



State of Ohio Environmental Protection Agency

Street Address:

Lazarus Gov. Center
122 S. Front Street
Columbus, OH 43215

TELE: (614) 644-3020 FAX: (614) 644-2329

Mailing Address:

Lazarus Gov. Center
P.O. Box 1049
Columbus, OH 43216-1049

05/30/03

CERTIFIED MAIL

RE: Final Title V Chapter 3745-77 permit

15-76-05-1149
Ironrock Capital, Inc.
Philip G McGuinness
1201 Millerton Road S.E.
Canton, OH 44707

RECEIVED

JUN 06 2003

CANTON CITY HEALTH DEPT.
AIR POLLUTION DIVISION

Dear Philip G McGuinness:

Enclosed is the Title V permit that allows you to operate the facility in the manner indicated in the permit. Because this permit may contain several conditions and restrictions, we urge you to read it carefully.

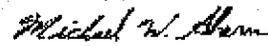
The Ohio EPA is encouraging companies to investigate pollution prevention and energy conservation. Not only will this reduce pollution and energy consumption, but it can also save you money. If you would like to learn ways you can save money while protecting the environment, please contact our Office of Pollution Prevention at (614) 644-3469.

You are hereby notified that this action of the Director is final and may be appealed to the Environmental Review Appeals Commission pursuant to Section 3745.04 of the Ohio Revised Code. The appeal must be in writing and set forth the action complained of and the grounds upon which the appeal is based. It must be filed with the Environmental Review Appeals Commission within thirty (30) days after notice of the Director's action. A copy of the appeal must be served on the Director of the Ohio Environmental Protection Agency within three (3) days of filing with the Commission. It is also requested by the Director that a copy of the appeal be served upon the Environmental Enforcement Section of the Office of the Attorney General. An appeal may be filed with the Environmental Review Appeals Commission at the following address:

Environmental Review Appeals Commission
236 East Town Street
Room 300
Columbus, Ohio 43215

If you have any questions, please contact Canton Division of Air Pollution Control.

Very truly yours,


Michael W. Ahern, Supervisor
Field Operations and Permit Section
Division of Air Pollution Control

cc: Canton Division of Air Pollution Control
File, DAPC PMU



State of Ohio Environmental Protection Agency

FINAL TITLE V PERMIT

Issue Date: 05/30/03

Effective Date: 06/20/03

Expiration Date: 06/20/08

This document constitutes issuance of a Title V permit for Facility ID: 15-76-05-1149 to: Ironrock Capital, Inc. 1201 Millerton Road S.E. Canton, OH 44707

Emissions Unit ID (Company ID)/Emissions Unit Activity Description

Table with 3 columns: Emissions Unit ID, Company ID, and Emissions Unit Activity Description. Rows include P001 (Roadways), P004 (Receiving materials), P004 (Tunnel kiln #1), P005 (Shuttle kiln #2), P006 (Tunnel kiln #3), P011 (Crushing & storage), P012 (Grinding & screening), P014 (Tunnel kiln #4), P015 (Tunnel Kiln #5), and P017 (ASC Glazing Line).

You will be contacted approximately eighteen (18) months prior to the expiration date regarding the renewal of this permit. If you are not contacted, please contact the appropriate Ohio EPA District Office or local air agency listed below. This permit and the authorization to operate the air contaminant sources (emissions units) at this facility shall expire at midnight on the expiration date shown above.

Described below is the current Ohio EPA District Office or local air agency that is responsible for processing and administering your Title V permit:

Canton Division of Air Pollution Control
420 Market Avenue N.
Canton, OH 44702-1544
(330) 489-3385

OHIO ENVIRONMENTAL PROTECTION AGENCY

Handwritten signature of Christopher Jones

Christopher Jones
Director

PART I - GENERAL TERMS AND CONDITIONS

A. *State and Federally Enforceable Section*

1. **Monitoring and Related Record Keeping and Reporting Requirements**

- a. Except as may otherwise be provided in the terms and conditions for a specific emissions unit, the permittee shall maintain records that include the following, where applicable, for any required monitoring under this permit:
 - i. The date, place (as defined in the permit), and time of sampling or measurements.
 - ii. The date(s) analyses were performed.
 - iii. The company or entity that performed the analyses.
 - iv. The analytical techniques or methods used.
 - v. The results of such analyses.
 - vi. The operating conditions existing at the time of sampling or measurement.
(Authority for term: OAC rule 3745-77-07(A)(3)(b)(i))
- b. Each record of any monitoring data, testing data, and support information required pursuant to this permit shall be retained for a period of five years from the date the record was created. Support information shall include all calibration and maintenance records and all original strip-chart recordings for continuous monitoring instrumentation, and copies of all reports required by this permit. Such records may be maintained in computerized form.
(Authority for term: OAC rule 3745-77-07(A)(3)(b)(ii))
- c. The permittee shall submit required reports in the following manner:
 - i. Reports of any required monitoring and/or record keeping information shall be submitted to the appropriate Ohio EPA District Office or local air agency.
(Authority for term: OAC rule 3745-77-07(A)(3)(c))
 - ii. **All reporting required in accordance with the OAC rule 3745-77-07(A)(3)(c) with respect to emission limitations, operational restrictions, and control device operating parameter limitations shall be submitted in the following manner:**
 - (a) Written reports of (i) any deviations from federally enforceable emission limitations, operational restrictions, and control device operating parameter limitations ; (ii) the probable cause of such deviations; and (iii) any corrective actions or preventive measures taken, shall be promptly made to the appropriate Ohio EPA District Office or local air agency. Except as may otherwise be provided in the terms and conditions for a specific emissions unit, i.e., in Part III of this Title V permit, the written reports shall be submitted quarterly, i.e., by January 31, April 30, July 31, and October 31 of each year, and shall cover the previous calendar quarters. In identifying each deviation, the permittee shall specify the applicable requirement for which the deviation occurred, describe each deviation, and provide the magnitude and duration of each deviation. These written reports shall satisfy the requirements (in part) of OAC rule 3745-77-07(A)(3)(c)(i) and (ii) pertaining to the submission of monitoring reports every six

months and the requirements (in part) of OAC rule 3745-77-07(A)(3)(c)(iii) pertaining to the prompt reporting of all deviations. See B.6 below if no deviations occurred during the quarter.

(Authority for term: OAC rules 3745-77-07(A)(3)(c)(i), (ii) and (iii))

- (b) Any malfunction, as defined in OAC rule 3745-15-06(B)(1), shall be promptly reported to the Ohio EPA in accordance with OAC rule 3745-15-06. In addition, to fulfill the deviation reporting requirements for this Title V permit, written reports that identify each malfunction that occurred during each calendar quarter shall be submitted, at a minimum, quarterly, i.e., by January 31, April 30, July 31, and October 31 of each year, and shall cover the previous calendar quarters.

In identifying each deviation caused by a malfunction, the permittee shall specify the applicable requirement for which the deviation occurred, describe each deviation, and provide the magnitude and duration of each deviation. For a specific malfunction, if this information has been provided in a written report that was submitted in accordance with OAC rule 3745-15-06, the permittee may simply reference that written report to identify the deviation. Also, if a deviation caused by a malfunction is identified in a written report submitted pursuant to paragraph (a) above, a separate report is not required for that malfunction pursuant to this paragraph. Nevertheless, all malfunctions, including those reported only verbally in accordance with OAC rule 3745-15-06, must be reported in writing, at a minimum, on a quarterly basis.

Any scheduled maintenance, as defined in OAC rule 3745-15-06(A)(1), that results in a deviation from a federally enforceable emission limitation, operational restriction, and control device operating parameter limitation shall be reported in the same manner as described above for malfunctions. These written reports for malfunctions (and scheduled maintenance projects, if appropriate) shall satisfy the requirements (in part) of OAC rule 3745-77-07(A)(3)(c)(iii) pertaining to the prompt reporting of all deviations.

(Authority for term: OAC rules 3745-77-07(A)(3)(c)(iii))

iii. **For monitoring, record keeping, and reporting requirements:**

Written reports that identify any deviations from the federally enforceable monitoring, record keeping, and reporting requirements contained in this permit shall be submitted to the appropriate Ohio EPA District Office or local air agency every six months, i.e., by January 31 and July 31 of each year, for the previous six calendar months. In identifying each deviation, the permittee shall specify the applicable requirement for which the deviation occurred, describe each deviation, and provide the magnitude and duration of each deviation. These semi-annual written reports shall satisfy the requirements of OAC rule 3745-77-07(A)(3)(c)(i) and (ii) pertaining to the reporting of any deviations related to the monitoring, record keeping, and reporting requirements. If no deviations occurred during a six-month period, the permittee shall submit a semi-annual report which states that no deviations occurred during that period.

(Authority for term: OAC rules 3745-77-07(A)(3)(c)(i) and (ii))

- iv. Each written report shall be signed by a responsible official certifying that, "based on information and belief formed after reasonable inquiry, the statements and information in the

report (including any written malfunction reports required by OAC rule 3745-15-06 that are referenced in the deviation reports) are true, accurate, and complete."

(Authority for term: OAC rule 3745-77-07(A)(3)(c)(iv))

2. Scheduled Maintenance/Malfunction Reporting

Any scheduled maintenance of air pollution control equipment shall be performed in accordance with paragraph (A) of OAC rule 3745-15-06. The malfunction of any emissions unit(s) or any associated air pollution control system(s) shall be reported to the appropriate Ohio EPA District Office or local air agency in accordance with paragraph (B) of OAC rule 3745-15-06. Except as provided in OAC rule 3745-15-06, any scheduled maintenance or malfunction necessitating the shutdown or bypassing of any air pollution control system(s) shall be accompanied by the shutdown of the emissions unit(s) that is (are) served by such control system(s).

(Authority for term: OAC rule 3745-77-07(A)(3)(c)(iii))

3. Risk Management Plans

If applicable, the permittee shall develop and register a risk management plan pursuant to section 112(r) of the Clean Air Act, as amended, 42 U.S.C. § 7401 et seq. ("Act"); and, pursuant to 40 C.F.R. 68.215(a), the permittee shall submit either of the following:

- a. a compliance plan for meeting the requirements of 40 C.F.R. Part 68 by the date specified in 40 C.F.R. 68.10(a) and OAC 3745-104-05(A); or
- b. as part of the compliance certification submitted under 40 C.F.R. 70.6(c)(5), a certification statement that the source is in compliance with all requirements of 40 C.F.R. Part 68 and OAC Chapter 3745-104, including the registration and submission of the risk management plan.

(Authority for term: OAC rule 3745-77-07(A)(4))

4. Title IV Provisions

If the permittee is subject to the requirements of 40 CFR Part 72 concerning acid rain, the permittee shall ensure that any affected emissions unit complies with those requirements. Emissions exceeding any allowances that are lawfully held under Title IV of the Act, or any regulations adopted thereunder, are prohibited.

(Authority for term: OAC rule 3745-77-07(A)(5))

5. Severability Clause

A determination that any term or condition of this permit is invalid shall not invalidate the force or effect of any other term or condition thereof, except to the extent that any other term or condition depends in whole or in part for its operation or implementation upon the term or condition declared invalid.

(Authority for term: OAC rule 3745-77-07(A)(6))

6. General Requirements

- a. The permittee must comply with all terms and conditions of this permit. Any noncompliance with the federally enforceable terms and conditions of this permit constitutes a violation of the Act, and is grounds for enforcement action or for permit revocation, revocation and reissuance, or modification, or for denial of a permit renewal application.

- b. It shall not be a defense for the permittee in an enforcement action that it would have been necessary to halt or reduce the permitted activity in order to maintain compliance with the federally enforceable terms and conditions of this permit.
- c. This permit may be modified, reopened, revoked, or revoked and reissued, for cause, in accordance with A.10 below. The filing of a request by the permittee for a permit modification, revocation and reissuance, or revocation, or of a notification of planned changes or anticipated noncompliance does not stay any term and condition of this permit.
- d. This permit does not convey any property rights of any sort, or any exclusive privilege.
- e. The permittee shall furnish to the Director of the Ohio EPA, or an authorized representative of the Director, upon receipt of a written request and within a reasonable time, any information that may be requested to determine whether cause exists for modifying, reopening or revoking this permit or to determine compliance with this permit. Upon request, the permittee shall also furnish to the Director or an authorized representative of the Director, copies of records required to be kept by this permit. For information claimed to be confidential in the submittal to the Director, if the Administrator of the U.S. EPA requests such information, the permittee may furnish such records directly to the Administrator along with a claim of confidentiality.

(Authority for term: OAC rule 3745-77-07(A)(7))

7. Fees

The permittee shall pay fees to the Director of the Ohio EPA in accordance with ORC section 3745.11 and OAC Chapter 3745-78.

(Authority for term: OAC rule 3745-77-07(A)(8))

8. Marketable Permit Programs

No revision of this permit is required under any approved economic incentive, marketable permits, emissions trading, and other similar programs or processes for changes that are provided for in this permit.

(Authority for term: OAC rule 3745-77-07(A)(9))

9. Reasonably Anticipated Operating Scenarios

The permittee is hereby authorized to make changes among operating scenarios authorized in this permit without notice to the Ohio EPA, but, contemporaneous with making a change from one operating scenario to another, the permittee must record in a log at the permitted facility the scenario under which the permittee is operating. The permit shield provided in these general terms and conditions shall apply to all operating scenarios authorized in this permit.

(Authority for term: OAC rule 3745-77-07(A)(10))

10. Reopening for Cause

This Title V permit will be reopened prior to its expiration date under the following conditions:

- a. Additional applicable requirements under the Act become applicable to one or more emissions units covered by this permit, and this permit has a remaining term of three or more years. Such a reopening shall be completed not later than eighteen (18) months after promulgation of the applicable requirement.

No such reopening is required if the effective date of the requirement is later than the date on which the permit is due to expire, unless the original permit or any of its terms and conditions has been extended pursuant to paragraph (E)(1) of OAC rule 3745-77-08.

- b. This permit is issued to an affected source under the acid rain program and additional requirements (including excess emissions requirements) become applicable. Upon approval by the Administrator, excess emissions offset plans shall be deemed to be incorporated into the permit, and shall not require a reopening of this permit.
- c. The Director of the Ohio EPA or the Administrator of the U.S. EPA determines that the federally applicable requirements in this permit are based on a material mistake, or that inaccurate statements were made in establishing the emissions standards or other terms and conditions of this permit related to such federally applicable requirements.
- d. The Administrator of the U.S. EPA or the Director of the Ohio EPA determines that this permit must be revised or revoked to assure compliance with the applicable requirements.
(Authority for term: OAC rules 3745-77-07(A)(12) and 3745-77-08(D))

11. Federal and State Enforceability

Only those terms and conditions designated in this permit as federally enforceable, that are required under the Act, or any of its applicable requirements, including relevant provisions designed to limit the potential to emit of a source, are enforceable by the Administrator of the U.S. EPA, the State, and citizens under the Act. All other terms and conditions of this permit shall not be federally enforceable and shall be enforceable under State law only.

(Authority for term: OAC rule 3745-77-07(B))

12. Compliance Requirements

- a. Any document (including reports) required to be submitted and required by a federally applicable requirement in this Title V permit shall include a certification by a responsible official that, based on information and belief formed after reasonable inquiry, the statements in the document are true, accurate, and complete.
- b. Upon presentation of credentials and other documents as may be required by law, the permittee shall allow the Director of the Ohio EPA or an authorized representative of the Director to:
 - i. At reasonable times, enter upon the permittee's premises where a source is located or the emissions-related activity is conducted, or where records must be kept under the conditions of this permit.
 - ii. Have access to and copy, at reasonable times, any records that must be kept under the conditions of this permit, subject to the protection from disclosure to the public of confidential information consistent with paragraph (E) of OAC rule 3745-77-03.
 - iii. Inspect at reasonable times any facilities, equipment (including monitoring and air pollution control equipment), practices, or operations regulated or required under this permit.
 - iv. As authorized by the Act, sample or monitor at reasonable times substances or parameters for the purpose of assuring compliance with the permit and applicable requirements.

- c. The permittee shall submit progress reports to the appropriate Ohio EPA District Office or local air agency concerning any schedule of compliance for meeting an applicable requirement. Progress reports shall be submitted semiannually, or more frequently if specified in the applicable requirement or by the Director of the Ohio EPA. Progress reports shall contain the following:
- i. Dates for achieving the activities, milestones, or compliance required in any schedule of compliance, and dates when such activities, milestones, or compliance were achieved.
 - ii. An explanation of why any dates in any schedule of compliance were not or will not be met, and any preventive or corrective measures adopted.
- d. Compliance certifications concerning the terms and conditions contained in this permit that are federally enforceable emission limitations, standards, or work practices, shall be submitted to the Director (the appropriate Ohio EPA District Office or local air agency) and the Administrator of the U.S. EPA in the following manner and with the following content:
- i. Compliance certifications shall be submitted annually on a calendar year basis. The annual certification shall be submitted on or before April 30th of each year during the permit term.
 - ii. Compliance certifications shall include the following:
 - (a) An identification of each term or condition of this permit that is the basis of the certification.
 - (b) The permittee's current compliance status.
 - (c) Whether compliance was continuous or intermittent.
 - (d) The method(s) used for determining the compliance status of the source currently and over the required reporting period.
 - (e) Such other facts as the Director of the Ohio EPA may require in the permit to determine the compliance status of the source.
 - iii. Compliance certifications shall contain such additional requirements as may be specified pursuant to sections 114(a)(3) and 504(b) of the Act.

(Authority for term: OAC rules 3745-77-07(C)(1),(2),(4) and (5) and ORC section 3704.03(L))

13. Permit Shield

- a. Compliance with the terms and conditions of this permit (including terms and conditions established for alternate operating scenarios, emissions trading, and emissions averaging, but excluding terms and conditions for which the permit shield is expressly prohibited under OAC rule 3745-77-07) shall be deemed compliance with the applicable requirements identified and addressed in this permit as of the date of permit issuance.
- b. This permit shield provision shall apply to any requirement identified in this permit pursuant to OAC rule 3745-77-07(F)(2), as a requirement that does not apply to the source or to one or more emissions units within the source.

