal accompanied by the applicable filing fees with the appropriate District Court of Appeal. The Notice of Appeal must be filed within 14 (fourteen) days from the date this Notice is filed with the Clerk of the Department.

Executed in Tallahassee, Florida.

C.H. Fancy, P.E., Chief
Bureau of Air Regulation

CERTIFICATE OF SERVICE

The undersigned duly designated deputy agency clerk hereby certifies that this NOTICE OF FINAL PERMIT (including the FINAL permit) was sent by certified mail (*) and copies were mailed by U.S. Mail before the close of business on 12-23-96 to the person(s) listed:

Mr. John D. Baker, FRI*
Mr. Brian Beals, EPA
Mr. John Bunyak, NPS
Mr. Chris Kirts, NED
Ms. Pat Reynolds, NEDB
Mr. Doug Beason, OGC
Ms. Mona Sullivan, Alachua Co.
Mr. John Koogler, P.E., K&A
Mr. Segundo Fernandez, O,H,F&C
Priscilla Harris, Esq. for HC

Clerk Stamp

FILING AND ACKNOWLEDGMENT FILED, on this date, pursuant to §120.52(7), Florida Statutes, with the designated Department Clerk, receipt of which is hereby acknowledged.

Charlotte J. Hayes (Clerk) 12/23/96 (Date)

Department of Environmental Protection

Lawton Chiles
Governor

Twin Towers Office Building
2600 Blair Stone Road
Tallahassee, Florida 32399-2400

Virginia B. Wetherell
Secretary

PERMITTEE:
Florida Rock Industries
155 East 21st Street
Jacksonville, FL 32206

Permit Number: AC01-267311
PSD-FL-228
Expiration Date: 12/31/99
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General Conditions:

1. The terms, conditions, requirements, limitations, and restrictions set forth in this permit are "Permit Conditions" and are binding and enforceable pursuant to Sections 403.161, 403.727, or 403.859 through 403.861, Florida Statutes. The permittee is placed on notice that the Department will review this permit periodically and may initiate enforcement action for any violation of these conditions.

2. This permit is valid only for the specific processes and operations applied for and indicated in the approved drawings or exhibits. Any unauthorized deviation from the approved drawings, exhibits, specifications, or conditions of this permit may constitute grounds for revocation and enforcement action by the Department.

3. As provided in Subsections 403.087(6) and 403.722(5), Florida Statutes, the issuance of this permit does not convey any vested rights or any exclusive privileges. Neither does it authorize any injury to public or private property or any invasion of personal rights, nor any infringement of federal, state or local laws or regulations. This permit is not a waiver of or approval of any other Department permit that may be required for other aspects of the total project which are not addressed in the permit.

4. This permit conveys no title to land or water, does not constitute State recognition or acknowledgment of title, and does not constitute authority for the use of submerged lands unless herein provided and the necessary title or leasehold interests have been obtained from the State. Only the Trustees of the Internal Improvement Trust Fund may express State opinion as to title.

5. This permit does not relieve the permittee from liability for harm or injury to human health or welfare, animal, or plant life, or property caused by the construction or operation of this permitted source, or from penalties therefore; nor does it allow the permittee to cause pollution in contravention of Florida Statutes and Department rules, unless specifically authorized by an order from the Department.

6. The permittee shall properly operate and maintain the facility and systems of treatment and control (and related appurtenances) that are installed or used by the permittee to achieve compliance with the conditions of this permit, as required by Department rules. This provision includes the operation of backup or auxiliary facilities or similar systems when necessary to achieve compliance with the conditions of the permit and when required by Department rules.

7. The permittee, by accepting this permit, specifically agrees to allow authorized Department personnel, upon presentation of credentials or other documents as may be required by law and at a reasonable time, access to the premises, where the permitted activity is located or conducted to:

   a. Have access to and copy any records that must be kept under the conditions of the permit;

   b. Inspect the facility, equipment, practices, or operations regulated or required under this permit; and

   c. Sample or monitor any substances or parameters at any location reasonably necessary to assure compliance with this permit or Department rules.

   Reasonable time may depend on the nature of the concern being investigated.

8. If, for any reason, the permittee does not comply with or will be unable to comply with any condition or limitation specified in this permit, the permittee shall immediately provide the Department with the following information:

   a. a description of and cause of non-compliance; and

b. the period of noncompliance, including dates and times; or, if not corrected, the anticipated time the non-compliance is expected to continue, and steps being taken to reduce, eliminate, and prevent recurrence of the non-compliance.

The permittee shall be responsible for any and all damages which may result and may be subject to enforcement action by the Department for penalties or for revocation of this permit.

9. In accepting this permit, the permittee understands and agrees that all records, notes, monitoring data and other information relating to the construction or operation of this permitted source which are submitted to the Department may be used by the Department as evidence in any enforcement case involving the permitted source arising under the Florida Statutes or Department rules, except where such use is prescribed by Sections 403.73 and 403.111, Florida Statutes. Such evidence shall only be used to the extent it is consistent with the Florida Rules of Civil Procedure and appropriate evidentiary rules.

10. The permittee agrees to comply with changes in Department rules and Florida Statutes after a reasonable time for compliance, provided, however, the permittee does not waive any other rights granted by Florida Statutes or Department rules.

11. This permit is transferable only upon Department approval in accordance with Florida Administrative Code Rules 17-4.120 and 17-730.300, F.A.C., as applicable. The permittee shall be liable for any non-compliance of the permitted activity until the transfer is approved by the Department.