(Authority for term: OAC rule 3745-77-07(F))

14. Operational Flexibility

The permittee is authorized to make the changes identified in OAC rule 3745-77-07(H)(1)(a) to (H)(1)(c) within the permitted stationary source without obtaining a permit revision, if such change is not a modification

under any provision of Title I of the Act [as defined in OAC rule 3745-77-01(JJ)], and does not result in an exceedance of the emissions allowed under this permit (whether expressed therein as a rate of emissions or in terms of total emissions), and the permittee provides the Administrator of the U.S. EPA and the appropriate Ohio EPA District Office or local air agency with written notification within a minimum of seven days in advance of the proposed changes, unless the change is associated with, or in response to, emergency conditions. If less than seven days notice is provided because of a need to respond more quickly to such emergency conditions, the permittee shall provide notice to the Administrator of the U.S. EPA and the appropriate District Office of the Ohio EPA or local air agency as soon as possible after learning of the need to make the change. The notification shall contain the items required under OAC rule 3745-77-07(H)(2)(d).

(Authority for term: OAC rules 3745-77-07(H)(1) and (2))

15. Emergencies

The permittee shall have an affirmative defense of emergency to an action brought for noncompliance with technology-based emission limitations if the conditions of OAC rule 3745-77-07(G)(3) are met. This emergency defense provision is in addition to any emergency or upset provision contained in any applicable requirement.

(Authority for term: OAC rule 3745-77-07(G))

16. Off-Permit Changes

The owner or operator of a Title V source may make any change in its operations or emissions at the source that is not specifically addressed or prohibited in the Title V permit, without obtaining an amendment or modification of the permit, provided that the following conditions are met:

- a. The change does not result in conditions that violate any applicable requirements or that violate any existing federally enforceable permit term or condition.
- b. The permittee provides contemporaneous written notice of the change to the Director and the Administrator of the U.S. EPA, except that no such notice shall be required for changes that qualify as insignificant emission levels or activities as defined in OAC rule 3745-77-01(U). Such written notice shall describe each such change, the date of such change, any change in emissions or pollutants emitted, and any federally applicable requirement that would apply as a result of the change.
- c. The change shall not qualify for the permit shield under OAC rule 3745-77-07(F).
- d. The permittee shall keep a record describing all changes made at the source that result in emissions of a regulated air pollutant subject to an applicable requirement, but not otherwise regulated under the permit, and the emissions resulting from those changes.
- e. The change is not subject to any applicable requirement under Title IV of the Act or is not a modification under any provision of Title I of the Act.

Paragraph (I) of rule 3745-77-07 of the Administrative Code applies only to modification or amendment of the permittee's Title V permit. The change made may require a permit to install under Chapter 3745-31 of the Administrative Code if the change constitutes a modification as defined in that Chapter. Nothing in paragraph

(I) of rule 3745-77-07 of the Administrative Code shall affect any applicable obligation under Chapter 3745-31 of the Administrative Code.

(For purposes of clarification, the permittee can refer to Engineering Guide #63 that is available in the STARSHIP software package.)

(Authority for term: OAC rule 3745-77-07(I))

17. Compliance Method Requirements

Nothing in this permit shall alter or affect the ability of any person to establish compliance with, or a violation of, any applicable requirement through the use of credible evidence to the extent authorized by law. Nothing in this permit shall be construed to waive any defenses otherwise available to the permittee, including but not limited to, any challenge to the Credible Evidence Rule (see 62 Fed. Reg. 8314, Feb. 24, 1997), in the context of any future proceeding.

(This term is provided for informational purposes only.)

18. Insignificant Activities

Each insignificant activity that has one or more applicable requirements shall comply with those applicable requirements.

(Authority for term: OAC rule 3745-77-07(A)(1))

19. Permit to Install Requirement

Prior to the "installation" or "modification" of any "air contaminant source," as those terms are defined in OAC rule 3745-31-01, a permit to install must be obtained from the Ohio EPA pursuant to OAC Chapter 3745-31.

(Authority for term: OAC rule 3745-77-07(A)(1))

20. Air Pollution Nuisance

The air contaminants emitted by the emissions units covered by this permit shall not cause a public nuisance, in violation of OAC rule 3745-15-07.

(Authority for term: OAC rule 3745-77-07(A)(1))

B. State Only Enforceable Section

1. Reporting Requirements Related to Monitoring and Record Keeping Requirements

The permittee shall submit required reports in the following manner:

- a. Reports of any required monitoring and/or record keeping information shall be submitted to the appropriate Ohio EPA District Office or local air agency.
- b. Except as otherwise may be provided in the terms and conditions for a specific emissions unit, quarterly written reports of (i) any deviations (excursions) from emission limitations, operational restrictions, and control device operating parameter limitations that have been detected by the testing, monitoring, and record keeping requirements specified in this permit, (ii) the probable cause of such deviations, and (iii) any corrective actions or preventive measures which have been or will be taken, shall be submitted to the appropriate Ohio EPA District Office or local air agency. In identifying each deviation, the permittee shall specify the applicable requirement for which the deviation occurred, describe each deviation, and provide the magnitude and duration of each deviation. If no deviations occurred during a calendar quarter, the permittee shall submit a quarterly report, which states that no deviations occurred during that quarter. The reports shall be submitted quarterly, i.e., by January 31, April 30, July 31, and October 31 of each year and shall cover the previous calendar quarters. (These quarterly reports shall exclude deviations resulting from malfunctions reported in accordance with OAC rule 3745-15-06.)

2. Records Retention Requirements

Each record of any monitoring data, testing data, and support information required pursuant to this permit shall be retained for a period of five years from the date the record was created. Support information shall include, but not be limited to, all calibration and maintenance records and all original strip-chart recordings for continuous monitoring instrumentation, and copies of all reports required by this permit. Such records may be maintained in computerized form.

3. Inspections and Information Requests

The Director of the Ohio EPA, or an authorized representative of the Director, may, subject to the safety requirements of the permittee and without undue delay, enter upon the premises of this source at any reasonable time for purposes of making inspections, conducting tests, examining records or reports pertaining to any emission of air contaminants, and determining compliance with any applicable State air pollution laws and regulations and the terms and conditions of this permit. The permittee shall furnish to the Director of the Ohio EPA, or an authorized representative of the Director, upon receipt of a written request and within a reasonable time, any information that may be requested to determine whether cause exists for modifying, reopening or revoking this permit or to determine compliance with this permit. Upon verbal or written request, the permittee shall also furnish to the Director of the Ohio EPA, or an authorized representative of the Director, copies of records required to be kept by this permit.

4. Scheduled Maintenance/Malfunction Reporting

Any scheduled maintenance of air pollution control equipment shall be performed in accordance with paragraph (A) of OAC rule 3745-15-06. The malfunction of any emissions units or any associated air pollution control system(s) shall be reported to the appropriate Ohio EPA District Office or local air agency in accordance with

paragraph (B) of OAC rule 3745-15-06. Except as provided in that rule, any scheduled maintenance or malfunction necessitating the shutdown or bypassing of any air pollution control system(s) shall be accompanied by the shutdown of the emissions unit(s) that is (are) served by such control system(s).

5. Permit Transfers

Any transferee of this permit shall assume the responsibilities of the prior permit holder. The appropriate Ohio EPA District Office or local air agency must be notified in writing of any transfer of this permit.

6. Additional Reporting Requirements When There Are No Deviations of Federally Enforceable Emission Limitations, Operational Restrictions, or Control Device Operating Parameter Limitations (See Section A of This Permit)

If no deviations occurred during a calendar quarter, the permittee shall submit a quarterly report, which states that no deviations occurred during that quarter. The reports shall be submitted quarterly, i.e., by January 31, April 30, July 31, and October 31 of each year and shall cover the previous calendar quarters.

Part II - Specific Facility Terms and Conditions

A. State and Federally Enforceable Section

1. This facility is subject to the applicable requirements specified in OAC Chapter 3745-25. In accordance with Ohio EPA Engineering Guide #64, the emission control action programs, as specified in OAC rule 3745-25-03, shall be developed and submitted within 60 days after receiving notification from the Ohio EPA.
2. Ironrock Capital, Inc. is a major stationary source for PSD with respect to SO₂.

B. State Only Enforceable Section

1. The following insignificant emissions units are located at this facility:

F003 - Meredith ceramic glaze application process;

P007 - tunnel drier #1;

P008 - tunnel drier #2;

P009 - QC laboratory; and

P901 - mixing and blending.

Each insignificant emissions unit at this facility must comply with all applicable State and federal regulations, as well as any emission limitations and/or control requirements contained within a permit to install for the emissions unit.

Facility Name: Ironrock Capital inc.
 Facility ID: 15-76-05-1149
 Emissions Unit: Roadways (F001)

Part III - Terms and Conditions for Emissions Units

Emissions Unit ID: Roadways (F001)

Activity Description: Paved carpark , unpaved roadways and car parking areas.

A. State and Federally Enforceable Section

I. Applicable Emissions Limitations and/or Control Requirements

1. The specific operation(s), property, and/or equipment which constitute this emissions unit are listed in the following table along with the applicable rules and/or requirements and with the applicable emissions limitations and/or control measures. Emissions from this unit shall not exceed the listed limitations, and the listed control measures shall be employed. Additional applicable emissions limitations and/or control measures (if any) may be specified in narrative form following the table.

<u>Operations, Property, and/or Equipment</u>	<u>Applicable Rules/ Requirements</u>	<u>Applicable Emissions Limitations/Control Measures</u>
paved parking areas (see section A.I.2.a)	OAC rule 3745-17-07(B)(4)	no visible particulate emissions except for 6 minutes during any 60-minute observation period
	OAC rule 3745-17-08(B), (B)(8)	reasonably available control measures (see sections A.I.2.c, A.I.2.d, and A.I.2.h)
unpaved roadways and parking areas (see section A.I.2.b)	OAC rule 3745-17-07(B)(5)	no visible particulate emissions except for 13 minutes during any 60-minute observation period
	OAC rule 3745-17-08(B), (B)(2)	reasonably available control measures (see sections A.I.2.e and A.I.2.h)

2. Additional Terms and Conditions

- 2.a The paved roadways and parking areas that are covered by this permit and subject to the requirements of OAC rules 3745-17-07 and 3745-17-08 are listed below:

paved roadways:

none

paved parking areas:

office parking

2. Additional Terms and Conditions (continued)

- 2.b The unpaved roadways and parking areas that are covered by this permit and subject to the requirements of OAC rules 3745-17-07 and 3745-17-08 are listed below:

unpaved roadways:

east road, west road, plant entrance

unpaved parking areas:

none

- 2.c The permittee shall employ reasonably available control measures on all paved roadways and parking areas for the purpose of ensuring compliance with the above-mentioned applicable requirements. In accordance with the permittee's permit application, the permittee has committed to clean the paved roadways and parking areas by sweeping with a broom at sufficient frequencies to ensure compliance. Nothing in this paragraph shall prohibit the permittee from employing other control measures to ensure compliance.
- 2.d The permittee shall promptly remove, in such a manner as to minimize or prevent resuspension, earth and/or other material from paved parking areas onto which such material has been deposited by trucking or earth moving equipment or erosion by water or other means.
- 2.e The permittee shall employ reasonably available control measures on all unpaved roadways and parking areas for the purpose of ensuring compliance with the above-mentioned applicable requirements. In accordance with the permittee's permit application, the permittee has committed to treat the unpaved roadways and parking areas with virgin oil, dust suppression material and/or resurface the unpaved roadways and parking areas at sufficient frequencies to ensure compliance. Nothing in this paragraph shall prohibit the permittee from employing other control measures to ensure compliance.
- 2.f The control measures shall be implemented at frequencies that will minimize or eliminate visible emissions of fugitive dust generated by vehicular traffic and ensure compliance with the above-mentioned visible emission limitations, and the needed frequencies of implementation shall be determined by the permittee's inspections. It is further understood that on any specific day implementation of the control measures shall not be necessary for a paved or unpaved roadway or parking area that is covered with snow and/or ice or if precipitation has occurred that is sufficient for that day to minimize or eliminate visible emissions of fugitive dust generated by vehicular traffic and to ensure compliance with the above-mentioned visible emission limitations.
- 2.g Any unpaved roadway or parking area, which during the term of this permit is paved or takes the characteristics of a paved surface due to the application of certain types of dust suppressants, may be considered as a paved roadway or parking area, and controlled with the control measure specified above for paved surfaces. Such unpaved roadway or parking area shall remain subject to the visible emission limitation for unpaved roadways and parking areas.
- 2.h Open-bodied vehicles transporting materials likely to become airborne shall have such materials covered at all times if the control measure is necessary to minimize or eliminate visible emissions of fugitive dust.

II. Operational Restrictions

None

III. Monitoring and/or Record Keeping Requirements

1. The permittee shall perform inspections of the roadways and parking areas in accordance with the following frequencies:

paved roadways and parking areas	minimum inspection frequency
office parking	monthly
unpaved roadways and parking areas	minimum inspection frequency
east road, west road, plant entrance	once every two weeks

The purpose of the inspections is to determine the need for implementing the control measures specified in section A.1.2. The inspections shall be performed during representative, normal traffic conditions. No inspection shall be necessary for a roadway or parking area that is covered with snow and/or ice or if precipitation has occurred that is sufficient for that day to minimize or eliminate visible emissions of fugitive dust generated by vehicular traffic and to ensure compliance with the above-mentioned visible emission limitations. Any required inspection that is not performed due to any of the above-identified events shall be performed as soon as such event(s) has (have) ended, except if the next inspection is within one week.

The permittee may, upon receipt of written approval from the Canton City Health Department, Air Pollution Control Division, modify the above-mentioned inspection frequencies if operating experience indicates that less frequent inspections would be sufficient to minimize or eliminate visible emissions of fugitive dust generated by vehicular traffic and to ensure compliance with the above-mentioned visible emission limitations.

2. The permittee shall maintain records of the following information:
 - a. the date and reason any required inspection was not performed, including those inspections that were not performed due to snow and/or ice cover or precipitation;
 - b. the date of each inspection where it was determined by the permittee that it was necessary to implement the control measures;
 - c. the dates the control measures were implemented and which control measures were implemented; and
 - d. on a calendar quarter basis, the total number of days the control measures were implemented and the total number of days where snow and/or ice cover or precipitation were sufficient to not require the control measures.

The information required in section A.III.2.d shall be kept separately for (i) the paved roadways and parking areas and (ii) the unpaved roadways and parking areas and shall be updated on a calendar quarter basis within 30 days after the end of each calendar quarter.

IV. Reporting Requirements

1. The permittee shall submit quarterly deviation reports that identify any of the following occurrences:
 - a. each day during which an inspection was not performed by the required frequency, excluding an inspection which was not performed due to an exemption for snow and/or ice cover or precipitation; and
 - b. each instance when a control measure, that was to be implemented as a result of an inspection, was not implemented.
2. The deviation reports shall be submitted in accordance with the requirements specified in Part I - General Term and Condition A.1.c.ii.

Facility Name: **Ironrock Capital inc.**
Facility ID: **15-76-05-1149**
Emissions Unit: **Roadways (F001)**

V. Testing Requirements

1. Compliance with the emission limitations for the paved and unpaved roadways and parking areas identified above shall be determined utilizing Test Method 22 of 40 CFR Part 60, Appendix A and the procedures specified in OAC rule 3745-17-03(B)(4).

VI. Miscellaneous Requirements

None

B. State Enforceable Section

I. Applicable Emissions Limitations and/or Control Requirements

1. The specific operation(s), property, and/or equipment which constitute this emissions unit are listed in the following table along with the applicable rules and/or requirements and with the applicable emissions limitations and/or control measures. Emissions from this unit shall not exceed the listed limitations, and the listed control measures shall be employed. Additional applicable emissions limitations and/or control measures (if any) may be specified in narrative form following the table.

<u>Operations, Property, and/or Equipment</u>	<u>Applicable Rules/ Requirements</u>	<u>Applicable Emissions Limitations/Control Measures</u>
paved parking areas	none	none
unpaved roadways and parking areas	none	none

2. Additional Terms and Conditions

None

II. Operational Restrictions

None

III. Monitoring and/or Record Keeping Requirements

None

IV. Reporting Requirements

1. If there are no deviations during a calendar quarter that must be reported pursuant to section A.IV of this permit, the permittee shall submit a quarterly report, in accordance with paragraph B.8 of the General Terms and Conditions, which states that no deviations occurred during that quarter.

V. Testing Requirements

None

VI. Miscellaneous Requirements

None

Part III - Terms and Conditions for Emissions Units

Emissions Unit ID: Receiving materials(Raw Fireclay or Shale) from pits (F004)

Activity Description: Raw Fireclay and Shale from the pit, dumped from truck into respective receiving hopper.

A. State and Federally Enforceable Section

I. Applicable Emissions Limitations and/or Control Requirements

1. The specific operation(s), property, and/or equipment which constitute this emissions unit are listed in the following table along with the applicable rules and/or requirements and with the applicable emissions limitations and/or control measures. Emissions from this unit shall not exceed the listed limitations, and the listed control measures shall be employed. Additional applicable emissions limitations and/or control measures (if any) may be specified in narrative form following the table.