12. This permit or a copy thereof shall be kept at the work site of the permitted activity.

13. This permit also constitutes:

    (X) Determination of Best Available Control Technology (BACT)
    (X) Determination of Prevention of Significant Deterioration (PSD)
    (X) Compliance with New Source Performance Standards (NSPS)

14. The permittee shall comply with the following:

    a. Upon request, the permittee shall furnish all records and plans required under Department rules. During enforcement actions, the retention period for all records will be extended automatically unless otherwise stipulated by the Department.

    b. The permittee shall hold at the facility or other location designated by this permit records of all monitoring information (including all calibration and maintenance records and all original strip chart recordings for continuous monitoring instrumentation) required by the permit, copies of all reports required by this permit, and records of all data used to complete the application for this permit. These materials shall be retained at least three years from the date of the sample, measurement, report, or application unless otherwise specified by Department rule.

    c. Records of monitoring information shall include:

    - the date, exact place, and time of sampling or measurements;
    - the person responsible for performing the sampling or measurements;
    - the person responsible for performing the analyses;
    - the analytical techniques or methods used; and
    - the results of such analyses.

15. When requested by the Department, the permittee shall within a reasonable time furnish any information required by law which is needed to determine compliance with the permit. If the permittee becomes aware that relevant facts were not submitted or were incorrect in the permit application or in any report to the Department, such facts or information shall be corrected promptly.

SPECIFIC CONDITIONS:

1. The construction and operation of the subject facility shall comply with all applicable provisions of Chapter 403, F.S., Chapters 62-204 through 62-297, F.A.C., and 40 CFR 60 (1995 version).

2. Unless otherwise indicated, the construction and operation of the subject facility shall be in accordance with the capacities and specifications stated in the application. The facility shall comply with all applicable requirements of 40 CFR 60, Subpart A, Appendix A and Appendix B (1994 version); Subpart F - Standards of Performance for Portland Cement Plants; Subpart Y - Standards of Performance for Coal Preparation Plants; Subpart OOO - Standards of Performance for Nonmetallic Mineral Processing Plants, Subpart Kb, Storage Vessels for Petroleum Liquids; all of which are adopted by reference in Chapter 62-204, F.A.C.

3. The kiln clinker production rate shall not exceed 95.8 tons per hour (TPH) and 2300 tons per day (TPD). On an annual basis, the clinker production rate shall not exceed 712,500 tons per year (TPY). The clinker production rate will be determined as a function of the preheater dry feed rate. The preheater dry feed rate is limited to 149.9 TPH and 1,114,350 TPY. Continuous operation is allowed (8,760 hours per year) as long as the 712,500 TPY clinker limit is not exceeded. [Rule 62-210.200(225), F.A.C.]

4. Fuels fired in the pyroprocessing system (kiln and calciner) shall not exceed a total maximum heat input of 364 MMBtu/hr and shall consist only of coal, (usage rate shall not exceed 14.0 TPH), whole tires, and unused No. 2 fuel oil which may also be fired in the Raw Mill Air Heater. All fuel usage shall be in compliance with the following limits and conditions: [Rule 62-210.200(225), F.A.C.]

   a. The maximum sulfur content of the coal fired in the pyroprocessing system shall not exceed 1.25% sulfur, by weight. The coal usage rate shall be determined using ASTM Method D-2234, D-3173, D-3176, D-3177 or D-4239.

   b. Whole tires may be used as an alternate fuel. Such tires shall be fed into the kiln system at the transition section between the base of the precalciner and the point where gases exit the kiln. The tire feeder mechanism shall have a double airlock, vertical and horizontal guillotine gates, and a ram. The permitted feed rate shall not exceed 109.2 MMBtu/hr (30% of total kiln fuel input) or 4.2 TPH (approximately 400 tires per hour) and 36,792 TPY. Before initiating tire firing, the gases exiting the kiln ahead of the calciner burner shall be maintained at a minimum of 1,440 degrees F for at least one hour.

   c. No. 2 fuel oil fired shall not exceed a maximum sulfur content of 0.05% by weight (certified by fuel supplier) and usage shall not exceed 2,486,000 gallons per year for the Raw Mill Air Heater and 125,000 gallons per year for kiln startup.

   d. The total input of mercury compounds (as Hg) in all materials and fuel kiln system may not exceed 200 pounds per year. FRI will demonstrate compliance with this condition through monthly sampling and analysis of the raw mill feed, coal and tires.

5. Emissions from the facility shall comply with the pollutant limits specified in attached Tables I and II. Following completion of the performance tests required herein, the interim SO_2 emission limit may be revised downward based on the test results (and continuous emission monitoring data) such that overall

control attained for all air pollutants including, SO_2, NO_x, VOC, and CO, is optimized. The Department shall issue the final SO_2 emission limits within 120 days following receipt of all test results required by this permit. Any changes will be publicly noticed. FRI will install any additional control equipment during the two year optimization period to insure compliance with the NO_x limit of 2.8 lb/ton clinker by the end of the period.

6. EPA-reference methods for sampling pollutants shall consist of 3 consecutive test runs, each of one hour duration, shall be performed on the kiln and cooler stacks for each pollutant specified in Tables I and II.

Continuous monitoring equipment shall be installed, operated, and used to determine compliance with the emission limits for NOx and SO2 from the kiln. Since the emission limits are on a mass basis, a continuous flow monitor will be installed. Continuous emission monitors shall be installed and certified, before the initial performance test, and operated in compliance with 40 CFR 60, Appendix F, Quality Assurance Procedures (1994 version) or other Department approved QA plan; 40 CFR 60 Appendix B, Performance Specification 1, 2, and 3 (1995 version).

Continuous opacity monitors shall be installed, operated, and maintained at the kiln/raw mill ESP stack and the clinker cooler ESP stack pursuant to 40 CFR 60.63. A continuous monitor for temperature shall be installed, operated, and maintained at the coal mill baghouse exhaust [S-17] pursuant to 40 CFR 60.253.