<u>Operations, Property, and/or Equipment</u>	<u>Applicable Rules/ Requirements</u>	<u>Applicable Emissions Limitations/Control Measures</u>
Raw fireclay and raw shale receiving, each with a maximum processing capacity of 80 TPH, including truck dumping, conveying and transferring of raw materials (includes one raw fireclay truck dump receiving hopper with partial enclosure and water sprays serviced by the truck dump fabric filter (DCF004) with exhaust inside the building, one raw shale truck dump receiving hopper with partial enclosure and water sprays serviced by DCF004, and apron feed conveyor, with transfer to existing conveyors for each truck dump receiving hopper).	OAC rule 3745-31-05(A)(3) (PTI 15-1146)	1.50 lbs/hr of particulate emissions from the stack of the truck dump fabric filter
		0.416 tpy of particulate emissions from the stack of the truck dump fabric filter
		See A.I.2.a, A.I.2.c, and A.II.1 below.
		Compliance with this rule also includes compliance with OAC rule 3745-17-07(B) for the apron feed conveyor and the associated transfer of raw materials to the existing conveyors.
	OAC rule 3745-17-07(A)	The visible particulate emission limitations specified in this rule are less stringent than the visible particulate emission limitation established pursuant to OAC rule 3745-31-05(A)(3).
	OAC rule 3745-17-07(B)	See A.I.2.b below.
	OAC rule 3745-17-08(B)	The control measures specified in this rule are equal to or less stringent than the control measures established pursuant to OAC rule 3745-31-05(A)(3).
	OAC rule 3745-17-11(B)	See A.I.2.d below.

Facility Name: **Ironrock Capital inc.**

Facility ID: **15-76-05-1149**

Emissions Unit: **Receiving materials(Raw Fireclay or Shale) from pit:**

2. Additional Terms and Conditions

- 2.a**
- i. During dumping of raw materials into the raw fireclay and raw shale truck dump receiving hoppers, there shall be no visible particulate emissions of fugitive dust from the 3-sided partial enclosures which exceed 10% opacity as a 3-minute average.
 - ii. The raw fireclay and raw shale truck dump receiving hoppers shall be serviced by water sprays and a fabric filter that has a collection efficiency that is sufficient to minimize or eliminate visible particulate emissions of fugitive dust at the points of capture to the extent possible with good engineering design. The truck dump receiving hoppers shall be serviced by the truck dump fabric filter, DCF004. The fabric filter shall be vented inside the building, and there shall be no visible particulate emissions at the outlet of the fabric filter.
 - iii. Except for the apron feed conveyors, any belt conveyors that are not contained in a totally enclosed building shall be covered.
- 2.b** The visible particulate emissions of fugitive dust resulting from the operation of the apron feed conveyor and the transfer of raw materials to existing conveyors shall not exceed 20% opacity as a 3-minute average.
- 2.c** For the following operations associated with this emissions unit, the best available control measures shall be:
- i. for the truck dumping operations, partial enclosures shall be used for each of the shale and fireclay truck dump receiving hoppers, with water sprays in each partial enclosure for the control of particulate emissions from each of the truck dump receiving hoppers with partial enclosures during dumping, and a fabric filter (DCF004) with a collection efficiency sufficient to minimize or eliminate visible particulate emissions of fugitive dust at the points of capture (shale partial enclosure and fireclay partial enclosure) with good engineering design.
 - ii. for the apron feed conveyors, the conveyor, except for the portion which receives the raw materials during the truck dumping operations, shall be located inside a building (total enclosure);
 - iii. for the transfer points from the apron feed conveyor #1 to the existing conveyors, the transfer points shall be located inside a building (total enclosure); and
 - iv. except for the apron feed conveyors, for any belt conveyors not in a building, the belt conveyors shall be covered so as to minimize or eliminate visible particulate emissions of fugitive dust from the belt conveyors to the extent possible with good engineering design.
- 2.d** The raw fireclay and raw shale truck dump receiving hoppers, the apron feed conveyor #1, and the transfer points from the apron feed conveyor #1 to the existing conveyors are subject to OAC rule 3745-17-11. The particulate emission limitation specified in this applicable rule is less stringent than the particulate emission limitation established pursuant to the best available technology requirement specified in OAC rule 3745-31-05(A)(3).

II. Operational Restrictions

1. The permittee shall be limited to receiving, crushing, grinding, and screening 111,000 tons of material per calendar year in emissions units F004, P011, and P012.
2. The pressure drop across the fabric filter shall be maintained within the range of 2 to 4 inches of water while the emissions unit is in operation.

III. Monitoring and/or Record Keeping Requirements

1. The permittee shall maintain weekly records of the following:
 - a. the amount of material unloaded (received) in this emissions unit, in tons; and
 - b. the total amount of material received, crushed, ground, and screened in emissions units F004, P011, and P012, in tons.
2. The permittee shall perform weekly visible emissions checks for the following equipment and operations, when the emissions unit is in operation and when the weather conditions allow:
 - a. for each receiving hopper, check for any visible particulate emissions of fugitive dust outside the 3-sided enclosure serving this truck dumping operation when the truck dumping is taking place;
 - b. for the apron feed conveyor #1, check for any visible particulate emissions of fugitive dust around the conveyor when the conveyor is transporting material;
 - c. for the apron feed conveyor #1 transfer point, check for any visible particulate emissions of fugitive dust at the transfer points when the conveyor is transporting material; and
 - d. for each stack, check for any visible particulate emissions when the equipment that the stack is serving is in operation.

The presence or absence of any visible emissions shall be noted in an operations log. If visible emissions are observed, the permittee shall also note the following in the operations log:

- a. the color of the emissions;
 - b. whether the emissions are representative of normal operations;
 - c. if the emissions are not representative of normal operations, the cause of the abnormal emissions;
 - d. the total duration of any visible emission incident; and
 - e. any corrective actions taken to eliminate the visible emissions.
3. The permittee shall properly operate and maintain equipment to monitor the pressure drop across the baghouse while the emissions unit is in operation. The monitoring equipment shall be installed, calibrated, operated, and maintained in accordance with the manufacturer's recommendations, instructions, and operating manual(s). The permittee shall record the pressure drop across the baghouse on a daily basis.
 4. The permittee shall maintain a daily record of the hours of operation for this emissions unit.

IV. Reporting Requirements

1. The permittee shall submit semiannual written reports that (a) identify all days during which any visible particulate emissions were observed at any of the locations identified in section A.III.2 and (b) describe any corrective actions taken to eliminate the visible particulate emissions. These reports shall be submitted to the Canton City Health Department, Air Pollution Control Division by January 31 and July 31 of each year and shall cover the previous 6-month period.
2. The permittee shall submit annual reports that include the total amount of raw materials processed (unloaded), in tons, and the total particulate emissions, in tons for this emissions unit during the previous calendar year. These reports shall be submitted by January 31 of each year.
3. The permittee shall submit quarterly pressure drop deviation (excursion) reports that identify all periods of time during which the pressure drop across the fabric filter did not comply with the allowable range specified above.
4. The quarterly deviation reports shall be submitted in accordance with the requirements specified in Part I - General Term and Condition A.1.c.ii.

V. Testing Requirements

1. Compliance with the emission limitations in sections A.I.1 and A.I.2 of these terms and conditions shall be determined in accordance with the following methods:

1.a Emission Limitation:

1.50 lbs/hr of particulate emissions from the stack of the truck dump fabric filter

Applicable Compliance Method:

Compliance may be demonstrated by multiplying the number of tons of raw materials dumped per year (obtained from the required records), by the average size of a truckload (20 tons/truckload), and then by the emission factor from PTI 15-1146 (1 pound of particulate emissions per truckload), and then by the control efficiency of the watering (1 - 0.70), and then by the truck dump fabric filter collection efficiency (1 - 0.50), and then dividing by 2,000 lbs/ton to obtain the tons of particulate emissions per year from the stack of the truck dump fabric filter.

If required, the permittee shall demonstrate compliance with this emission limitation through emission tests performed in accordance with 40 CFR Part 60, Appendix A, Methods 1 through 5.

1.b Emission Limitation:

0.416 tpy of particulate emissions from the stack of the truck dump fabric filter

Applicable Compliance Method:

Compliance may be demonstrated by multiplying the hourly emission limitation of 1.5 lbs/hr by the actual annual hours of operation, and then dividing by 2000 lbs/ton.

1.c Emission Limitation:

During dumping of raw materials into the truck dump receiving hoppers, there shall be no visible particulate emissions of fugitive dust which exceed 10% opacity as a 3-minute average.

Applicable Compliance Method:

If required, compliance shall be demonstrated through visible emissions observations performed in accordance with the requirements specified in 40 CFR Part 60, Appendix A, Method 9.

1.d Emission Limitation:

no visible particulate emissions at the outlet of the fabric filter

Applicable Compliance Method:

If required, compliance shall be demonstrated through visible emissions observations performed in accordance with the requirements specified in 40 CFR Part 60, Appendix A, Method 22.

1.e Emission Limitation:

The visible particulate emissions of fugitive dust resulting from the operation of the apron feed conveyor and the transfer of raw materials to existing conveyors shall not exceed 20% opacity as a 3-minute average.

Applicable Compliance Method:

If required, compliance shall be demonstrated through visible emissions observations performed in accordance with the requirements specified in 40 CFR Part 60, Appendix A, Method 9 and the procedures specified in OAC rule 3745-17-03(B)(3).

V. Testing Requirements (continued)

2. The permittee shall conduct, or have conducted, emission testing for this emissions unit in accordance with the following requirements:
 - a. The emission testing shall be conducted on an annual basis.
 - b. The emission testing shall be conducted to demonstrate compliance with the visible particulate emission limitation (10% opacity as a 3-minute average) for the unloading operations at the truck dump receiving hoppers.
 - c. The following test method shall be employed to demonstrate compliance with the visible particulate emission limitation: Method 9 of 40 CFR Part 60, Appendix A.
 - d. The test(s) shall be conducted while the emissions unit is operating at or near its maximum capacity, unless otherwise specified or approved by the Canton City Health Department, Air Pollution Control Division.

Not later than 30 days prior to the proposed test date(s), the permittee shall submit an "Intent to Test" notification to the Canton City Health Department, Air Pollution Control Division. The "Intent to Test" notification shall describe in detail the proposed test methods and procedures, the emissions unit operating parameters, the time(s) and date(s) of the test(s), and the person(s) who will be conducting the test(s). Failure to submit such notification for review and approval prior to the test(s) may result in the Canton City Health Department, Air Pollution Control Division's refusal to accept the results of the emission test(s).

Personnel from the appropriate Canton City Health Department, Air Pollution Control Division shall be permitted to witness the test(s), examine the testing equipment, and acquire data and information necessary to ensure that the operation of the emissions unit and the testing procedures provide a valid characterization of the emissions from the emissions unit and/or the performance of the control equipment.

A comprehensive written report on the results of the emission test(s) shall be signed by the person or persons responsible for the tests and submitted to the Canton City Health Department, Air Pollution Control Division within 30 days following completion of the test(s). The permittee may request additional time for the submittal of the written report, where warranted, with prior approval from the Canton City Health Department, Air Pollution Control Division.

VI. Miscellaneous Requirements

1. Note that this emissions unit is not subject to 40 CFR Part 60, Subpart OOO, Standards of Performance for Nonmetallic Mineral Processing Plants as is indicated in 40 CFR 60.672(d).

B. State Enforceable Section

I. Applicable Emissions Limitations and/or Control Requirements

1. The specific operation(s), property, and/or equipment which constitute this emissions unit are listed in the following table along with the applicable rules and/or requirements and with the applicable emissions limitations and/or control measures. Emissions from this unit shall not exceed the listed limitations, and the listed control measures shall be employed. Additional applicable emissions limitations and/or control measures (if any) may be specified in narrative form following the table.

<u>Operations, Property, and/or Equipment</u>	<u>Applicable Rules/ Requirements</u>	<u>Applicable Emissions Limitations/Control Measures</u>
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2. Additional Terms and Conditions

None

II. Operational Restrictions

None

III. Monitoring and/or Record Keeping Requirements

None

IV. Reporting Requirements

None

V. Testing Requirements

None

VI. Miscellaneous Requirements

None

Part III - Terms and Conditions for Emissions Units

Emissions Unit ID: Tunnel kiln #1 (P004)

Activity Description: Natural gas fired Tunnel Kiln firing unglazed ceramic quarry tiles to a temperature of 2200°F.

A. State and Federally Enforceable Section

I. Applicable Emissions Limitations and/or Control Requirements

1. The specific operation(s), property, and/or equipment which constitute this emissions unit are listed in the following table along with the applicable rules and/or requirements and with the applicable emissions limitations and/or control measures. Emissions from this unit shall not exceed the listed limitations, and the listed control measures shall be employed. Additional applicable emissions limitations and/or control measures (if any) may be specified in narrative form following the table.

<u>Operations, Property, and/or Equipment</u>	<u>Applicable Rules/ Requirements</u>	<u>Applicable Emissions Limitations/Control Measures</u>
natural gas-fired tunnel kiln to produce unglazed quarry tile; kiln #1; maximum input capacity 11.2 mmBtu/hr; maximum raw material feed rate 3.97 TPH; tile production capacity 3.67 TPH, vented to a common stack for emissions units P004, P005, P006, and P014	OAC rule 3745-17-07(A)	See A.I.2.a below.
	OAC rule 3745-17-11(B)	See A.I.2.b below.
	OAC rule 3745-18-06(E)(1)	See A.I.2.c below.
	OAC rule 3745-31-05(A)(3) (PTI 15-1173)	See A.I.2.d and A.I.2.e below. Compliance with this rule also includes compliance with OAC rule 3745-17-07(A).

2. Additional Terms and Conditions

- 2.a Visible particulate emissions from any stack shall not exceed 20% opacity, as a 6-minute average, except as provided by the rule.
- 2.b The particulate emission limitation required by OAC rule 3745-17-11(B) is less stringent than the particulate emission limitation established pursuant to the best available technology requirement specified in OAC rule 3745-31-05(A)(3).
- 2.c The sulfur dioxide (SO₂) emission limitation required by OAC rule 3745-18-06(E)(1) is less stringent than the SO₂ emission limitation established pursuant to the best available technology requirement specified in OAC rule 3745-31-05(A)(3).

2. Additional Terms and Conditions (continued)

- 2.d** The following emission limitations shall apply to emissions units P004 (kiln #1), P005 (kiln #2), P006 (kiln #3), and P014 (kiln #4), combined:

21.65 lbs/hr of particulate emissions
94.14 tpy of particulate emissions

16.06 lbs/hr of nitrogen oxides (NOx)
70.34 tpy of NOx

76.65 lbs/hr of SO2
12,877 lbs/wk of SO2
306.53 tpy of SO2

6.5 lbs/hr of fluorides
28.47 tpy of fluorides

- 2.e** The height of the stack serving this emissions unit shall be a minimum of 45 meters from the ground level.

II. Operational Restrictions

1. The permittee shall burn only natural gas as fuel in this emissions unit.
2. The total amount of sulfur in the raw materials used in emissions units P004, P005, P006, and P014 shall not exceed 8,220 pounds in any one week. The amount of sulfur shall be determined by multiplying the tons of raw material (dry weight) used in a week, times the weighted-average sulfur content of the raw materials. See section A.VI.1 for an explanation of the calculation of this weekly sulfur (in the feed) value. This restriction shall change, in accordance with section A.VI.1 if the current sulfur emission factor changes.
3. The total amount of sulfur fed to emissions units P004, P005, P006, and P014 shall not exceed 97,900 pounds in any one quarter. The amount of sulfur shall be determined by multiplying the tons (dry weight) of raw materials fed to these emissions units during that quarter, times the weighted-average sulfur content of the raw materials. See section A.VI.1 for an explanation of the calculation of this quarterly sulfur (in the feed) value. This restriction shall change, in accordance with section A.VI.1 if the current sulfur emission factor changes.

III. Monitoring and/or Record Keeping Requirements

1. The permittee shall perform checks, at least once every two-week period and within 15 days of the last check performed, when the emissions unit is in operation and when the weather conditions allow, for any visible particulate emissions from the stack serving this emissions unit. The presence or absence of any visible emissions shall be noted in an operations log. If visible emissions are observed, the permittee shall also note the following in the operations log:
 - a. the color of the emissions;
 - b. whether the emissions are representative of normal operations;
 - c. if the emissions are not representative of normal operations, the cause of the abnormal emissions;
 - d. the total duration of any visible emission incident; and
 - e. any corrective actions taken to eliminate the visible emissions.
2. For each day during which the permittee burns a fuel other than natural gas in this emissions unit, the permittee shall maintain a record of the type and quantity of fuel burned.
3. The permittee shall comply with the following monitoring and record keeping requirements for the purpose of determining the weekly and average hourly SO2 emissions from emissions units P004, P005, P006, and P014, combined:

III. Monitoring and/or Record Keeping Requirements (continued)

3.a The following procedures shall be used to obtain a representative sample of the total daily amount of fireclay and shale fed to emissions units P004, P005, P006, and P014:

i. Daily samples shall be taken of the raw materials (fireclay and shale) used in tile production. A daily grab sample of fireclay shall be taken from the belt conveyor leading from one of the two ground fireclay storage tanks which feed the conveyor belts which feed the pug mixers. A daily grab sample of shale shall be taken from the belt conveyor leading from one of the two ground shale storage tanks which feed the conveyor belts which feed the pug mixers. One of these pug mixers supplies mixed raw materials to emissions units P004 and P005 and the other pug mixer supplies mixed raw materials to emissions units P006 and P014.

ii. The two individual daily samples from the conveyor belts shall be mixed in proportion to the daily production rates in emissions units P004, P005, P006, and P014 to obtain a representative daily composite sample.

iii. The daily composite sample shall be placed in a composite bottle with lid to produce a weekly composite sample. The weekly composite shall be mixed thoroughly so that a sample may be taken from the bottle to represent the whole week's production from the four emissions units.

iv. The permittee shall maintain the following daily records:

- (a) the production schedule indicating what product is being produced in each of the four kilns including the amount, in grams, of the clay and shale used to make the daily composite sample;
- (b) the production rate of each product being produced, and the number of kiln cars processed per day in each kiln; and
- (c) the total daily production rate.

v. The permittee shall maintain weekly records of the production schedules indicating what products are produced in emissions units P004 and P005 combined, and indicating what products are produced in emissions units P006 and P014 combined.