Continuous monitors shall be installed for CO and/or O_2 for use in determining plant operating parameters to optimize emissions of CO, NO_x, and SO_2 and to set a final SO_2 limit. These monitors (CO and/or O2) are process monitors and are not subject to 40 CFR 60, Appendix B.

Performance tests shall begin within 60 days after achieving and maintaining the permitted production rate, but not later than 180 days after initial operation at that rate, using the following EPA reference methods:

Method 5	Determination of Particulate Matter Emissions from Stationary Sources
Method 9	Visual Determination of the Opacity of Emissions from Stationary Sources
Method 10	Determination of Carbon Monoxide Emissions from Stationary Sources
Method 22	Visual Determination of Fugitive Emissions from Material Sources
Method 25	Determination of Volatile Organic Compound Emissions from Stationary Sources
Method 104	Determination of Beryllium Emissions from Stationary Sources (40 CFR 61, Appendix B)

The manual stack tests shall be conducted while firing both primary fuels at permitted capacity (70% coal and 30% tires) and while all continuous monitoring systems are functioning properly, and with all process
units operating at their permitted capacity. Permitted capacity is defined as 90-100% of the maximum operating rate allowed by the permit. If it is impracticable to test at permitted capacity, then the units may be tested at less than 90% of the maximum operating rate allowed by the permit. In this case, subsequent source operation is limited to 110% of the test load until a new test is conducted. Once the units are so limited, then operation at higher capacities (with prior notification provided to the Department) is allowed for no more than 15 consecutive days for the purpose of additional compliance testing to regain the permitted capacity in the permit. [Rule 62-297.310(2)(b), F.A.C.]

7. An operating log shall be established and maintained for the weight of tires fired. The log shall include the daily tire usage, a monthly running total of the tire usage, and a cumulative annual running total to ensure that the annual limit is not exceeded. The log shall be maintained on file for at least five (5) years and shall be made available to the Department upon request. Records of the quantity and analysis of coal and fuel oil consumed and invoices for all fuel purchases along with logs for all raw materials

and products shall be kept for a minimum of 5 years. Periods of startup, shutdown, and process malfunctions shall be noted on the same logs used for tires. [Rule 62-210.200(225)]

8. The Department's Northeast District office shall be notified at least 15 days prior to performance testing. Written reports of the test results shall be submitted to the Bureau of Air Regulation in Tallahassee and the Northeast District office within 45 days of test completion. [Rules 62-297.310(8), F.A.C.]

9. An excess emission report shall be supplied to the Northeast District office on a quarterly basis with the start of commercial operation in accordance with 40 CFR 60.7. All measurements, records and other data required to be maintained by the permittee shall be retained for at least 5 years following the date on which such measurements, records, or data are recorded. The data shall be available to Department staff as requested. [40 CFR 60.7]

10. The provisions of Rule 62-296. 320 (4) (c) F.A.C., shall apply to all sources of unconfined particulate emissions, including but not limited to vehicular movement, transportation of materials, construction, alteration, demolition or wrecking, or related activities such as loading, unloading, storing and handling.

FKI shall follow the following protocol for the unconfined particulate matter (UPM, Fugitive Emissions):

The material handling activities at the plant covered by this protocol include loading and unloading, storage, and conveying of:

- Limestone and overburden
- Iron oxide source (coal ash, iron ore, or other)
- Gypsum
- Coal

The following reasonable precautions shall be implemented at the facility:

- All materials at the plant will be stored under roof on compacted clay or concrete.
- The plant area will be paved to limit the generation of UPM from truck and equipment traffic.
- A sweeper truck will be maintained and operated at the plant to limit dust buildup on paved surfaces.
- All materials are to be received and used with excess surface moisture.
- Water supply lines, hoses and sprinklers will be located near all material stockpiles.
- All plant equipment operators will be trained in basic environmental compliance, and will perform visual inspections of materials before handling. If the visual inspections indicate a lack of excess the materials can be handled without generating UPM.

10A. The permittee shall "immediately collect" any spilled CKD to prevent fugitive emissions.

11. Particulate emissions from coal handling facilities shall be minimized by following the procedures listed in specific condition No. 10 and below: [Rule 62-296.320(4)(c), F.A.C.]

a. All conveyers and transfer points shall be enclosed to preclude particulate emissions (except those directly associated with coal stacking/reclaiming).

b. Coal storage piles shall be shaped, compacted and oriented to minimize wind erosion.

c. Water sprays or chemical wetting agents and stabilizers shall be applied to storage piles, handling equipment, etc, during dry periods and as necessary to all facilities to maintain an opacity of less

than 5 percent, except when adding, moving or removing coal from the coal pile, during which the opacity shall be no more than 20 percent.

12. A malfunction means any sudden and unavoidable failure of air pollution control equipment or process equipment to operate in a normal or usual manner. Failures that are caused entirely or in part by poor maintenance, careless operation, or any other preventable upset condition or preventable equipment breakdown shall not be considered malfunctions and shall be prohibited. [Rules 62-210.200(176), F.A.C.]

13. Issuance of this permit does not relieve the facility owner or operator from compliance with any applicable federal, state, or local permitting requirements and regulations. [Rule 62-210.300, F.A.C.]

14. Objectionable odors associated with air emissions from this facility shall be prohibited. [Rule 62-296.320, F.A.C.

15. Stack sampling facilities shall be installed in accordance with Rule 62-297.310(6), F.A.C.

16. The Permittee shall not place waste tires on the ground. Waste tires shall be received in closed vans and unloaded directly into the tire feeding hopper. Also, in order to control mosquitoes at the site, waste tires shall be sprayed with an insecticide prior to receipt at the facility.