3.b The following procedures shall be used to determine the sulfur content of each weekly composite sample:

i. The weekly composite sample shall be analyzed for sulfur content each week.

ii. The weekly composite sample shall be analyzed using the permittee's Laboratory Equipment Corporation (LECO) analysis equipment that utilizes ASTM Test Method D1552 or E350-97 to determine the corrected, weighted-average sulfur content of the raw materials.

iii. For quality assurance of the LECO equipment and its analytical methods, the permittee shall perform a calibration test before the weekly composite sample is analyzed for sulfur content. Two standard calibration rings with known sulfur concentration shall be analyzed for sulfur content utilizing the LECO equipment. The two sulfur content results shall be averaged to obtain the calibration correction factor. The analysis of the weekly composite sample shall utilize the calibration correction factor to obtain the corrected, weighted-average, sulfur content result.

iv. The permittee shall maintain the following weekly records:

- (a) the value of the corrected, weighted-average sulfur content of the raw materials used to make tile that week;
- (b) the sulfur concentration of the rings used to calibrate the LECO equipment each week;
- (c) the measured sulfur concentrations of the calibration rings; and
- (d) the calibration correction factors.

III. Monitoring and/or Record Keeping Requirements (continued)

3.c The following procedures shall be used for the sampling and analysis of the tile processed in emissions units P004, P005, P006, and P014 during the emission tests:

i. From each kiln, the permittee shall collect one piece of unfired tile from each kiln car (the device upon which the unfired clay is stacked and which moves the clay through the fired kiln for curing) that will be located in the firing section of each kiln during each of the three hours of the next day's emission testing. The set of unfired samples from each hour of the testing shall be crushed and mixed together.

ii. The twelve mixed samples (one from each hour from each kiln) of uncured tile shall be analyzed by the permittee or its contractor for sulfur content using a published method for the determination of sulfur content which is suitable for uncured and cured tile materials. These analyses shall give the amount of sulfur entering each kiln in the uncured tile, in units of pounds of sulfur per hour per kiln, in each of the three hours of the test.

iii. From each kiln, the permittee shall collect one piece of fired tile from each kiln car (the device upon which the unfired clay is stacked and which moves the clay through the fired kiln for curing) that was located in the firing section of each kiln during each of the three hours of the emission testing. The set of fired samples from each hour of the testing shall be crushed and mixed together.

iv. The twelve mixed samples (one from each hour from each kiln) of cured tile shall be analyzed by the permittee or its contractor for sulfur content using a published method for the determination of sulfur content which is suitable for uncured and cured tile materials. These analyses shall give the amount of sulfur exiting each kiln in the cured tile, in units of pounds of sulfur per hour per kiln, in each of the three hours of the test.

v. The sulfur converted to SO₂ (out the stack) to the sulfur (in the feed) emission factor (the sulfur emission factor), that is, the ratio of the amount of sulfur converted to SO₂ and emitted from the stack (lbs S) to sulfur in the feed (lbs S), shall be calculated by averaging the three individual sulfur emission factors from each of the three hours of the SO₂ emission testing required in section A.V.2. The individual sulfur emission factors shall be calculated by taking the sulfur in the feed (lbs S/hr) minus sulfur retained in the fired tile (sulfur not converted to SO₂) (lbs S/hr), and dividing by the sulfur in the feed (lbs S/hr) for each hour to give a ratio for each of the three individual testing hours. The sulfur retained in the fired tile (lbs S/hr) shall be determined by subtracting the measured sulfur content (lbs S/hr) of the fired tile from the unfired tile used during the hour of the emission test. The amount of sulfur in the feed (lbs S/hr) shall be determined from the sulfur content measurement of the unfired tile used during the hour of the emission test. The three individual sulfur emission factors shall be averaged together to obtain the sulfur emission factor (lbs S/lbs S).

The weekly SO₂ emission rate from the combined emissions units (lbs SO₂/week), calculated by multiplying the weekly amount of sulfur usage in the combined emissions units (lbs S), times the current sulfur emission factor (lbs S/lbs S), and times 2.00 (lbs SO₂/lb S) (stoichiometric ratio).

vi. The permittee shall maintain the following records:

(a) the sulfur content of the crushed and mixed unfired sample from each hour of the test;

(b) the calculations performed to obtain the sulfur emission factor; and

(c) the final sulfur emission factor.

III. Monitoring and/or Record Keeping Requirements (continued)

4. The permittee shall maintain records of the following information for emissions units P004, P005, P006, and P014, combined:
 - a. the total amount of sulfur in the raw materials used in the combined emissions unit in any one week, calculated by multiplying the tons of feed (dry weight) to the combined emissions units during that week, times the weighted-average sulfur content for that week;
 - b. the weekly SO₂ emission rate from the combined emissions units (lbs SO₂/week), calculated by multiplying the weekly amount of sulfur usage in the combined emissions units (lbs S), times the current sulfur emission factor (lbs S/lbs S), and times 2.00 (lbs SO₂/lb S) (stoichiometric ratio);
 - c. the average SO₂ emission rate from the combined emissions units (lbs SO₂/hr), calculated as the weekly amount of sulfur usage in the combined emissions units (lbs S), times the current sulfur emission factor, divided by the hours of operation for the combined emissions units for the week; and
 - d. the total amount of sulfur in the raw materials used in the combined emissions units in any one quarter, calculated by summing the weekly values of the total amount of sulfur in the raw materials used in the combined emissions units (from section A.III.4.a. above) for all the weeks during that quarter.
5. The sulfur emission factor to be used in determining the pounds of SO₂ emitted per week, the average pounds of SO₂ emitted per hour, the total amount of sulfur fed to emissions units P004, P005, P006, and P014, combined, per week, and the total amount of sulfur fed to emissions units P004, P005, P006, and P014, combined, per quarter shall be based upon the most recent emission testing. The change from the old sulfur emission factor to the new one shall take place at the start of the quarter immediately following the quarter in which the emission testing took place.
6. The permittee shall maintain a monthly record of the hours of operation for emissions units P004, P005, P006, and P014, combined.

IV. Reporting Requirements

1. The permittee shall submit quarterly written reports that (a) identify all days during which any visible particulate emissions were observed from the stack serving this emissions unit and (b) describe any corrective actions taken to eliminate the visible particulate emissions. These reports shall be submitted to the Director (the Canton City Health Department, Air Pollution Control Division) by January 31, April 30, July 31, and October 31 of each year and shall cover the previous 3-month period.
2. The permittee shall submit quarterly deviation (excursion) reports that include an identification of each week during which the average hourly SO₂ emissions from the raw materials used in tile production in emissions units P004, P005, P006, and P014, combined, exceeded 76.65 lbs/hr. The actual average hourly SO₂ emissions for each such week shall also be reported.
3. The permittee shall submit deviation (excursion) reports that identify each day when a fuel other than natural gas was burned in this emissions unit. Each report shall be submitted within 30 days after the deviation occurs. It shall not be necessary to submit a deviation report for any quarter in which no deviations occurred.
4. The permittee shall submit quarterly deviation (excursion) reports that identify each week during which the total weight of sulfur in the raw materials used in emissions units P004, P005, P006, and P014, combined, exceeded the operational restriction defined in section A.II.2 (current value of 8,220 pounds) and the actual pounds of sulfur used in the raw materials for emissions units P004, P005, P006, and P014, combined, for each such week.
5. The permittee shall submit quarterly deviation (excursion) reports that identify each quarter during which the total weight of sulfur in the raw materials used in emissions units P004, P005, P006, and P014, combined, exceeded the operational restriction defined in section A.II.3 (current value of 97,900 pounds) and the actual pounds of sulfur used in the raw materials for emissions units P004, P005, P006, and P014, combined, for each such quarter.

Facility Name: **Ironrock Capital inc.**
Facility ID: **15-76-05-1149**
Emissions Unit: **Tunnel kiln #1 (P004)**

IV. Reporting Requirements (continued)

6. The quarterly deviation reports shall be submitted in accordance with the requirements specified in Part 1 - General Term and Condition A.1.c.ii.
7. The permittee shall also submit annual reports that specify the total particulate, SO₂, NO_x, and fluoride emissions from emissions units P004, P005, P006, and P014, combined, in tons, for the previous calendar year. These reports shall be submitted by January 31 of each year.

V. Testing Requirements

1. Compliance with the emission limitations in sections A.I.1 and A.I.2 of these terms and conditions shall be determined in accordance with the following methods:

1.a Emission Limitation:

Visible particulate emissions from any stack shall not exceed 20% opacity, as a 6-minute average, except as provided by the rule.

Applicable Compliance Method:

Compliance shall be demonstrated based upon visible particulate emission observations performed on the common stack serving emissions units P004, P005, P006, and P014 in accordance with 40 CFR Part 60, Appendix A, Method 9 and the procedures specified in OAC rule 3745-17-03(B)(1).

1.b Emission Limitation:

21.65 lbs/hr of particulate emissions for emissions units P004, P005, P006, and P014, combined.

Applicable Compliance Method:

Compliance with this emission limitation shall be demonstrated based upon emission testing performed in accordance with the requirements specified in 40 CFR Part 60, Appendix A, Methods 1 through 5 and section A.V.2 below.

1.c Emission Limitation:

94.14 tpy of particulate emissions for emissions units P004, P005, P006, and P014, combined

Applicable Compliance Method:

Compliance with this emission limitation shall be demonstrated based upon the production records required pursuant to section A.III and the data from the most recent emission tests that demonstrated that the emissions unit(s) was (were) in compliance.

1.d Emission Limitation:

16.06 lbs/hr of NO_x for emissions units P004, P005, P006, and P014, combined

Applicable Compliance Method:

Compliance with this emission limitation shall be demonstrated based upon emission testing performed in accordance with the requirements specified in 40 CFR Part 60, Appendix A, Methods 1 through 4 and 7 and section A.V.2 below.

V. Testing Requirements (continued)

1.e Emission Limitation:

70.34 tpy of NOx for emissions units P004, P005, P006, and P014, combined

Applicable Compliance Method:

This emission limitation was established by multiplying the hourly NOx emission limitation for emissions units P004, P005, P006, and P014 by 8760 and dividing by 2000 lbs/ton. Compliance with this emission limitation may be assumed provided that the permittee complies with the hourly NOx emission limitation. Compliance with this emission limitation shall be demonstrated based upon the production records required pursuant to section A.III and the data from the most recent emission tests that demonstrated that the emissions unit(s) was (were) in compliance.

1.f Emission Limitation:

76.65 lbs/hr of SO2 for emissions units P004, P005, P006, and P014, combined

Applicable Compliance Method:

Compliance with this emission limitation may be demonstrated based upon the records required pursuant to section A.III. Compliance with this emission limitation shall be demonstrated based upon emission testing performed in accordance with the requirements specified in 40 CFR Part 60, Appendix A, Methods 1 through 4 and 7 and section A.V.2 below.

1.g Emission Limitation:

306.53 tpy of SO2 for emissions units P004, P005, P006, and P014, combined

Applicable Compliance Method:

Compliance with this emission limitation shall be demonstrated based upon the applicable production records required pursuant to section A.III.

1.h Emission Limitation:

6.5 lbs/hr of fluorides for emissions units P004, P005, P006, and P014, combined

Applicable Compliance Method:

Compliance with this emission limitation shall be demonstrated based upon emission testing performed in accordance with the requirements specified in 40 CFR Part 60, Appendix A, Methods 1 through 4 and 13A and section A.V.2 below.

1.i Emission Limitation:

28.47 tpy of fluorides for emissions units P004, P005, P006, and P014, combined

Applicable Compliance Method:

This emission limitation was established by multiplying the hourly fluorides emission limitation for emissions units P004, P005, P006, and P014 by 8760 and dividing by 2000 lbs/ton. Compliance with this emission limitation may be assumed provided that the permittee complies with the hourly fluorides emission limitation. Compliance with this emission limitation shall be based upon the production records required pursuant to section A.III and the data from the most recent emission tests that demonstrated that the emissions unit(s) was (were) in compliance.

V. Testing Requirements (continued)

- 2.** The permittee shall conduct, or have conducted, emission testing for emissions units P004, P005, P006, and P014 in accordance with the following requirements:
- 2.a** The emission testing shall be conducted no later than 6 months after issuance of the permit and within 27 to 33 months after issuance of the permit.
- 2.b** The emission testing shall be conducted to demonstrate compliance with the visible particulate emission limitation in section A.1.2.a and with the allowable, hourly mass emission rates for particulates, SO₂, NO_x, and fluorides in section A.1.2.d.
- 2.c** The following test methods shall be employed to demonstrate compliance with the visible particulate emissions limitation and the allowable mass emission rates:
- for visible particulate emissions - Method 9 of 40 CFR Part 60, Appendix A;
for particulates - Methods 1 through 5 of 40 CFR Part 60, Appendix A;
for SO₂ - Methods 1 through 4 and 6 of 40 CFR Part 60, Appendix A;
for NO_x - Methods 1 through 4 and 7 of 40 CFR Part 60, Appendix A; and
for fluorides (total gaseous and particulate fluorides which do not include fluorocarbons) - Methods 1 through 4 and 13A of 40 CFR Part 60, Appendix A.
- 2.d** The following parameters, at a minimum, shall be monitored or analyzed and recorded during the emission testing: the process weight rate of each kiln, in pounds per hour; the sulfur content, in weight-percent sulfur of the raw materials used to make tile in each kiln; the amount of sulfur, in pounds, entering each kiln in the uncured tile in each of the three hours of the testing; the sulfur content, in weight-percent sulfur of the fired tile made in each kiln; and the amount of sulfur, in pounds, exiting each kiln in the cured tile in each of the three hours of the testing.
- 2.e** The emission tests should be conducted while emissions units P004, P005, P006, and P014 are concurrently operating at or near their maximum capacities unless otherwise specified or approved by the Canton City Health Department, Air Pollution Control Division.

Not later than 30 days prior to the proposed test date(s), the permittee shall submit an "Intent to Test" notification to the Canton City Health Department, Air Pollution Control Division. The "Intent to Test" notification shall describe in detail the proposed test methods and procedures, the emissions unit operating parameters, the time(s) and date(s) of the test(s), and the person(s) who will be conducting the test(s). Failure to submit such notification for review and approval prior to the test(s) may result in the Canton City Health Department, Air Pollution Control Division's refusal to accept the results of the emission test(s).

Personnel from the Canton City Health Department, Air Pollution Control Division shall be permitted to witness the test(s), examine the testing equipment, and acquire data and information necessary to ensure that the operation of the emissions unit and the testing procedures provide a valid characterization of the emissions from the emissions unit and/or the performance of the control equipment.

A comprehensive written report on the results of the emission test(s) shall be signed by the person or persons responsible for the tests and submitted to the Canton City Health Department, Air Pollution Control Division within 30 days following completion of the test(s). The permittee may request additional time for the submittal of the written report, where warranted, with prior approval from the Canton City Health Department, Air Pollution Control Division.

VI. Miscellaneous Requirements

1. Following are the calculations for the permitted amount of sulfur in the raw feed materials used in emissions units P004, P005, P006, and P014.

The sulfur emission factor (EF). The sulfur EF relates the ratio of the amount of sulfur converted to SO₂ and emitted from the stack (lbs S) to sulfur in the raw feed materials (lbs S).

The sulfur EF = sulfur (out the stack)/sulfur (in the feed) = pounds of S converted to SO₂/pound of S in the feed.

The sulfur EF = 0.783 pound of S converted to SO₂/pound of S in the feed, based upon the 6/15/00 emission testing results.

The allowable SO₂ emission limitation = 306.53 tons of SO₂ emitted/year.

The allowable SO₂ emission limitation = (306.53 tons of SO₂ emitted/year) X (2000 lbs/ton).

The allowable SO₂ emission limitation = 613,060 lbs of SO₂ emitted/year.

Using the sulfur EF and stoichiometry,

613,060 lbs SO₂ emitted/year = (0.783 lb S emitted/lb S in the feed) X (Allowable lbs S in the feed) X (1 mole S emitted/32 lbs S emitted) X (1 mole SO₂ emitted/1 mole S emitted) X (64 lbs SO₂ emitted/mole SO₂ emitted)

Solving the above equation for the Allowable lbs S in the feed,

Allowable lbs S in the feed = (613,060 lbs SO₂ emitted/year) X (1 lb S in the feed/0.783 lb S emitted) X (32 lbs S emitted/mole S emitted) X (mole S emitted/mole SO₂ emitted) X (mole SO₂ emitted/64 lbs SO₂ emitted)

Allowable lbs S in the feed = 391,481 lbs S in the feed per year

Allowable lbs S in the feed = (391,481 lbs S/year) X (1 year/4 quarters) = 97,870 lbs S/quarter

rounding

Allowable lbs S in the feed = 97,900 lbs S/quarter

The allowable SO₂ emission limitation = 12,877 lbs of SO₂ emitted/week.

Again, using the sulfur EF and stoichiometry and solving for the Allowable lbs S in the feed,

Allowable lbs S in the feed = (12,877 lbs SO₂ emitted/week) X (1 lb S in the feed/0.783 lb S emitted) X (32 lbs S emitted/mole S emitted) X (mole S emitted/mole of SO₂ emitted) X (mole SO₂ emitted/64 lbs SO₂ emitted)

Allowable lbs S in the feed = 8,223 lbs S in the feed;

rounding

Allowable lbs S in the feed = 8,220 lbs S in the feed.

The rounded values are the values used in this permit.

B. State Enforceable Section

I. Applicable Emissions Limitations and/or Control Requirements

1. The specific operation(s), property, and/or equipment which constitute this emissions unit are listed in the following table along with the applicable rules and/or requirements and with the applicable emissions limitations and/or control measures. Emissions from this unit shall not exceed the listed limitations, and the listed control measures shall be employed. Additional applicable emissions limitations and/or control measures (if any) may be specified in narrative form following the table.