17. The Permittee shall document the number of tires burned during a week and then establish storage and inventory based on a typical weekly requirement. The Permittee shall keep all documentation concerning tire inventory at the site and make the information available for Department review during inspections.

18. Storage of solid waste at the facility shall not be in violation of the prohibitions of F.A.C. Rule 62-701.300. In addition, all solid waste materials to be used in cement production shall be stored under cover, on compacted clay, to prevent the generation of runoff or leachate.

19. No RCRA hazardous waste or used oil may be burned. Cement Kiln Dust (CKD) collected in the kiln electrostatic precipitator (ESP) will be returned to the process. Any CKD not returned to the process shall be handled in accordance with Subtitle C rules under development by EPA. In the interim, the permittee shall develop a contingent management practice (CMP) for storage, sales, or disposal of any CKD not reused. The CMP will be a condition of the operating permit.

20. In the event that baghouse or ESP catches come in contact with the soil, the waste shall be collected and a hazardous waste determination performed for metals in accordance with 40 CFR 262.11 and FAC Rule 62-730.160. If the hazardous waste determination indicates that the material is hazardous, it shall be disposed of in a permitted hazardous waste disposal facility. If the material is not hazardous, the waste material is a solid waste as defined in F.A.C. Chapter 62-701 and must be disposed of in a permitted, lined landfill. The Permittee shall contact the Solid Waste Section, Northeast District Office, at telephone number (904) 448-4320, prior to disposal of the fugitive baghouse or ESP catches which are to be disposed of as solid waste.

21. The Permittee shall store all hazardous waste generated at the site in D.O.T. approved containers and send it for disposal to a permitted hazardous waste facility in compliance with F.A.C. Chapter 62-730.

22. The Permittee shall manage used oil and used oil filters generated at the facility in compliance with F.A.C. Chapter 62-710 and 40 CFR 279.12.

23. In the event of a permanent shutdown of the facility, all residual materials will be either properly disposed at a permitted facility or transported to other cement production facilities within six (6) months following shutdown.

24. The permittee, for good cause, may request that this construction permit be extended. Such a request shall be submitted to the Bureau of Air Regulation prior to 60 days before the expiration of the permit. However, the permittee shall promptly notify the Northeast District office of any delays in completion of the project which would affect the startup date by more than 90 days. [Rule 62-4.090, F.A.C.]

25. An application for a Title V operation permit must be submitted to the Northeast District office at least 90 days prior to the expiration date of this construction permit but no later than 180 days after commencing operation. To properly apply for an operation permit, the permittee shall submit the appropriate application form, certification that construction was completed noting any deviations from the conditions in the construction permit, and compliance test reports as required by this permit. [Rules 62-213.420, 62-4.055 and 62-4.220, F.A.C.]

26. Particulate control equipment for emissions from the kiln and cooler will consist of electrostatic precipitators (ESPs). FRI shall provide the Department with the final designs and the manufacturer's guarantee for the ESPs before construction begins.

27. FRI shall provide to the Department a final construction schedule after selection of the contractor and before commencement of construction.

STATE OF FLORIDA DEPARTMENT OF ENVIRONMENTAL PROTECTION

Howard L. Rhodes, Director
Division of Air Resources Management

BEST AVAILABLE CONTROL TECHNOLOGY (BACT) DETERMINATION
PORTLAND CEMENT MANUFACTURING FACILITY
Florida Rock Industries
PSD-FL-228 and AC 01-267311
Alachua County

The applicant, Florida Rock Industries Inc. (FRI), plans to construct a 2,300 ton per day (maximum TPD as clinker) dry process portland cement plant with a preheater/precalciner design at its existing quarry approximately 2.5 miles northeast of Newberry, Alachua County, Florida. The project includes a single kiln and clinker cooler along with crushers, raw mill, finish mill, cement and clinker handling equipment, coal handling equipment, silos, and air pollution control equipment. The facility will, on average, operate at a lower rate and produce 712,500 tons per year (TPY) of clinker and yield 772,400 tons of portland cement per year. A process description is included in the Technical Evaluation and Preliminary Determination.

Table 1 is a list of the emission units from the proposed project.

BACT Determination Requested by the Applicant:

POLLUTANT	EMISSION LIMIT
Particulate Matter (kiln)	0.3 lbs/ton of dry kiln feed
Particulate Matter (cooler)	0.1 lbs/ton of dry kiln feed
Particulate Matter (material handling, conveying, storage)	0.01 gr/dscf by baghouses
Sulfur Dioxide (kiln)	0.54 lbs/ton clinker
Sulfuric Acid Mist (kiln)	Absorption by clinker (future stack tests)
Nitrogen Oxides (kiln)	4.6 lbs/ton clinker
Carbon Monoxide (kiln)	3.6 lbs/ton clinker
Volatile Organic Compounds (kiln)	0.12 lbs/ton clinker
Beryllium	Particulate control equipment

Electrostatic Precipitators (ESPs) will be used to capture particulate matter from the kiln and the cooler. Fabric Filters (baghouses) and will be used to limit particulate emissions from all other process emission units.

Portland cement plants are among the major facilities listed in Florida Administrative Code (FAC) Chapter 62-212, Prevention of Significant Deterioration (PSD), Table 212.400-1, "Major Facilities Categories." A BACT determination is required for each pollutant exceeding the significant emission rates in Table 212.400-2, "Regulated Air Pollutants Significant Emissions Rates," which in this case are particulate matter (PM), sulfur dioxide (SO_2), carbon monoxide (CO), volatile organic compounds (VOC), nitrogen oxides (NO_x), and Beryllium (Be).

This facility is also subject to:

- o 40 CFR 60, Subpart F - Standards of Performance for Portland Cement Plants.
- o 40 CFR 60, Subpart OOO - Standards of Performance for Non- Metallic Mineral Processing Plants.
- o 40 CFR 60, Subpart Y - Standards of Performance for Coal Preparation Plants.
- o 40 CFR 60, Subpart Kb - Standards of Performance for Volatile Organic Liquid Storage Vessels (Including Petroleum Liquid Storage Vessels).

Date of Receipt of a BACT Application:

March 17, 1995

Review Group Members:

Teresa Heron and A. A. Linero of the New Source Review Section.

BACT Determination Procedure

In accordance with Chapter 62-212, F.A.C., this BACT determination is based on the maximum degree of reduction of each pollutant emitted which the Department of Environmental Protection (Department), on a case by case basis, taking into account energy, environmental and economic impacts, and other costs, determines is achievable through application of production processes and available methods, systems, and techniques. In addition, the regulations state that, in making the BACT determination, the Department shall give consideration to:

(a) Any Environmental Protection Agency determination of BACT pursuant to Section 169, and any emission limitation contained in 40 CFR Part 60 - Standards of Performance for New Stationary Sources or 40 CFR Part 61 - National Emission Standards for Hazardous Air Pollutants.

(b) All scientific, engineering, and technical material and other information available to the Department.

(c) The emission limiting standards or BACT determination of any other state.

(d) The social and economic impact of the application of such technology.

The EPA currently stresses that BACT should be determined using the "top-down" approach. The first step in this approach is to determine, for the emission unit in question, the most stringent control available for a similar or identical emission unit or emission unit category. If it is shown that this level of control is technically or economically infeasible for the emission unit in question, then the next most stringent level of control is determined and similarly evaluated. This process continues until the BACT level under consideration cannot be eliminated by any substantial or unique technical, environmental, or economic objections.

The air pollutant emissions from this facility can be grouped into categories based upon the control equipment and techniques that are available to control emissions from these emission units. Using this approach, the emissions can be classified as follows:

- o Combustion Products (e.g., SO_2, NO_x, PM). Controlled generally by good combustion of clean fuels, reactions with clinker and raw materials, removal in add-on control equipment.

- o Products of Incomplete Combustion (e.g., CO, VOC). Control is largely achieved by proper combustion techniques.

- o Emissions from materials handling, conveyance, and storage (primarily PM). Controlled generally by fabric filters and reasonable precautions.

Grouping the pollutants in this manner facilitates the BACT analysis because it enables the equipment available to control the type or group of pollutants emitted and the corresponding energy, economic, and environmental impacts to be examined on a common basis. Although all of the pollutants addressed in the BACT analysis may be subject to a specific emission limiting standard as a result of PSD review, the control of "non-regulated" air pollutants is considered in imposing a more stringent BACT limit on a "regulated" pollutant (i.e., PM, SO_2, H_2SO_4, fluorides, etc.), if a reduction in "non-regulated" air pollutants can be directly attributed to the control device selected as BACT for the abatement of the "regulated" pollutants.

COMBUSTION PRODUCTS

Nitrogen Oxides (NO_X)

Emissions of NO_X from dry process cement plants with a preheater/precalciner include the kiln, the calcining loop, and any fuel- fired support operation. Oxides of nitrogen (NO_X) are generated during fuel combustion by oxidation of chemically bound nitrogen in the fuel (fuel NO_X) and by thermal fixation of nitrogen in the combustion air (thermal NO_X). As flame temperature increases, the amount of thermally generated NO_X increases. Fuel type affects the quantity and type of NO_X generated. Generally, natural gas is low in nitrogen. However it causes higher flame temperatures and generates more thermal NO_X than oil or coal, which have higher fuel nitrogen content, but exhibit lower flame temperatures.

NO_X emissions represent a significant portion of the total emissions generated by this project, and should be minimized using BACT.

The emissions of NOx can potentially be reduced at Portland cement plants by two methods:

1. Minimizing the quantity of NOx generated during combustion (combustion modifications).

2. Reducing the quantity of NOx in the flue gas stream (flue gas controls).

A review of the EPA's BACT/LAER Clearinghouse indicates that NO_X emissions at most facilities are minimized by process control and good combustion practices.

The applicant stated that NO_X emissions at this facility will be controlled through Process Control and Secondary Combustion of Fuel. The applicant gave subsequent consideration to other possible control methods following a request by the Department for additional details justifying the selected method. The applicant rejected Selective Catalytic Reduction (SCR), Selective Non-catalytic Reduction (SNCR), and Low NO_X burners (LNB) "as technologies involving adverse economic or questionable environmental and energy impacts."

The applicant has proposed a NOx emission rate of 440.82 lb/hr. Taking into consideration the clinker production rate of 95.83 tons/hr and heat input of 364 MMBtu/hr, the proposed emission rate equates to 4.60 lb/ton feed and 1.21 lb/MMBtu, respectively.

The proposed NOx emission rate is compared below with previous BACT determinations made irrespective of cement manufacturing process.

Previous BACT Determinations

BASIS	Least Stringent	Most Stringent	Proposed
	Year 1978	Year 1981	Year 1995
lb/ton clinker	11.13	0.85	4.6

It is important to note that the facility which was given the 0.85 lb/ton NO_x limit has not been able to meet it since construction. Another plant with a NO_x limit of 1.11 lb/ton, utilizing the same process as planned by FRI, was never built. A plant with a process similar to that of FRI received a BACT determination of 2.09 lb NO_x/ton but apparently received a less stringent requirement in subsequent operating permits. Another plant (in California) with the same process as FRI received a NO_x value of 2.5 lb/ton. This value is equal to 2.8 lb/ton clinker when corrected for the additional heat requirement necessary to process the higher moisture limestone mined in Florida. A review of the NO_x emission rate summary indicates that the applicant's proposal is not representative of the most stringent BACT determinations made to-date for plants utilizing the same process. Also, these BACT determinations were established for sources which were permitted several years ago, and do not necessarily represent present top-down BACT evaluation.