<u>Operations, Property, and/or Equipment</u>	<u>Applicable Rules/ Requirements</u>	<u>Applicable Emissions Limitations/Control Measures</u>
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2. **Additional Terms and Conditions**
None

- II. Operational Restrictions**
None

- III. Monitoring and/or Record Keeping Requirements**
None

- IV. Reporting Requirements**
None

- V. Testing Requirements**
None

- VI. Miscellaneous Requirements**
None

Part III - Terms and Conditions for Emissions Units

Emissions Unit ID: Shuttle kiln #2 (P005)

Activity Description: Natural gas fired Shuttle Batch Kiln reduction firing unglazed ceramic quarry tiles to a temperature of 2200°F.

A. State and Federally Enforceable Section

I. Applicable Emissions Limitations and/or Control Requirements

1. The specific operation(s), property, and/or equipment which constitute this emissions unit are listed in the following table along with the applicable rules and/or requirements and with the applicable emissions limitations and/or control measures. Emissions from this unit shall not exceed the listed limitations, and the listed control measures shall be employed. Additional applicable emissions limitations and/or control measures (if any) may be specified in narrative form following the table.

<u>Operations, Property, and/or Equipment</u>	<u>Applicable Rules/ Requirements</u>	<u>Applicable Emissions Limitations/Control Measures</u>
natural gas-fired tunnel kiln to produce unglazed quarry tile; kiln #2; maximum input capacity 11.2 mmBtu/hr; maximum raw material feed rate 3.97 TPH; tile production capacity 3.67 TPH, vented to a common stack for emissions units P004, P005, P006, and P014	OAC rule 3745-17-07(A)	See A.I.2.a below.
	OAC rule 3745-17-11(B)	See A.I.2.b below.
	OAC rule 3745-18-06(E)(1)	See A.I.2.c below.
	OAC rule 3745-31-05(A)(3) (PTI 15-1173)	See A.I.2.d and A.I.2.e below.
This kiln may be operated as a natural gas-fired shuttle batch kiln, with a reducing atmosphere, firing unglazed quarry tiles as an alternate operating scenario.		Compliance with this rule also includes compliance with OAC rule 3745-17-07(A).

2. Additional Terms and Conditions

- 2.a Visible particulate emissions from any stack shall not exceed 20% opacity, as a 6-minute average, except as provided by the rule.
- 2.b The particulate emission limitation required by OAC rule 3745-17-11(B) is less stringent than the particulate emission limitation established pursuant to the best available technology requirement specified in OAC rule 3745-31-05(A)(3).
- 2.c The sulfur dioxide (SO₂) emission limitation required by OAC rule 3745-18-06(E)(1) is less stringent than the SO₂ emission limitation established pursuant to the best available technology requirement specified in OAC rule 3745-31-05(A)(3).

2. Additional Terms and Conditions (continued)

- 2.d The following emission limitations shall apply to emissions units P004 (kiln #1), P005 (kiln #2), P006 (kiln #3), and P014 (kiln #4), combined:

21.65 lbs/hr of particulate emissions
94.14 tpy of particulate emissions

16.06 lbs/hr of nitrogen oxides (NOx)
70.34 tpy of NOx

76.65 lbs/hr of SO2
12,877 lbs/wk of SO2
306.53 tpy of SO2

6.5 lbs/hr of fluorides
28.47 tpy of fluorides

- 2.e The height of the stack serving this emissions unit shall be a minimum of 45 meters from the ground level.

II. Operational Restrictions

1. The permittee shall burn only natural gas as fuel in this emissions unit.
2. The total amount of sulfur in the raw materials used in emissions units P004, P005, P006, and P014 shall not exceed 8,220 pounds in any one week. The amount of sulfur shall be determined by multiplying the tons of raw material (dry weight) used in a week, times the weighted-average sulfur content of the raw materials. See section A.VI.1 for an explanation of the calculation of this weekly sulfur (in the feed) value. This restriction shall change, in accordance with section A.VI.1 if the current sulfur emission factor changes.
3. The total amount of sulfur fed to emissions units P004, P005, P006, and P014 shall not exceed 97,900 pounds in any one quarter. The amount of sulfur shall be determined by multiplying the tons (dry weight) of raw materials fed to these emissions units during that quarter, times the weighted-average sulfur content of the raw materials. See section A.VI.1 for an explanation of the calculation of this quarterly sulfur (in the feed) value. This restriction shall change, in accordance with section A.VI.1 if the current sulfur emission factor changes.

III. Monitoring and/or Record Keeping Requirements

1. The permittee shall perform checks, at least once every two-week period and within 15 days of the last check performed, when the emissions unit is in operation and when the weather conditions allow, for any visible particulate emissions from the stack serving this emissions unit. The presence or absence of any visible emissions shall be noted in an operations log. If visible emissions are observed, the permittee shall also note the following in the operations log:
 - a. the color of the emissions;
 - b. whether the emissions are representative of normal operations;
 - c. if the emissions are not representative of normal operations, the cause of the abnormal emissions;
 - d. the total duration of any visible emission incident; and
 - e. any corrective actions taken to eliminate the visible emissions.
2. For each day during which the permittee burns a fuel other than natural gas in this emissions unit, the permittee shall maintain a record of the type and quantity of fuel burned.
3. The permittee shall comply with the following monitoring and record keeping requirements for the purpose of determining the weekly and average hourly SO2 emissions from emissions units P004, P005, P006, and P014, combined:

III. Monitoring and/or Record Keeping Requirements (continued)

3.a The following procedures shall be used to obtain a representative sample of the total daily amount of fireclay and shale fed to emissions units P004, P005, P006, and P014:

i. Daily samples shall be taken of the raw materials (fireclay and shale) used in tile production. A daily grab sample of fireclay shall be taken from the belt conveyor leading from one of the two ground fireclay storage tanks which feed the conveyor belts which feed the pug mixers. A daily grab sample of shale shall be taken from the belt conveyor leading from one of the two ground shale storage tanks which feed the conveyor belts which feed the pug mixers. One of these pug mixers supplies mixed raw materials to emissions units P004 and P005 and the other pug mixer supplies mixed raw materials to emissions units P006 and P014.

ii. The two individual daily samples from the conveyor belts shall be mixed in proportion to the daily production rates in emissions units P004, P005, P006, and P014 to obtain a representative daily composite sample.

iii. The daily composite sample shall be placed in a composite bottle with lid to produce a weekly composite sample. The weekly composite shall be mixed thoroughly so that a sample may be taken from the bottle to represent the whole week's production from the four emissions units.

iv. The permittee shall maintain the following daily records:

- (a) the production schedule indicating what product is being produced in each of the four kilns including the amount, in grams, of the clay and shale used to make the daily composite sample;
- (b) the production rate of each product being produced, and the number of kiln cars processed per day in each kiln; and
- (c) the total daily production rate.

v. The permittee shall maintain weekly records of the production schedules indicating what products are produced in emissions units P004 and P005 combined, and indicating what products are produced in emissions units P006 and P014 combined.

3.b The following procedures shall be used to determine the sulfur content of each weekly composite sample:

i. The weekly composite sample shall be analyzed for sulfur content each week.

ii. The weekly composite sample shall be analyzed using the permittee's Laboratory Equipment Corporation (LECO) analysis equipment that utilizes ASTM Test Method D1552 or E350-97 to determine the corrected, weighted-average sulfur content of the raw materials.

iii. For quality assurance of the LECO equipment and its analytical methods, the permittee shall perform a calibration test before the weekly composite sample is analyzed for sulfur content. Two standard calibration rings with known sulfur concentration shall be analyzed for sulfur content utilizing the LECO equipment. The two sulfur content results shall be averaged to obtain the calibration correction factor. The analysis of the weekly composite sample shall utilize the calibration correction factor to obtain the corrected, weighted-average, sulfur content result.

iv. The permittee shall maintain the following weekly records:

- (a) the value of the corrected, weighted-average sulfur content of the raw materials used to make tile that week;
- (b) the sulfur concentration of the rings used to calibrate the LECO equipment each week;
- (c) the measured sulfur concentrations of the calibration rings; and
- (d) the calibration correction factors.

III. Monitoring and/or Record Keeping Requirements (continued)

3.c The following procedures shall be used for the sampling and analysis of the tile processed in emissions units P004, P005, P006, and P014 during the emission tests:

i. From each kiln, the permittee shall collect one piece of unfired tile from each kiln car (the device upon which the unfired clay is stacked and which moves the clay through the fired kiln for curing) that will be located in the firing section of each kiln during each of the three hours of the next day's emission testing. The set of unfired samples from each hour of the testing shall be crushed and mixed together.

ii. The twelve mixed samples (one from each hour from each kiln) of uncured tile shall be analyzed by the permittee or its contractor for sulfur content using a published method for the determination of sulfur content which is suitable for uncured and cured tile materials. These analyses shall give the amount of sulfur entering each kiln in the uncured tile, in units of pounds of sulfur per hour per kiln, in each of the three hours of the test.

iii. From each kiln, the permittee shall collect one piece of fired tile from each kiln car (the device upon which the unfired clay is stacked and which moves the clay through the fired kiln for curing) that was located in the firing section of each kiln during each of the three hours of the emission testing. The set of fired samples from each hour of the testing shall be crushed and mixed together.

iv. The twelve mixed samples (one from each hour from each kiln) of cured tile shall be analyzed by the permittee or its contractor for sulfur content using a published method for the determination of sulfur content which is suitable for uncured and cured tile materials. These analyses shall give the amount of sulfur exiting each kiln in the cured tile, in units of pounds of sulfur per hour per kiln, in each of the three hours of the test.

v. The sulfur converted to SO₂ (out the stack) to the sulfur (in the feed) emission factor (the sulfur emission factor), that is, the ratio of the amount of sulfur converted to SO₂ and emitted from the stack (lbs S) to sulfur in the feed (lbs S), shall be calculated by averaging the three individual sulfur emission factors from each of the three hours of the SO₂ emission testing required in section A.V.2. The individual sulfur emission factors shall be calculated by taking the sulfur in the feed (lbs S/hr) minus sulfur retained in the fired tile (sulfur not converted to SO₂) (lbs S/hr), and dividing by the sulfur in the feed (lbs S/hr) for each hour to give a ratio for each of the three individual testing hours. The sulfur retained in the fired tile (lbs S/hr) shall be determined by subtracting the measured sulfur content (lbs S/hr) of the fired tile from the unfired tile used during the hour of the emission test. The amount of sulfur in the feed (lbs S/hr) shall be determined from the sulfur content measurement of the unfired tile used during the hour of the emission test. The three individual sulfur emission factors shall be averaged together to obtain the sulfur emission factor (lbs S/lbs S).

The weekly SO₂ emission rate from the combined emissions units (lbs SO₂/week), calculated by multiplying the weekly amount of sulfur usage in the combined emissions units (lbs S), times the current sulfur emission factor (lbs S/lbs S), and times 2.00 (lbs SO₂/lb S) (stoichiometric ratio).

vi. The permittee shall maintain the following records:

- (a) the sulfur content of the crushed and mixed unfired sample from each hour of the test;
- (b) the calculations performed to obtain the sulfur emission factor; and
- (c) the final sulfur emission factor.

III. Monitoring and/or Record Keeping Requirements (continued)

4. The permittee shall maintain records of the following information for emissions units P004, P005, P006, and P014, combined:
 - a. the total amount of sulfur in the raw materials used in the combined emissions unit in any one week, calculated by multiplying the tons of feed (dry weight) to the combined emissions units during that week, times the weighted-average sulfur content for that week;
 - b. the weekly SO₂ emission rate from the combined emissions units (lbs SO₂/week), calculated by multiplying the weekly amount of sulfur usage in the combined emissions units (lbs S), times the current sulfur emission factor (lbs S/lbs S), and times 2.00 (lbs SO₂/lb S) (stoichiometric ratio);
 - c. the average SO₂ emission rate from the combined emissions units (lbs SO₂/hr), calculated as the weekly amount of sulfur usage in the combined emissions units (lbs S), times the current sulfur emission factor, divided by the hours of operation for the combined emissions units for the week; and
 - d. the total amount of sulfur in the raw materials used in the combined emissions units in any one quarter, calculated by summing the weekly values of the total amount of sulfur in the raw materials used in the combined emissions units (from section A.III.4.a. above) for all the weeks during that quarter.
5. The sulfur emission factor to be used in determining the pounds of SO₂ emitted per week, the average pounds of SO₂ emitted per hour, the total amount of sulfur fed to emissions units P004, P005, P006, and P014, combined, per week, and the total amount of sulfur fed to emissions units P004, P005, P006, and P014, combined, per quarter shall be based upon the most recent emission testing. The change from the old sulfur emission factor to the new one shall take place at the start of the quarter immediately following the quarter in which the emission testing took place.
6. The permittee shall maintain a monthly record of the hours of operation for emissions units P004, P005, P006, and P014, combined.

IV. Reporting Requirements

1. The permittee shall submit quarterly written reports that (a) identify all days during which any visible particulate emissions were observed from the stack serving this emissions unit and (b) describe any corrective actions taken to eliminate the visible particulate emissions. These reports shall be submitted to the Director (the Canton City Health Department, Air Pollution Control Division) by January 31, April 30, July 31, and October 31 of each year and shall cover the previous 3-month period.
2. The permittee shall submit quarterly deviation (excursion) reports that include an identification of each week during which the average hourly SO₂ emissions from the raw materials used in tile production in emissions units P004, P005, P006, and P014, combined, exceeded 76.65 lbs/hr. The actual average hourly SO₂ emissions for each such week shall also be reported.
3. The permittee shall submit deviation (excursion) reports that identify each day when a fuel other than natural gas was burned in this emissions unit. Each report shall be submitted within 30 days after the deviation occurs. It shall not be necessary to submit a deviation report for any quarter in which no deviations occurred.
4. The permittee shall submit quarterly deviation (excursion) reports that identify each week during which the total weight of sulfur in the raw materials used in emissions units P004, P005, P006, and P014, combined, exceeded the operational restriction defined in section A.II.2 (current value of 8,220 pounds) and the actual pounds of sulfur used in the raw materials for emissions units P004, P005, P006, and P014, combined, for each such week.
5. The permittee shall submit quarterly deviation (excursion) reports that identify each quarter during which the total weight of sulfur in the raw materials used in emissions units P004, P005, P006, and P014, combined, exceeded the operational restriction defined in section A.II.3 (current value of 97,900 pounds) and the actual pounds of sulfur used in the raw materials for emissions units P004, P005, P006, and P014, combined, for each such quarter.

IV. Reporting Requirements (continued)

6. The quarterly deviation reports shall be submitted in accordance with the requirements specified in Part 1 - General Term and Condition A.1.c.ii.
7. The permittee shall also submit annual reports that specify the total particulate, SO₂, NO_x, and fluoride emissions from emissions units P004, P005, P006, and P014, combined, in tons, for the previous calendar year. These reports shall be submitted by January 31 of each year.
8. The permittee shall submit a written report to the Canton City Health Department Air Pollution Control Division whenever the permittee plans to switch the operation of the kiln from a natural gas-fired shuttle batch kiln to a natural gas-fired tunnel kiln. The written report shall be submitted at least seven days before the kiln is operated as a natural gas-fired tunnel kiln and shall include the planned date of operation of the kiln as a natural gas-fired tunnel kiln.

V. Testing Requirements

1. Compliance with the emission limitations in sections A.I.1 and A.I.2 of these terms and conditions shall be determined in accordance with the following methods:

- 1.a Emission Limitation:

Visible particulate emissions from any stack shall not exceed 20% opacity, as a 6-minute average, except as provided by the rule.

Applicable Compliance Method:

Compliance shall be demonstrated based upon visible particulate emission observations performed on the common stack serving emissions units P004, P005, P006, and P014 in accordance with 40 CFR Part 60, Appendix A, Method 9 and the procedures specified in OAC rule 3745-17-03(B)(1).

- 1.b Emission Limitation:

21.65 lbs/hr of particulate emissions for emissions units P004, P005, P006, and P014, combined.

Applicable Compliance Method:

Compliance with this emission limitation shall be demonstrated based upon emission testing performed in accordance with the requirements specified in 40 CFR Part 60, Appendix A, Methods 1 through 5 and section A.V.2 below.

- 1.c Emission Limitation:

94.14 tpy of particulate emissions for emissions units P004, P005, P006, and P014, combined

Applicable Compliance Method:

Compliance with this emission limitation shall be demonstrated based upon the production records required pursuant to section A.III and the data from the most recent emission tests that demonstrated that the emissions unit(s) was (were) in compliance.

V. Testing Requirements (continued)

1.d Emission Limitation:

16.06 lbs/hr of NO_x for emissions units P004, P005, P006, and P014, combined

Applicable Compliance Method:

Compliance with this emission limitation shall be demonstrated based upon emission testing performed in accordance with the requirements specified in 40 CFR Part 60, Appendix A, Methods 1 through 4 and 7 and section A.V.2 below.

1.e Emission Limitation:

70.34 tpy of NO_x for emissions units P004, P005, P006, and P014, combined

Applicable Compliance Method:

This emission limitation was established by multiplying the hourly NO_x emission limitation for emissions units P004, P005, P006, and P014 by 8760 and dividing by 2000 lbs/ton. Compliance with this emission limitation may be assumed provided that the permittee complies with the hourly NO_x emission limitation. Compliance with this emission limitation shall be demonstrated based upon the production records required pursuant to section A.III and the data from the most recent emission tests that demonstrated that the emissions unit(s) was (were) in compliance.

1.f Emission Limitation:

76.65 lbs/hr of SO₂ for emissions units P004, P005, P006, and P014, combined

Applicable Compliance Method:

Compliance with this emission limitation may be demonstrated based upon the records required pursuant to section A.III. Compliance with this emission limitation shall be demonstrated based upon emission testing performed in accordance with the requirements specified in 40 CFR Part 60, Appendix A, Methods 1 through 4 and 7 and section A.V.2 below.