The dry process with preheater/precalciner proposed by the applicant is the most energy-efficient process. Therefore one would expect the lower fuel use to result in the lowest possible emissions, all else being equal. Additionally, the lower flame temperature realized when burning coal (compared with burning gas or oil) as well as documented reductions from tire burning, are further reasons to expect the lowest possible emission rate among kilns employing Process Control and Secondary Combustion of Fuel.

A survey of stack test data from various kilns around the country, operating for more than three years, suggest that a lower emission level than the one proposed for NOx is possible. Additionally, the Department became aware of a recent BACT determination in Nevada which was based on application of SNCR. These factors will also be considered in determining what emission rate can be achieved in accordance with a top-down BACT determination.

Sulfur Dioxide

Sulfur dioxide (SO_2) may be generated both from sulfur compounds such as sulfates in the raw materials and from sulfur (including pyrites) in the fuel. The sulfur content of both raw materials and fuels varies from plant to plant and with geographic location. Sulfur dioxide at this facility will be generated by the combustion of coal and tires in the kiln and precalciner burners, and by the combustion of No. 2 fuel oil in the raw mill auxiliary heater. Sulfur reported as sulfite (SO_3) in the raw material is 0.08% (maximum as tested).

The exhaust gas from a cement kiln can contain varying amounts of SO_2. Under low oxygen conditions, sulfates in the raw materials can be converted to SO_2. At high temperature and excess air conditions, some of the sulfur introduced into the cement kiln with the raw materials (such as pyrites), and most of the sulfur contained in the fuel, are converted to SO_2. Most of the SO_2 subsequently reacts with oxygen and alkali compounds (such as Na_2O and K_2O vaporized at sintering temperatures) to form alkali sulfates, which are found in cement clinker and in kiln dust. The amount of SO_2 released in the kiln flue gases will vary with the amount of excess alkali available for absorption. Additional SO_2 may be removed through contact with the incoming raw materials and, to some extent, in the particulate control equipment.

Per the applicant, SO_2 control processes can be classified into five categories: fuel/material sulfur content limitations, absorption by a solution, adsorption on a solid bed, direct conversion to sulfur, or direct conversion to sulfuric acid.

FRI proposes to limit SO_2 emissions through Process Design and Material/Fuel Sulfur Limitations. This will be accomplished by taking advantage of the alkaline environment in the kiln, preheater/precalciner, and raw mill to effect substantial removal of SO_2. Ultimately the sulfur is incorporated into the clinker lattice structure, thus minimizing the amount emitted to the atmosphere. Some additional SO_2 removal through contact with particulate matter may also take place in the ESP.

The SO_2 limit proposed by the applicant (0.54 lbs/ton clinker) is less stringent than some BACT determinations for other portland cement plants.

A review of the BACT determinations for cement plants as contained in the BACT Clearinghouse indicates SO_2 reduction levels from 70 to 96% (percent) from facilities utilizing the dry processes. The Department did not find instances of BACT involving measures beyond those proposed by FRI. Some plants use baghouses for particulate control. It is possible that the filter cake on the bags enhances SO_2 removal compared with an ESP. However the difference is marginal compared with the primary removal mechanism involving oxidation of SO_2 to SO_3, alkali reactions, and subsequent removal of sulfates as particulate matter and clinker.

A survey of stack test data from different facilities around the country operating for at least three years demonstrates lower rates possible for SO_2. This factor along with the energy efficiency of the plant, and the possible benefits of removal by the particulate control system will be considered by the Department in making a top-down BACT determination.

Particulate Matter (PM, PM10) and Beryllium

Particulate Matter is generated by the various physical and chemical processes at a cement manufacturing plant. Sources of particulate matter at cement plants include (1) quarrying and crushing, (2) raw material storage, (3) grinding and blending, 4) clinker production, 5) finish grinding, and 6) packaging and loading. Additional sources of PM are raw material storage piles, conveyers, storage silos, and unloading facilities. The largest emission source of PM within cement plants is the pyroprocessing system that includes the kiln and clinker cooler exhaust stacks.

Emissions from kiln are affected by several factors, including differences in convective patterns, material movement patterns, burner locations and insertion lengths, heat transfer mechanisms, and the type of clinker cooler that supplies secondary air to the kiln for combustion. Typically, dust from the pollution control equipment servicing the kiln is collected and recycled into the kiln thereby, producing clinker from the dust. According to FRI's application, all cement kiln dust (CKD) captured in the ESP will be returned to the pyroprocessing system as raw material.

Common control devices for stack gases include settling chambers, inertial separators, impingement separators, wet scrubbers, fabric filters, and electrostatic precipitators. Fabric filters (baghouses) and electrostatic precipitator (ESPs) are generally considered equivalent for particulate control. Both types of devices can achieve removal efficiencies of over 99%. ESPs and baghouses are used extensively as control devices at cement plants. ESPs are generally specified for kiln and clinker cooler exhaust gases because of their ability to operate effectively at varying temperatures. Baghouses are also used at various facilities for particulate control from kilns and coolers. Both types of control equipment provide for the recovery/recycling of collected dust back into the process stream. Baghouses are also used to control particulate emissions from most other material processing operations at cement plants.

Common controls to limit particulate emissions from fugitive sources (such as roadways, stockpiles, and material processing and conveying equipment) include wet suppression, sweeping, application of surfactants, paving of roads and covering of stockpiles to reduce wind erosion. Wet suppression of fugitive particulate emissions is considered as BACT for most material handling operations and unpaved roads. Wind erosion of particles from stockpiles can be limited by the processing of wet materials (1.5% moisture or greater), and by covering of stockpiles where feasible.

Small quantities of beryllium are generated by the combustion of coal in the kiln and calciner burner, and by the combustion of No. 2 fuel oil in the raw mill auxiliary air heater. Beryllium will be generated as a particulate emission from the combustion of fuels, and will be controlled by the ESP on the kiln.

A review of the BACT Clearinghouse shows that baghouses and ESPs are widely used to control particulate matter from process emission units at cement plants. They are commonly accepted as BACT.

The applicant has proposed the New Source Performance Standard NSPS limits of 0.3 per ton of dry feed (kiln) and 0.1 pounds per ton of dry feed (cooler) as BACT for this facility. The NSPS values constitute the "floor" for BACT determinations. Consideration will also be given to any more stringent emission rates determined for kilns in Florida.

PRODUCTS OF INCOMPLETE COMBUSTION

Carbon Monoxide and Volatile Organic Compounds

Carbon monoxide is a pollutant formed by the incomplete combustion (oxidation) of carbon containing compounds in the cement kiln fuel and during the transformation of cement raw materials to cement clinker. When insufficient oxygen is provided, more CO and less CO_2 are formed than under excess air conditions. Substantial quantities of CO and CO_2 are also generated through calcining of limestone and other calcareous material. This calcining process thermally decomposes $CaCO_3$ to CaO and CO_2. The calcining of limestone in the cement manufacturing process liberates large amounts of CO_2, which is available for dissociation into CO.

VOC is also a pollutant formed by the incomplete combustion of fuel or hydrocarbons contained in the raw materials.

Emissions of CO can potentially be reduced at portland cement plants by two main methods: utilization of proper combustion practices to maximize the oxidation of CO to CO_2 and reducing the quantity of CO in the flu gas stream (flue gas control).

Emissions of VOC can be controlled by add-on control devices by the mechanisms of adsorption, absorption, or incineration (afterburning). Incineration processes include flame incineration, thermal incineration, and catalytic incineration. No add-on controls for CO or VOC have been demonstrated for cement plants. The high temperatures and control of excess air and fuel, typically results in simultaneous optimization for control of products of incomplete combustion and NO_X. The applicant proposes combustion control as BACT for VOC and CO from this plant.

A review of the BACT Clearinghouse reveals that for CO and VOC, as BACT from cement plants for these pollutants is as proposed by the applicant.

BACT DETERMINATION BY DEP:

Based on the information provided by the applicant and the information searches conducted by the Department, lower emissions limits can be obtained employing the top-down BACT approach for SO_2 and NO_X.

The Department has determined that the NO_X and SO_2 levels proposed by the applicant are roughly equal to typical emission limits from plants already in operation throughout the country and do not reflect the most stringent BACT determinations for portland cement plants. The Department appreciates the concern by the applicant that compliance with such emissions limits may be more difficult in the future as a result of possible implementation of enhanced monitoring requirements pursuant to the Title V Operating Permit Program. However, there has not been any change in the methods for setting limits as a result of this pending program.

The Department reviewed Document EPA-453/R-94-004, "Alternative Control Techniques - NO_X Emissions from Cement Manufacturing." Various methods beyond the one proposed by the applicant are detailed. Some of the methods discussed therein are already planned for this project including tire burning and staged combustion. As previously mentioned, the high energy efficiency of the dry preheater/precalciner process also suggests a lower NO_X limit is achievable. Based on the referenced document, it appears that SNCR, Low NO_X burners and Indirect Firing are available (at least as technology transfer) to consider in achieving a lower NO_X emission limit.

The Department also reviewed a paper presented at the Air and Waste Management Association (AWMA) International Specialty Conference on Waste Combustion in Boilers and Industrial Furnaces. The paper, "Reduction of NO_X Emissions from Cement Kiln/Calciner through the use of the NO_XOUT Process," which was written by representatives of Nalco and Ash Grove Cement, suggests that SNCR is a viable control method. A level as low as 1.0 lb/ton of clinker was reached based on demonstration tests conducted at the Ash Grove cement plant in Seattle, Washington.

Recently a proposed cement plant (Great Star Cement, Clark County, Nevada) was permitted with the urea-based SNCR/NO_XOUT process as BACT. The process relies on the reaction between ammonia and NO_X to yield molecular nitrogen. The delivery system consists of urea injectors in one of the preheater sections. The objective was to achieve only 50% reduction in NO_X emissions. At that level there should be no ammonia slip while meeting the BACT limit of 3.1 lb/ton clinker.

The Department examined the worst case scenario which assumes that FRI can only achieve its proposed BACT NO_X value of 4.6 lb/ton clinker while employing process control and secondary combustion of fuel. The Department reviewed the degree to which SNCR can be employed in order to achieve a further NO_X reduction to 2.8 lb/ton clinker.

Based on a recent Nalco estimate prepared for Great Star Cement, the capital costs for servicing a 3100 TPD kiln is $471,000 ($54,165 on an annualized basis). Operating costs to reduce NO_X emissions by 3.0 lb/ton clinker are estimated at $674,000. First year costs are projected to be $728,000 and $410/ton NO_X removed. After adjusting only the operating costs for the smaller FRI kiln and lesser removal objective, annual operating costs would be roughly $400,000. Thus the first year costs would be approximately $450,000 for a marginal cost less than $400/ton NO_X removed and add less than $0.50 to the cost of a ton of cement.