1.g Emission Limitation:

306.53 tpy of SO₂ for emissions units P004, P005, P006, and P014, combined

Applicable Compliance Method:

Compliance with this emission limitation shall be demonstrated based upon the applicable production records required pursuant to section A.III.

1.h Emission Limitation:

6.5 lbs/hr of fluorides for emissions units P004, P005, P006, and P014, combined

Applicable Compliance Method:

Compliance with this emission limitation shall be demonstrated based upon emission testing performed in accordance with the requirements specified in 40 CFR Part 60, Appendix A, Methods 1 through 4 and 13A and section A.V.2 below.

V. Testing Requirements (continued)

1.i Emission Limitation:

28.47 tpy of fluorides for emissions units P004, P005, P006, and P014, combined

Applicable Compliance Method:

This emission limitation was established by multiplying the hourly fluorides emission limitation for emissions units P004, P005, P006, and P014 by 8760 and dividing by 2000 lbs/ton. Compliance with this emission limitation may be assumed provided that the permittee complies with the hourly fluorides emission limitation. Compliance with this emission limitation shall be based upon the production records required pursuant to section A.III and the data from the most recent emission tests that demonstrated that the emissions unit(s) was (were) in compliance.

2. The permittee shall conduct, or have conducted, emission testing for emissions units P004, P005, P006, and P014 in accordance with the following requirements:

2.a The emission testing shall be conducted no later than 6 months after issuance of the permit and within 27 to 33 months after issuance of the permit.

2.b The emission testing shall be conducted to demonstrate compliance with the visible particulate emission limitation in section A.1.2.a and with the allowable, hourly mass emission rates for particulates, SO₂, NO_x, and fluorides in section A.1.2.d.

2.c The following test methods shall be employed to demonstrate compliance with the visible particulate emissions limitation and the allowable mass emission rates:

for visible particulate emissions - Method 9 of 40 CFR Part 60, Appendix A;

for particulates - Methods 1 through 5 of 40 CFR Part 60, Appendix A;

for SO₂ - Methods 1 through 4 and 6 of 40 CFR Part 60, Appendix A;

for NO_x - Methods 1 through 4 and 7 of 40 CFR Part 60, Appendix A; and

for fluorides (total gaseous and particulate fluorides which do not include fluorocarbons) - Methods 1 through 4 and 13A of 40 CFR Part 60, Appendix A.

2.d The following parameters, at a minimum, shall be monitored or analyzed and recorded during the emission testing: the process weight rate of each kiln, in pounds per hour; the sulfur content, in weight-percent sulfur of the raw materials used to make tile in each kiln; the amount of sulfur, in pounds, entering each kiln in the uncured tile in each of the three hours of the testing; the sulfur content, in weight-percent sulfur of the fired tile made in each kiln; and the amount of sulfur, in pounds, exiting each kiln in the cured tile in each of the three hours of the testing.

2.e The emission tests should be conducted while emissions units P004, P005, P006, and P014 are concurrently operating at or near their maximum capacities unless otherwise specified or approved by the Canton City Health Department, Air Pollution Control Division.

Facility Name: **Ironrock Capital inc.**
Facility ID: **15-76-05-1149**
Emissions Unit: **Shuttle kiln #2 (P005)**

V. Testing Requirements (continued)

Not later than 30 days prior to the proposed test date(s), the permittee shall submit an "Intent to Test" notification to the Canton City Health Department, Air Pollution Control Division. The "Intent to Test" notification shall describe in detail the proposed test methods and procedures, the emissions unit operating parameters, the time(s) and date(s) of the test(s), and the person(s) who will be conducting the test(s). Failure to submit such notification for review and approval prior to the test(s) may result in the Canton City Health Department, Air Pollution Control Division's refusal to accept the results of the emission test(s).

Personnel from the Canton City Health Department, Air Pollution Control Division shall be permitted to witness the test(s), examine the testing equipment, and acquire data and information necessary to ensure that the operation of the emissions unit and the testing procedures provide a valid characterization of the emissions from the emissions unit and/or the performance of the control equipment.

A comprehensive written report on the results of the emission test(s) shall be signed by the person or persons responsible for the tests and submitted to the Canton City Health Department, Air Pollution Control Division within 30 days following completion of the test(s). The permittee may request additional time for the submittal of the written report, where warranted, with prior approval from the Canton City Health Department, Air Pollution Control Division.

VI. Miscellaneous Requirements

1. Following are the calculations for the permitted amount of sulfur in the raw feed materials used in emissions units P004, P005, P006, and P014.

The sulfur emission factor (EF). The sulfur EF relates the ratio of the amount of sulfur converted to SO₂ and emitted from the stack (lbs S) to sulfur in the raw feed materials (lbs S).

The sulfur EF = sulfur (out the stack)/sulfur (in the feed) = pounds of S converted to SO₂/pound of S in the feed.

The sulfur EF = 0.783 pound of S converted to SO₂/pound of S in the feed, based upon the 6/15/00 emission testing results.

The allowable SO₂ emission limitation = 306.53 tons of SO₂ emitted/year.

The allowable SO₂ emission limitation = (306.53 tons of SO₂ emitted/year) X (2000 lbs/ton).

The allowable SO₂ emission limitation = 613,060 lbs of SO₂ emitted/year.

Using the sulfur EF and stoichiometry,

$613,060 \text{ lbs SO}_2 \text{ emitted/year} = (0.783 \text{ lb S emitted/lb S in the feed}) \times (\text{Allowable lbs S in the feed}) \times (1 \text{ mole S emitted}/32 \text{ lbs S emitted}) \times (1 \text{ mole SO}_2 \text{ emitted}/1 \text{ mole S emitted}) \times (64 \text{ lbs SO}_2 \text{ emitted}/\text{mole SO}_2 \text{ emitted})$

Solving the above equation for the Allowable lbs S in the feed,

$\text{Allowable lbs S in the feed} = (613,060 \text{ lbs SO}_2 \text{ emitted/year}) \times (1 \text{ lb S in the feed}/0.783 \text{ lb S emitted}) \times (32 \text{ lbs S emitted}/\text{mole S emitted}) \times (\text{mole S emitted}/\text{mole SO}_2 \text{ emitted}) \times (\text{mole SO}_2 \text{ emitted}/64 \text{ lbs SO}_2 \text{ emitted})$

Allowable lbs S in the feed = 391,481 lbs S in the feed per year

Allowable lbs S in the feed = (391,481 lbs S/year) X (1 year/4 quarters) = 97,870 lbs S/quarter

rounding

Allowable lbs S in the feed = 97,900 lbs S/quarter

The allowable SO₂ emission limitation = 12,877 lbs of SO₂ emitted/week.

Again, using the sulfur EF and stoichiometry and solving for the Allowable lbs S in the feed,

$\text{Allowable lbs S in the feed} = (12,877 \text{ lbs SO}_2 \text{ emitted/week}) \times (1 \text{ lb S in the feed}/0.783 \text{ lb S emitted}) \times (32 \text{ lbs S emitted}/\text{mole S emitted}) \times (\text{mole S emitted}/\text{mole of SO}_2 \text{ emitted}) \times (\text{mole SO}_2 \text{ emitted}/64 \text{ lbs SO}_2 \text{ emitted})$

Allowable lbs S in the feed = 8,223 lbs S in the feed,

rounding

Allowable lbs S in the feed = 8,220 lbs S in the feed.

The rounded values are the values used in this permit.

Facility Name: **Ironrock Capital Inc.**
Facility ID: **15-76-05-1149**
Emissions Unit: **Shuttle kiln #2 (P005)**

B. State Enforceable Section

I. Applicable Emissions Limitations and/or Control Requirements

1. The specific operation(s), property, and/or equipment which constitute this emissions unit are listed in the following table along with the applicable rules and/or requirements and with the applicable emissions limitations and/or control measures. Emissions from this unit shall not exceed the listed limitations, and the listed control measures shall be employed. Additional applicable emissions limitations and/or control measures (if any) may be specified in narrative form following the table.

<u>Operations, Property, and/or Equipment</u>	<u>Applicable Rules/ Requirements</u>	<u>Applicable Emissions Limitations/Control Measures</u>
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2. Additional Terms and Conditions

None

II. Operational Restrictions

None

III. Monitoring and/or Record Keeping Requirements

None

IV. Reporting Requirements

None

V. Testing Requirements

None

VI. Miscellaneous Requirements

None

Part III - Terms and Conditions for Emissions Units

Emissions Unit ID: Tunnel kiln #3 (P006)

Activity Description: Natural gas fired Tunnel Kiln firing unglazed ceramic quarry tiles to a temperature of 2200°F.

A. State and Federally Enforceable Section

I. Applicable Emissions Limitations and/or Control Requirements

1. The specific operation(s), property, and/or equipment which constitute this emissions unit are listed in the following table along with the applicable rules and/or requirements and with the applicable emissions limitations and/or control measures. Emissions from this unit shall not exceed the listed limitations, and the listed control measures shall be employed. Additional applicable emissions limitations and/or control measures (if any) may be specified in narrative form following the table.

<u>Operations, Property, and/or Equipment</u>	<u>Applicable Rules/ Requirements</u>	<u>Applicable Emissions Limitations/Control Measures</u>
natural gas-fired tunnel kiln to produce unglazed quarry tile; kiln #3; maximum input capacity 11.2 mmBtu/hr; maximum raw material feed rate 3.97 TPH; tile production capacity 3.67 TPH, vented to a common stack for emissions units P004, P005, P006, and P014	OAC rule 3745-17-07(A)	See A.1.2.a below.
	OAC rule 3745-17-11(B)	See A.1.2.b below.
	OAC rule 3745-18-06(E)(1)	See A.1.2.c below.
	OAC rule 3745-31-05(A)(3) (PTI 15-1173)	See A.1.2.d and A.1.2.e below. Compliance with this rule also includes compliance with OAC rule 3745-17-07(A).

2. Additional Terms and Conditions

- 2.a Visible particulate emissions from any stack shall not exceed 20% opacity, as a 6-minute average, except as provided by the rule.
- 2.b The particulate emission limitation required by OAC rule 3745-17-11(B) is less stringent than the particulate emission limitation established pursuant to the best available technology requirement specified in OAC rule 3745-31-05(A)(3).
- 2.c The sulfur dioxide (SO₂) emission limitation required by OAC rule 3745-18-06(E)(1) is less stringent than the SO₂ emission limitation established pursuant to the best available technology requirement specified in OAC rule 3745-31-05(A)(3).

2. Additional Terms and Conditions (continued)

- 2.d The following emission limitations shall apply to emissions units P004 (kiln #1), P005 (kiln #2), P006 (kiln #3), and P014 (kiln #4), combined:

21.65 lbs/hr of particulate emissions
94.14 tpy of particulate emissions

16.06 lbs/hr of nitrogen oxides (NOx)
70.34 tpy of NOx

76.65 lbs/hr of SO₂
12,877 lbs/wk of SO₂
306.53 tpy of SO₂

6.5 lbs/hr of fluorides
28.47 tpy of fluorides

- 2.e The height of the stack serving this emissions unit shall be a minimum of 45 meters from the ground level.

II. Operational Restrictions

1. The permittee shall burn only natural gas as fuel in this emissions unit.
2. The total amount of sulfur in the raw materials used in emissions units P004, P005, P006, and P014 shall not exceed 8,220 pounds in any one week. The amount of sulfur shall be determined by multiplying the tons of raw material (dry weight) used in a week, times the weighted-average sulfur content of the raw materials. See section A.VI.1 for an explanation of the calculation of this weekly sulfur (in the feed) value. This restriction shall change, in accordance with section A.VI.1 if the current sulfur emission factor changes.
3. The total amount of sulfur fed to emissions units P004, P005, P006, and P014 shall not exceed 97,900 pounds in any one quarter. The amount of sulfur shall be determined by multiplying the tons (dry weight) of raw materials fed to these emissions units during that quarter, times the weighted-average sulfur content of the raw materials. See section A.VI.1 for an explanation of the calculation of this quarterly sulfur (in the feed) value. This restriction shall change, in accordance with section A.VI.1 if the current sulfur emission factor changes.

III. Monitoring and/or Record Keeping Requirements

1. The permittee shall perform checks, at least once every two-week period and within 15 days of the last check performed, when the emissions unit is in operation and when the weather conditions allow, for any visible particulate emissions from the stack serving this emissions unit. The presence or absence of any visible emissions shall be noted in an operations log. If visible emissions are observed, the permittee shall also note the following in the operations log:
 - a. the color of the emissions;
 - b. whether the emissions are representative of normal operations;
 - c. if the emissions are not representative of normal operations, the cause of the abnormal emissions;
 - d. the total duration of any visible emission incident; and
 - e. any corrective actions taken to eliminate the visible emissions.
2. For each day during which the permittee burns a fuel other than natural gas in this emissions unit, the permittee shall maintain a record of the type and quantity of fuel burned.
3. The permittee shall comply with the following monitoring and record keeping requirements for the purpose of determining the weekly and average hourly SO₂ emissions from emissions units P004, P005, P006, and P014, combined:

III. Monitoring and/or Record Keeping Requirements (continued)

- 3.a** The following procedures shall be used to obtain a representative sample of the total daily amount of fireclay and shale fed to emissions units P004, P005, P006, and P014:
- i. Daily samples shall be taken of the raw materials (fireclay and shale) used in tile production. A daily grab sample of fireclay shall be taken from the belt conveyor leading from one of the two ground fireclay storage tanks which feed the conveyor belts which feed the pug mixers. A daily grab sample of shale shall be taken from the belt conveyor leading from one of the two ground shale storage tanks which feed the conveyor belts which feed the pug mixers. One of these pug mixers supplies mixed raw materials to emissions units P004 and P005 and the other pug mixer supplies mixed raw materials to emissions units P006 and P014.
 - ii. The two individual daily samples from the conveyor belts shall be mixed in proportion to the daily production rates in emissions units P004, P005, P006, and P014 to obtain a representative daily composite sample.
 - iii. The daily composite sample shall be placed in a composite bottle with lid to produce a weekly composite sample. The weekly composite shall be mixed thoroughly so that a sample may be taken from the bottle to represent the whole week's production from the four emissions units.
 - iv. The permittee shall maintain the following daily records:
 - (a) the production schedule indicating what product is being produced in each of the four kilns including the amount, in grams, of the clay and shale used to make the daily composite sample;
 - (b) the production rate of each product being produced, and the number of kiln cars processed per day in each kiln; and
 - (c) the total daily production rate.
 - v. The permittee shall maintain weekly records of the production schedules indicating what products are produced in emissions units P004 and P005 combined, and indicating what products are produced in emissions units P006 and P014 combined.
- 3.b** The following procedures shall be used to determine the sulfur content of each weekly composite sample:
- i. The weekly composite sample shall be analyzed for sulfur content each week.
 - ii. The weekly composite sample shall be analyzed using the permittee's Laboratory Equipment Corporation (LECO) analysis equipment that utilizes ASTM Test Method D1552 or E350-97 to determine the corrected, weighted-average sulfur content of the raw materials.
 - iii. For quality assurance of the LECO equipment and its analytical methods, the permittee shall perform a calibration test before the weekly composite sample is analyzed for sulfur content. Two standard calibration rings with known sulfur concentration shall be analyzed for sulfur content utilizing the LECO equipment. The two sulfur content results shall be averaged to obtain the calibration correction factor. The analysis of the weekly composite sample shall utilize the calibration correction factor to obtain the corrected, weighted-average, sulfur content result.
 - iv. The permittee shall maintain the following weekly records:
 - (a) the value of the corrected, weighted-average sulfur content of the raw materials used to make tile that week;
 - (b) the sulfur concentration of the rings used to calibrate the LECO equipment each week;
 - (c) the measured sulfur concentrations of the calibration rings; and
 - (d) the calibration correction factors.

III. Monitoring and/or Record Keeping Requirements (continued)

3.c The following procedures shall be used for the sampling and analysis of the tile processed in emissions units P004, P005, P006, and P014 during the emission tests:

i. From each kiln, the permittee shall collect one piece of unfired tile from each kiln car (the device upon which the unfired clay is stacked and which moves the clay through the fired kiln for curing) that will be located in the firing section of each kiln during each of the three hours of the next day's emission testing. The set of unfired samples from each hour of the testing shall be crushed and mixed together.

ii. The twelve mixed samples (one from each hour from each kiln) of uncured tile shall be analyzed by the permittee or its contractor for sulfur content using a published method for the determination of sulfur content which is suitable for uncured and cured tile materials. These analyses shall give the amount of sulfur entering each kiln in the uncured tile, in units of pounds of sulfur per hour per kiln, in each of the three hours of the test.

iii. From each kiln, the permittee shall collect one piece of fired tile from each kiln car (the device upon which the unfired clay is stacked and which moves the clay through the fired kiln for curing) that was located in the firing section of each kiln during each of the three hours of the emission testing. The set of fired samples from each hour of the testing shall be crushed and mixed together.

iv. The twelve mixed samples (one from each hour from each kiln) of cured tile shall be analyzed by the permittee or its contractor for sulfur content using a published method for the determination of sulfur content which is suitable for uncured and cured tile materials. These analyses shall give the amount of sulfur exiting each kiln in the cured tile, in units of pounds of sulfur per hour per kiln, in each of the three hours of the test.

v. The sulfur converted to SO₂ (out the stack) to the sulfur (in the feed) emission factor (the sulfur emission factor), that is, the ratio of the amount of sulfur converted to SO₂ and emitted from the stack (lbs S) to sulfur in the feed (lbs S), shall be calculated by averaging the three individual sulfur emission factors from each of the three hours of the SO₂ emission testing required in section A.V.2. The individual sulfur emission factors shall be calculated by taking the sulfur in the feed (lbs S/hr) minus sulfur retained in the fired tile (sulfur not converted to SO₂) (lbs S/hr), and dividing by the sulfur in the feed (lbs S/hr) for each hour to give a ratio for each of the three individual testing hours. The sulfur retained in the fired tile (lbs S/hr) shall be determined by subtracting the measured sulfur content (lbs S/hr) of the fired tile from the unfired tile used during the hour of the emission test. The amount of sulfur in the feed (lbs S/hr) shall be determined from the sulfur content measurement of the unfired tile used during the hour of the emission test. The three individual sulfur emission factors shall be averaged together to obtain the sulfur emission factor (lbs S/lbs S).

The weekly SO₂ emission rate from the combined emissions units (lbs SO₂/week), calculated by multiplying the weekly amount of sulfur usage in the combined emissions units (lbs S), times the current sulfur emission factor (lbs S/lbs S), and times 2.00 (lbs SO₂/lb S) (stoichiometric ratio).

vi. The permittee shall maintain the following records:

(a) the sulfur content of the crushed and mixed unfired sample from each hour of the test;

(b) the calculations performed to obtain the sulfur emission factor; and

(c) the final sulfur emission factor.

III. Monitoring and/or Record Keeping Requirements (continued)

4. The permittee shall maintain records of the following information for emissions units P004, P005, P006, and P014, combined:
 - a. the total amount of sulfur in the raw materials used in the combined emissions unit in any one week, calculated by multiplying the tons of feed (dry weight) to the combined emissions units during that week, times the weighted-average sulfur content for that week;
 - b. the weekly SO₂ emission rate from the combined emissions units (lbs SO₂/week), calculated by multiplying the weekly amount of sulfur usage in the combined emissions units (lbs S), times the current sulfur emission factor (lbs S/lbs S), and times 2.00 (lbs SO₂/lb S) (stoichiometric ratio);
 - c. the average SO₂ emission rate from the combined emissions units (lbs SO₂/hr), calculated as the weekly amount of sulfur usage in the combined emissions units (lbs S), times the current sulfur emission factor, divided by the hours of operation for the combined emissions units for the week; and
 - d. the total amount of sulfur in the raw materials used in the combined emissions units in any one quarter, calculated by summing the weekly values of the total amount of sulfur in the raw materials used in the combined emissions units (from section A.III.4.a. above) for all the weeks during that quarter.
5. The sulfur emission factor to be used in determining the pounds of SO₂ emitted per week, the average pounds of SO₂ emitted per hour, the total amount of sulfur fed to emissions units P004, P005, P006, and P014, combined, per week, and the total amount of sulfur fed to emissions units P004, P005, P006, and P014, combined, per quarter shall be based upon the most recent emission testing. The change from the old sulfur emission factor to the new one shall take place at the start of the quarter immediately following the quarter in which the emission testing took place.
6. The permittee shall maintain a monthly record of the hours of operation for emissions units P004, P005, P006, and P014, combined.

IV. Reporting Requirements

1. The permittee shall submit quarterly written reports that (a) identify all days during which any visible particulate emissions were observed from the stack serving this emissions unit and (b) describe any corrective actions taken to eliminate the visible particulate emissions. These reports shall be submitted to the Director (the Canton City Health Department, Air Pollution Control Division) by January 31, April 30, July 31, and October 31 of each year and shall cover the previous 3-month period.
2. The permittee shall submit quarterly deviation (excursion) reports that include an identification of each week during which the average hourly SO₂ emissions from the raw materials used in tile production in emissions units P004, P005, P006, and P014, combined, exceeded 76.65 lbs/hr. The actual average hourly SO₂ emissions for each such week shall also be reported.
3. The permittee shall submit deviation (excursion) reports that identify each day when a fuel other than natural gas was burned in this emissions unit. Each report shall be submitted within 30 days after the deviation occurs. It shall not be necessary to submit a deviation report for any quarter in which no deviations occurred.
4. The permittee shall submit quarterly deviation (excursion) reports that identify each week during which the total weight of sulfur in the raw materials used in emissions units P004, P005, P006, and P014, combined, exceeded the operational restriction defined in section A.II.2 (current value of 8,220 pounds) and the actual pounds of sulfur used in the raw materials for emissions units P004, P005, P006, and P014, combined, for each such week.
5. The permittee shall submit quarterly deviation (excursion) reports that identify each quarter during which the total weight of sulfur in the raw materials used in emissions units P004, P005, P006, and P014, combined, exceeded the operational restriction defined in section A.II.3 (current value of 97,900 pounds) and the actual pounds of sulfur used in the raw materials for emissions units P004, P005, P006, and P014, combined, for each such quarter.

IV. Reporting Requirements (continued)

6. The quarterly deviation reports shall be submitted in accordance with the requirements specified in Part 1 - General Term and Condition A.1.c.ii.
7. The permittee shall also submit annual reports that specify the total particulate, SO₂, NO_x, and fluoride emissions from emissions units P004, P005, P006, and P014, combined, in tons, for the previous calendar year. These reports shall be submitted by January 31 of each year.

V. Testing Requirements

1. Compliance with the emission limitations in sections A.I.1 and A.I.2 of these terms and conditions shall be determined in accordance with the following methods:

1.a Emission Limitation:

Visible particulate emissions from any stack shall not exceed 20% opacity, as a 6-minute average, except as provided by the rule.

Applicable Compliance Method:

Compliance shall be demonstrated based upon visible particulate emission observations performed on the common stack serving emissions units P004, P005, P006, and P014 in accordance with 40 CFR Part 60, Appendix A, Method 9 and the procedures specified in OAC rule 3745-17-03(B)(1).

1.b Emission Limitation:

21.65 lbs/hr of particulate emissions for emissions units P004, P005, P006, and P014, combined.

Applicable Compliance Method:

Compliance with this emission limitation shall be demonstrated based upon emission testing performed in accordance with the requirements specified in 40 CFR Part 60, Appendix A, Methods 1 through 5 and section A.V.2 below.

1.c Emission Limitation:

94.14 tpy of particulate emissions for emissions units P004, P005, P006, and P014, combined

Applicable Compliance Method:

Compliance with this emission limitation shall be demonstrated based upon the production records required pursuant to section A.III and the data from the most recent emission tests that demonstrated that the emissions unit(s) was (were) in compliance.

1.d Emission Limitation:

16.06 lbs/hr of NO_x for emissions units P004, P005, P006, and P014, combined

Applicable Compliance Method:

Compliance with this emission limitation shall be demonstrated based upon emission testing performed in accordance with the requirements specified in 40 CFR Part 60, Appendix A, Methods 1 through 4 and 7 and section A.V.2 below.

V. Testing Requirements (continued)

1.e Emission Limitation:

70.34 tpy of NO_x for emissions units P004, P005, P006, and P014, combined

Applicable Compliance Method:

This emission limitation was established by multiplying the hourly NO_x emission limitation for emissions units P004, P005, P006, and P014 by 8760 and dividing by 2000 lbs/ton. Compliance with this emission limitation may be assumed provided that the permittee complies with the hourly NO_x emission limitation. Compliance with this emission limitation shall be demonstrated based upon the production records required pursuant to section A.III and the data from the most recent emission tests that demonstrated that the emissions unit(s) was (were) in compliance.

1.f Emission Limitation:

76.65 lbs/hr of SO₂ for emissions units P004, P005, P006, and P014, combined

Applicable Compliance Method:

Compliance with this emission limitation may be demonstrated based upon the records required pursuant to section A.III. Compliance with this emission limitation shall be demonstrated based upon emission testing performed in accordance with the requirements specified in 40 CFR Part 60, Appendix A, Methods 1 through 4 and 7 and section A.V.2 below.

1.g Emission Limitation:

306.53 tpy of SO₂ for emissions units P004, P005, P006, and P014, combined

Applicable Compliance Method:

Compliance with this emission limitation shall be demonstrated based upon the applicable production records required pursuant to section A.III.

1.h Emission Limitation:

6.5 lbs/hr of fluorides for emissions units P004, P005, P006, and P014, combined

Applicable Compliance Method:

Compliance with this emission limitation shall be demonstrated based upon emission testing performed in accordance with the requirements specified in 40 CFR Part 60, Appendix A, Methods 1 through 4 and 13A and section A.V.2 below.

1.i Emission Limitation:

28.47 tpy of fluorides for emissions units P004, P005, P006, and P014, combined

Applicable Compliance Method:

This emission limitation was established by multiplying the hourly fluorides emission limitation for emissions units P004, P005, P006, and P014 by 8760 and dividing by 2000 lbs/ton. Compliance with this emission limitation may be assumed provided that the permittee complies with the hourly fluorides emission limitation. Compliance with this emission limitation shall be based upon the production records required pursuant to section A.III and the data from the most recent emission tests that demonstrated that the emissions unit(s) was (were) in compliance.

V. Testing Requirements (continued)

2. The permittee shall conduct, or have conducted, emission testing for emissions units P004, P005, P006, and P014 in accordance with the following requirements:
- 2.a The emission testing shall be conducted no later than 6 months after issuance of the permit and within 27 to 33 months after issuance of the permit.
- 2.b The emission testing shall be conducted to demonstrate compliance with the visible particulate emission limitation in section A.1.2.a and with the allowable, hourly mass emission rates for particulates, SO₂, NO_x, and fluorides in section A.1.2.d.
- 2.c The following test methods shall be employed to demonstrate compliance with the visible particulate emissions limitation and the allowable mass emission rates:
- for visible particulate emissions - Method 9 of 40 CFR Part 60, Appendix A;
for particulates - Methods 1 through 5 of 40 CFR Part 60, Appendix A;
for SO₂ - Methods 1 through 4 and 6 of 40 CFR Part 60, Appendix A;
for NO_x - Methods 1 through 4 and 7 of 40 CFR Part 60, Appendix A; and
for fluorides (total gaseous and particulate fluorides which do not include fluorocarbons) - Methods 1 through 4 and 13A of 40 CFR Part 60, Appendix A.
- 2.d The following parameters, at a minimum, shall be monitored or analyzed and recorded during the emission testing: the process weight rate of each kiln, in pounds per hour; the sulfur content, in weight-percent sulfur of the raw materials used to make tile in each kiln; the amount of sulfur, in pounds, entering each kiln in the uncured tile in each of the three hours of the testing; the sulfur content, in weight-percent sulfur of the fired tile made in each kiln; and the amount of sulfur, in pounds, exiting each kiln in the cured tile in each of the three hours of the testing.
- 2.e The emission tests should be conducted while emissions units P004, P005, P006, and P014 are concurrently operating at or near their maximum capacities unless otherwise specified or approved by the Canton City Health Department, Air Pollution Control Division.

Not later than 30 days prior to the proposed test date(s), the permittee shall submit an "Intent to Test" notification to the Canton City Health Department, Air Pollution Control Division. The "Intent to Test" notification shall describe in detail the proposed test methods and procedures, the emissions unit operating parameters, the time(s) and date(s) of the test(s), and the person(s) who will be conducting the test(s). Failure to submit such notification for review and approval prior to the test(s) may result in the Canton City Health Department, Air Pollution Control Division's refusal to accept the results of the emission test(s).

Personnel from the Canton City Health Department, Air Pollution Control Division shall be permitted to witness the test(s), examine the testing equipment, and acquire data and information necessary to ensure that the operation of the emissions unit and the testing procedures provide a valid characterization of the emissions from the emissions unit and/or the performance of the control equipment.

A comprehensive written report on the results of the emission test(s) shall be signed by the person or persons responsible for the tests and submitted to the Canton City Health Department, Air Pollution Control Division within 30 days following completion of the test(s). The permittee may request additional time for the submittal of the written report, where warranted, with prior approval from the Canton City Health Department, Air Pollution Control Division.

VI. Miscellaneous Requirements

1. Following are the calculations for the permitted amount of sulfur in the raw feed materials used in emissions units P004, P005, P006, and P014.

The sulfur emission factor (EF). The sulfur EF relates the ratio of the amount of sulfur converted to SO₂ and emitted from the stack (lbs S) to sulfur in the raw feed materials (lbs S).

The sulfur EF = sulfur (out the stack)/sulfur (in the feed) = pounds of S converted to SO₂/pound of S in the feed.

The sulfur EF = 0.783 pound of S converted to SO₂/pound of S in the feed, based upon the 6/15/00 emission testing results.

The allowable SO₂ emission limitation = 306.53 tons of SO₂ emitted/year.

The allowable SO₂ emission limitation = (306.53 tons of SO₂ emitted/year) X (2000 lbs/ton).

The allowable SO₂ emission limitation = 613,060 lbs of SO₂ emitted/year.

Using the sulfur EF and stoichiometry,

613,060 lbs SO₂ emitted/year = (0.783 lb S emitted/lb S in the feed) X (Allowable lbs S in the feed) X (1 mole S emitted/32 lbs S emitted) X (1 mole SO₂ emitted/1 mole S emitted) X (64 lbs SO₂ emitted/mole SO₂ emitted)

Solving the above equation for the Allowable lbs S in the feed,

Allowable lbs S in the feed = (613,060 lbs SO₂ emitted/year) X (1 lb S in the feed/0.783 lb S emitted) X (32 lbs S emitted/mole S emitted) X (mole S emitted/mole SO₂ emitted) X (mole SO₂ emitted/64 lbs SO₂ emitted)

Allowable lbs S in the feed = 391,481 lbs S in the feed per year

Allowable lbs S in the feed = (391,481 lbs S/year) X (1 year/4 quarters) = 97,870 lbs S/quarter

rounding

Allowable lbs S in the feed = 97,900 lbs S/quarter

The allowable SO₂ emission limitation = 12,877 lbs of SO₂ emitted/week.

Again, using the sulfur EF and stoichiometry and solving for the Allowable lbs S in the feed,

Allowable lbs S in the feed = (12,877 lbs SO₂ emitted/week) X (1 lb S in the feed/0.783 lb S emitted) X (32 lbs S emitted/mole S emitted) X (mole S emitted/mole of SO₂ emitted) X (mole SO₂ emitted/64 lbs SO₂ emitted)

Allowable lbs S in the feed = 8,223 lbs S in the feed,

rounding

Allowable lbs S in the feed = 8,220 lbs S in the feed.

The rounded values are the values used in this permit.

B. State Enforceable Section

I. Applicable Emissions Limitations and/or Control Requirements

1. The specific operation(s), property, and/or equipment which constitute this emissions unit are listed in the following table along with the applicable rules and/or requirements and with the applicable emissions limitations and/or control measures. Emissions from this unit shall not exceed the listed limitations, and the listed control measures shall be employed. Additional applicable emissions limitations and/or control measures (if any) may be specified in narrative form following the table.

<u>Operations, Property, and/or Equipment</u>	<u>Applicable Rules/ Requirements</u>	<u>Applicable Emissions Limitations/Control Measures</u>
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2. Additional Terms and Conditions

None

II. Operational Restrictions

None

III. Monitoring and/or Record Keeping Requirements

None

IV. Reporting Requirements

None

V. Testing Requirements

None

VI. Miscellaneous Requirements

None

Part III - Terms and Conditions for Emissions Units

Emissions Unit ID: Crushing & storage (P011)

Activity Description: Raw Shale and raw Fireclay transported from the pit is dumped, passed through a rotary crusher, reducing the size to < 6" diameter. The crushed Shale and Fireclay are transported to inside storage pens.

A. State and Federally Enforceable Section

I. Applicable Emissions Limitations and/or Control Requirements

1. The specific operation(s), property, and/or equipment which constitute this emissions unit are listed in the following table along with the applicable rules and/or requirements and with the applicable emissions limitations and/or control measures. Emissions from this unit shall not exceed the listed limitations, and the listed control measures shall be employed. Additional applicable emissions limitations and/or control measures (if any) may be specified in narrative form following the table.

<u>Operations, Property, and/or Equipment</u>	<u>Applicable Rules/ Requirements</u>	<u>Applicable Emissions Limitations/Control Measures</u>
This emissions unit consists of primary crushing of raw shale and raw clay and storage of crushed shale and crushed clay with maximum capacity 160 TPH (80 TPH shale and 80 TPH clay) which includes (1) in one totally enclosed building, one two-roll crusher for raw shale with watering and fabric filter (truck dump dust collector DCF004) and one two-roll crusher for raw clay with watering and the same fabric filter (DCF004); (2) enclosed in a second building, belt conveyors, storage bins for crushed material with loading into storage piles using a conveyor belt and loading out of storage piles using a front end loader; and (3) not enclosed in a building but totally covered, shale interconnecting belt #2 and fireclay interconnecting belt #3.	OAC rule 3745-31-05(A)(3) (PTI 15-1146)	0.61 lb of particulate emissions/hr 0.339 ton of particulate emissions/yr Compliance with this rule shall also include compliance with the requirements specified in 40 CFR Part 60, Subpart 000. See A.1.2.a below.
	40 CFR Part 60, Subpart 000	See A.1.2.b below.
	OAC rules 3745-17-07(A) and 3745-17-07(B)	See A.1.2.c below.
	OAC rule 3745-17-08(B)	See A.1.2.d below.
	OAC rule 3745-17-11(B)	See A.1.2.e below.