The cost per ton of NO_X removed is well within BACT costs for industry in general. The added cost to clinker production is low relative to other factors such as raw material, product, transportation cost fluctuations.

The Department is also aware of a cement plant owned by Mitsubishi in California, which makes use of a similar principal by injecting municipal wastewater sludge into a preheater section and relying (to some extent) on released ammonia to help lower NO_x emissions.

In addition to the BACT Clearinghouse and performance test results, the Department also reviewed various cement technology documents detailing the chemical reactions and technological problems of making cement. It is the conclusion of the Department that the key factors in SO_2 removal is maintaining proper ratios of sulfur and alkali in the kiln environment and intimate contact between raw materials and exhaust gases. This is considered by the Department to be BACT. It is clear that FRI can, with good operating practices, insure the lowest possible SO_2 emissions through its preheater/precalciner dry process. The Department believes that lower SO_2 values than proposed by the applicant are possible without add-on gas treatment systems.

The Department has also concluded that sulfuric acid mist emissions are not expected to be significant because free sulfite (SO_3) will preferentially react with clinker and kiln dust in the alkali environment of the kiln. Also, little water is available to complete the reaction to acid mist.

The BACT emission levels are established by the Department as follows:

Source	Pollutant Emission Limit
Kiln (PM)	0.20 pounds particulate matter per ton of feed (dry basis) and 0.31 lbs/ton clinker
Kiln (PM_{10})	0.26 lbs/ton clinker
Kiln (VE)	Visible emissions not to exceed 10 percent opacity
Kiln (SO_2)	0.28 lbs/ton clinker (interim) 24 hr rolling average Coal (1.25% sulfur by weight), No. 2 fuel oil (0.05% sulfur by weight), and tires (up to 30% of heat input) are the only fuels allowed
Sulfuric Acid Mist	Absorption by clinker (future stack tests)
Kiln (NOx)	2.8 lbs/ton clinker - 30 day rolling average
Kiln (CO)	3.6 lbs/ton clinker - 1 hr average
Kiln (VOC)	0.12 lbs/ton clinker - 1 hr average
Kiln (Be)	as controlled by PM BACT (ESP)

Cooler (PM)	0.10 pounds particulate matter per ton of kiln feed (dry basis) and 0.16 lbs/ton clinker
Cooler (PM10)	0.13 lbs/ton clinker
Cooler (VE)	Visible emissions not to exceed 10% opacity
Materials Handling Storage, Conveyance	Visible emissions not to exceed 5% opacity

Compliance with the particulate emission limitations shall be in accordance with the EPA Reference Method 5 as contained in Appendix A, 40 CFR 60, and set forth in Subsection 60.64 of the NSPS for Portland Cement Plants, 40 CFR 60.

Compliance with opacity standards shall be determined by conducting observations in accordance with 40 CFR 60, Appendix A, Method 9.

Compliance with the SO_2 and NO_x emission limitations shall be demonstrated using the CEMS.

Compliance with the CO limitations shall be demonstrated by 3 one-hour tests using EPA Method 10.

Compliance with the VOC limitations shall be demonstrated by 3 one- hour stack tests using Method 25 or Method 25A.

Pursuant to FAC 62-4.070(3), 62-212.400(5)(c) and 62-296.330, the kiln exhaust stack shall be equipped with continuous monitors to record NO_x and SO_2 for the purposes of compliance; opacity at both stacks to indicate proper maintenance and operation; and carbon monoxide and/or oxygen to optimize pollution control.

An additional purpose of the continuous monitors is to conduct a one-year program to optimize pollution removal and relate process variables to emissions. The Department will also consider a higher sulfur limit in the coal if it can be shown that the alkali/sulfur ratios are sufficiently balanced to minimize any additional SO_2 emissions.

BACT DETERMINATION RATIONALE:

BACT for visible emissions was determined to be more stringent than the NSPS for Portland Cement Plant, 40 CFR 60., Subpart F. With respect to the kiln, BACT for PM was determined to be more stringent than the NSPS for Portland Cement Plant, 40 CFR 60., Subpart F. The basis is the BACT Determination set by EPA for Pennsuco Cement, Medley, Florida in 1980.

BACT for SO_2 emissions from the cement kiln was based on the lowest number given in the BACT Clearinghouse. However the Department recognizes that because of the wide differences in fuels and raw materials nationwide it may be possible to meet a lower number or impossible to meet the value recommended by the Department. That is why the limit given is only an interim one. The final one will be determined after review of the process/pollutant optimization program described above.

For each small fabric filter in the material handling process the exhaust gases must not exhibit greater than 5 percent opacity. The Department has determined that 5 percent opacity is BACT, and is attainable with a baghouse.

BACT for NO_x emissions from the cement kiln was determined to be equal to 2.8 pounds per tons of clinker. This rate was obtained from the 2.5 lb/ton clinker value given in the BACT Clearinghouse report (corrected for conditions in Florida) and was achieved by a dry preheater/precalciner process plant. During first two years after startup, the kiln shall not exceed a NO_x limit of 3.8 lb/ton clinker and 2.8 lb/ton clinker thereafter. The Department may revise the NO_x limit to less than 2.8 lb/ton clinker and the SO2 limit to less than 0.28 lb/ton clinker (30-day rolling average) based on compliance test and continuous emission monitoring data.

FRI is required to supply additional technology to reduce NO_x emissions if the plant does not comply with the emission limit within two years. (Paragraph 30 of the Recommended Order dated July 23, 1996).

Details of the Analysis May be Obtained by Contacting:

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Date: 12/20/96

Approved:

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Date: 12/20/96