2. Additional Terms and Conditions

- 2.a** The following are the additional best available technology (BAT) requirements.
- i. The crushing operations and storage operations (including load-in and load-out of the crushed materials using a front-end loader) shall take place within totally enclosed buildings.
 - ii. The two-roll crushers shall be serviced by the truck dump fabric filter which shall have a capture efficiency sufficient to minimize or eliminate visible particulate emissions of fugitive dust at the points of capture to the extent possible with good engineering design. The fabric filter shall be vented inside the building.
 - iii. Conveyor belts shall be the only affected facilities which are not enclosed within a building. Any belt conveyors which are not contained within a totally enclosed building shall be covered.
 - iv. There shall be no vents into the ambient air from the buildings that contain affected facilities.
 - v. For the load-in and load-out of the stored materials using a front-end loader, the drop height of the front-end loader shall be minimized.
- 2.b** The following are the applicable emission limitations from 40 CFR Part 60, Subpart OOO, Standards of Performance for Nonmetallic Mineral Processing Plants (terms are defined in 40 CFR Part 60).
- i. Requirements for emissions from affected facilities not enclosed in a building: for any conveyor belts which are not enclosed within a building, there shall be no fugitive emissions which exhibit greater than 10% opacity as a 6-minute average.
 - ii. Requirements for emissions from affected facilities enclosed in buildings: there shall be no visible fugitive emissions escaping from the buildings housing the affected facilities.
- 2.c** The visible particulate emission limitations specified in OAC rules 3745-17-07(A) and 3745-17-07(B) are less stringent than the visible emission limitations specified in 40 CFR Part 60, Subpart OOO.
- 2.d** The fugitive dust control measures specified in this rule are equivalent to or less stringent than the fugitive dust control measures established pursuant to OAC rule 3745-31-05(A)(3).
- 2.e** The particulate emission limitation specified in this rule is less stringent than the particulate emission limitations established pursuant to OAC rule 3745-31-05(A)(3).

II. Operational Restrictions

1. The pressure drop across the fabric filter (DCF004) shall be maintained within the range of 2 to 4 inches of water while the emissions unit is in operation.
2. The permittee shall be limited to receiving, crushing, grinding, and screening 111,000 tons of material per calendar year in emissions units F004, P011, and P012.

III. Monitoring and/or Record Keeping Requirements

1. The permittee shall properly operate and maintain equipment to monitor the pressure drop across the baghouse while the emissions unit is in operation. The monitoring equipment shall be calibrated, operated, and maintained in accordance with the manufacturer's recommendations, instructions, and operating manual(s). The permittee shall record the pressure drop across the baghouse on a daily basis.

Facility Name: **Ironrock Capital inc.**
Facility ID: **15-76-05-1149**
Emissions Unit: **Crushing & storage (P011)**

III. Monitoring and/or Record Keeping Requirements (continued)

2. The permittee shall perform weekly visible emissions checks for the following equipment and operations, when the emissions unit is in operation and when the weather conditions allow:
 - a. for the shale interconnecting belt #2 and for the fireclay interconnecting belt #3 which are totally covered and not enclosed in any building, check for any visible particulate emissions of fugitive dust around the conveyors when the conveyors are transporting material;
 - b. for the following operations, property, and or equipment that are all enclosed in buildings, the raw shale crusher, the raw fireclay crusher, belt conveyors enclosed in buildings, and the crushed shale and crushed fireclay storage bins with continuous loading into storage piles in the bins and load out using a front-end loader, check for any visible particulate emissions of fugitive dust escaping from the buildings enclosing this equipment when they are in use; and
 - c. The presence or absence of any visible particulate emissions of fugitive dust (determined in accordance with sections A.III.2.a and A.III.2.b above) shall be noted in an operations log. If visible particulate emissions of fugitive dust are observed, the permittee shall also note the following in the operations log:
 - i. the color of the emissions;
 - ii. whether the emissions are representative of normal operations;
 - iii. if the emissions are not representative of normal operations, the cause of the abnormal emissions;
 - iv. the total duration of any visible fugitive emission incident; and
 - v. any corrective actions taken to eliminate the visible fugitive emissions.
3. The permittee shall maintain weekly records of the following:
 - a. the amount of material crushed in this emissions unit, in tons; and
 - b. the total amount of material received, crushed, ground, and screened in emissions units F004, P011, and P012, in tons.

IV. Reporting Requirements

1. The permittee shall submit quarterly deviation (excursion) reports that identify all periods of time during which the pressure drop across the baghouse did not comply with the allowable range specified above.
2. The permittee shall submit quarterly written reports that (a) identify all days during which any visible particulate emissions of fugitive dust were observed from any conveyor belts which are not enclosed within a building and (b) describe any corrective actions taken to eliminate the visible particulate emissions of fugitive dust. These reports shall be submitted to the Canton City Health Department, Air Pollution Control Division by January 31, April 30, July 31, and October 31 of each year and shall cover the previous calendar quarter.
3. The permittee shall submit annual reports that specify the total amount of material received, crushed, ground, and screened in emissions units F004, P011, and P012, in tons, and the total particulate emissions from this emissions unit during the previous calendar year. These reports shall be submitted by January 31 of each year.

V. Testing Requirements

1. Compliance with the emission limitations in sections A.I.1 and A.I.2 of these terms and conditions shall be determined in accordance with the following methods:

V. Testing Requirements (continued)

1.a Emission Limitation:

2.27 tpy of particulate emissions from the totally enclosed buildings

Applicable Compliance Method:

This emission limitation was established using emission factors and the maximum production rate of this emissions unit of 111,000 tons per year.

Crushing:

The emission factor to utilize is 12 pounds of particulate emissions/ton of material processed for SCC 3-05-009-04 from FIRE 6.22. The control efficiency of the watering is 70%. The fabric filter has a collection efficiency of 99.5%.

$(111,000 \text{ tons/year}) \times (12 \text{ pounds of particulate emissions/ton}) \times (1 - 0.70) \times (1 - 0.995) \times (1 \text{ ton}/2,000 \text{ lbs}) = 1.00$ tpy of particulate emissions

Storage:

Storage includes load-in to storage bins from conveyor belts and load-out from the piles in the storage bins using a front-end loader with a 1.4 cubic yard bucket. From Supplement #1 (1983) to the Ohio EPA's Reasonably Available Control Measures for Fugitive Dust Sources (RACM) Manual (Table 2.1.2-5), the emission factor for continuous load-in is 0.0009 pound of particulate emissions/ton and the emission factor for load-out from piles using a front-end loader is 0.0038 pound of particulate emissions/ton.

$(111,000 \text{ tons/year}) \times (0.0009 + 0.0038 \text{ pound of particulate emissions/ton}) \times (1 \text{ ton}/2,000 \text{ lbs}) = 0.26$ tpy of particulate emissions

Total Emissions:

Total Emissions = $(1.00 + 0.26)$ tpy of particulate emissions

Total Emissions = 1.26 tpy of particulate emissions

Compliance may be determined by emission factors and the production records in section A.III.3.

1.b Emission Limitation:

For any conveyor belts not enclosed in a building, there shall be no visible particulate emissions of fugitive dust which exhibit greater than 10% opacity as a 6-minute average.

Applicable Compliance Method:

Compliance shall be demonstrated based upon the requirements specified in 40 CFR Part 60, Appendix A, Method 9 and the procedures specified in 40 CFR 60.11.

1.c Emission Limitation:

There shall be no visible particulate emissions of fugitive dust escaping from the totally enclosed buildings housing the affected facilities.

Applicable Compliance Method:

Compliance shall be demonstrated based upon the requirements specified in 40 CFR Part 60, Appendix A, Method 22, 40 CFR 60.675(d), and section A.III.2 of this permit.

Facility Name: Ironrock Capital inc.
Facility ID: 15-76-05-1149
Emissions Unit: Crushing & storage (P011)

V. Testing Requirements (continued)

2. The permittee shall conduct, or have conducted, emission testing for this emissions unit in accordance with the following requirements:
 - a. The emission testing shall be conducted on an annual basis.
 - b. The emission testing shall be conducted to demonstrate compliance with the visible particulate emission limitations for fugitive dust specified in sections A.1.2.b.i and A.1.2.b.ii.
 - c. The following test methods shall be employed to demonstrate compliance with the visible particulate emission limitations: for the visible fugitive emissions limitation which includes a percent opacity in section A.1.2.b.i, Method 9 of 40 CFR Part 60, Appendix A, and for the visible fugitive emissions limitation which states no visible fugitive emissions in section A.1.2.b.ii, Method 22 of 40 CFR Part 60, Appendix A as described in 40 CFR 60.675(d). Alternative U.S. EPA approved test methods may be used with prior approval from the Ohio EPA.
 - d. The tests shall be conducted while the emissions unit is operating at or near its maximum capacity, unless otherwise specified or approved by the Canton City Health Department, Air Pollution Control Division, except as described in this term and condition. For the no visible emissions escaping from the buildings housing the affected facilities limitation, separate Method 22 observations shall be conducted on each of the two buildings. During the time that Method 22 visible emissions observations are being conducted on a particular building, only the affected facilities housed in that particular building shall be operated at or near their maximum capacity.

Not later than 30 days prior to the proposed test date(s), the permittee shall submit an "Intent to Test" notification to the Canton City Health Department, Air Pollution Control Division. The "Intent to Test" notification shall describe in detail the proposed test methods and procedures, the emissions unit operating parameters, the time(s) and date(s) of the test(s) and the person(s) who will be conducting the test(s). Failure to submit such notification for review and approval prior to the test(s) may result in the Canton City Health Department, Air Pollution Control Division's refusal to accept the results of the emission test(s).

Personnel from the Canton City Health Department, Air Pollution Control Division shall be permitted to witness the test(s), examine the testing equipment, and acquire data and information necessary to ensure that the operation of the emissions unit and the testing procedures provide a valid characterization of the emissions from the emissions unit and/or the performance of the control equipment.

A comprehensive written report on the results of the emission test(s) shall be signed by the person or persons responsible for the tests and submitted to the Canton City Health Department, Air Pollution Control Division within 30 days following completion of the test(s).

VI. Miscellaneous Requirements

None

B. State Enforceable Section

I. Applicable Emissions Limitations and/or Control Requirements

1. The specific operation(s), property, and/or equipment which constitute this emissions unit are listed in the following table along with the applicable rules and/or requirements and with the applicable emissions limitations and/or control measures. Emissions from this unit shall not exceed the listed limitations, and the listed control measures shall be employed. Additional applicable emissions limitations and/or control measures (if any) may be specified in narrative form following the table.

<u>Operations, Property, and/or Equipment</u>	<u>Applicable Rules/ Requirements</u>	<u>Applicable Emissions Limitations/Control Measures</u>
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2. Additional Terms and Conditions

None

II. Operational Restrictions

None

III. Monitoring and/or Record Keeping Requirements

None

IV. Reporting Requirements

None

V. Testing Requirements

None

VI. Miscellaneous Requirements

None

Part III - Terms and Conditions for Emissions Units

Emissions Unit ID: Grinding & screening (P012)

Activity Description: The crushed Shale and Fireclay are ground to an approximate size, passed over 18/24 mesh screens. The fine shale and fine Fireclay are put into storage ready for production, the oversize Shale and Fireclay are returned for further grinding.

A. State and Federally Enforceable Section

I. Applicable Emissions Limitations and/or Control Requirements

- The specific operation(s), property, and/or equipment which constitute this emissions unit are listed in the following table along with the applicable rules and/or requirements and with the applicable emissions limitations and/or control measures. Emissions from this unit shall not exceed the listed limitations, and the listed control measures shall be employed. Additional applicable emissions limitations and/or control measures (if any) may be specified in narrative form following the table.

<u>Operations, Property, and/or Equipment</u>	<u>Applicable Rules/ Requirements</u>	<u>Applicable Emissions Limitations/Control Measures</u>
<p>This emissions unit consists of secondary grinding, screening, conveying, and storing of shale and fireclay which includes (1) loading of crushed shale onto belt conveyor #6a using a front end loader; (2) grinding of shale with a dry grinding pan and screening with 180 square feet of heated Vibro Screens with recycle and a BaCO₃ feeder; (3) loading of crushed fireclay onto belt conveyor #1 using a front end loader; (4) grinding of fireclay with a hammer mill grinder, screening with 208 square feet of heated Vibro Screens with recycle and a BACO₃ feeder; (4) storing of ground and screened shale and fireclay in storage tanks with load-in using a belt conveyor; and, (5) belt conveyors including shale interconnecting belt #22 and fireclay interconnecting belt #14 which are not enclosed in a building but totally covered.</p>	<p>OAC rule 3745-31-05 (PTI 15-1146)</p>	<p>32.2 tpy of particulate emissions from the totally enclosed buildings</p>
<p>The shale and fireclay systems are independent of each other contained in separate sections of a building and may run simultaneously. For shale operations, the emissions unit is serviced by the 28,000 cfm fabric filter (DCP012s) and for fireclay operations is serviced by the 28,000 cfm fabric filter (DCP012c). Both fabric filters are vented inside their respective sections of the building.</p>	<p>40 CFR Part 60, Subpart 000</p>	<p>Compliance with this rule shall also include compliance with the requirements specified in 40 CFR Part 60, Subpart 000.</p>
	<p>OAC rule 3745-17-07(B)(1)</p>	<p>See A.I.2.a below.</p>
	<p>OAC rule 3745-17-08(B)</p>	<p>See A.I.2.b below.</p>
		<p>See A.I.2.c below.</p>
		<p>See A.I.2.d below.</p>

2. Additional Terms and Conditions

- 2.a** The following are the additional PTI 15-1146 best available technology (BAT) requirements:
- i. The grinding, screening, and storage operations (including the load-in and load-out of the materials using a front-end loader) shall take place within totally enclosed buildings.
 - ii. The grinding of shale in the dry grinding pan, screening with 180 square feet of heated Vibro Screens, the storage of ground shale, all conveyors except #6a, #6b, #7 and #22, conveyor transfer points except those associated with the previously listed conveyors, and the BaCO₃ feeder shall be serviced by the 28,000 cfm fabric filter DCP012s which is vented inside the building. The grinding of fireclay in the hammer mill grinder, screening with 180 square feet of heated Vibro Screens, the storing of ground fireclay, all conveyors except #1, #2, #3 and #14, conveyor transfer points except those associated with the previously listed conveyors, and the BaCO₃ feeder shall be serviced by the 28,000 cfm fabric filter DCP012c which is vented inside the building. These fabric filters shall have capture efficiencies sufficient to minimize or eliminate visible particulate emissions of fugitive dust at the points of capture to the extent possible with good engineering design.
 - iii. Conveyors shall be the only affected facilities which are not enclosed within a building. Any belt conveyors which are not contained within a totally enclosed building shall be covered.
 - iv. There shall be no vents into the ambient air from the buildings that contain affected facilities.
 - v. For the load-in of the crushed materials using a front-end loader, the drop height of the front-end loader shall be minimized.
- 2.b** The following are the applicable emission limitations and control requirements from 40 CFR Part 60, Subpart OOO, Standards of Performance for Nonmetallic Mineral Processing Plants (terms are defined in 40 CFR Part 60).
- i. Requirements for emissions from affected facilities not enclosed in a building: for any conveyor belts which are not enclosed within a building, there shall be no visible fugitive emissions which exhibit greater than 10% opacity as a 6-minute average.
 - ii. Requirements for emissions from affected facilities enclosed in buildings: there shall be no visible fugitive emissions escaping from the buildings housing the affected facilities.
- 2.c** The visible particulate emission limitation for fugitive dust required in OAC rule 3745-17-07(B)(1) is less stringent than the visible fugitive emission limitation established in 40 CFR Part 60, Subpart OOO.
- 2.d** For all the operations, property, and/or equipment that emit fugitive dust (particulate emissions which do not exit a stack), reasonably available control measures (RACM) shall be utilized to minimize or eliminate visible emissions of fugitive dust. The permittee shall comply with the BAT and 40 CFR Part 60, Subpart OOO requirements of this permit in order to comply with the RACM requirements of this permit.

II. Operational Restrictions

1. The pressure drop across the fabric filters servicing this emissions unit, DCP012c and DCP012s, shall be maintained in the range of 3 to 5 inches of water gauge while the emissions unit is in operation.
2. The permittee shall be limited to receiving, crushing, grinding, and screening 111,000 tons of material per calendar year in emissions units F004, P011, and P012.

III. Monitoring and/or Record Keeping Requirements

1. The permittee shall properly operate and maintain equipment to monitor the pressure drop across both fabric filters while the emissions unit is in operation. The monitoring equipment shall be calibrated, operated, and maintained in accordance with the manufacturer's recommendations, instructions, and operating manual(s). The permittee shall record the pressure drop across the fabric filters on a daily basis.

Facility Name: **Ironrock Capital inc.**
Facility ID: **15-76-05-1149**
Emissions Unit: **Grinding & screening (P012)**

III. Monitoring and/or Record Keeping Requirements (continued)

2. The permittee shall perform weekly visible emissions checks for the following equipment and operations, when the emissions unit is in operation and when the weather conditions allow:
 - a. for the shale interconnecting belt #22 and for the fireclay interconnecting belt #14 which are totally covered and not enclosed in any building, check for any visible fugitive emissions around the conveyors when the conveyors are transporting material;
 - b. for the following operations, property, and or equipment that are all enclosed in buildings, the raw shale dry grinding pan and associated screens, the raw fireclay hammer mill grinder and associated screens, the BaCO₃ feeders, belt conveyors enclosed in buildings, and the ground and screened shale and fireclay storage tanks with continuous loading by belt conveyor, check for any visible particulate emissions of fugitive dust escaping from the buildings enclosing the operations, property and or equipment; and
 - c. The presence or absence of any visible fugitive emissions (determined in accordance with sections A.III.2.a and A.III.2.b above) shall be noted in an operations log. If visible fugitive emissions are observed, the permittee shall also note the following in the operations log:
 - i. the color of the emissions;
 - ii. whether the emissions are representative of normal operations;
 - iii. if the emissions are not representative of normal operations, the cause of the abnormal emissions;
 - iv. the total duration of any visible fugitive emission incident; and
 - v. any corrective actions taken to eliminate the visible fugitive emissions.
3. The permittee shall maintain weekly records of the following:
 - a. the amount of material ground in this emissions unit, in tons; and
 - b. the total amount of material received, crushed, ground, and screened in emissions units F004, P011, and P012, in tons.

IV. Reporting Requirements

1. The permittee shall submit quarterly deviation (excursion) reports that identify all periods of time during which the pressure drop across the fabric filters did not comply with the allowable ranges specified above.
2. The permittee shall submit quarterly written reports which (a) identify all days during which any visible particulate emissions of fugitive dust were observed from any conveyor belts which are not enclosed within a building and (b) describe any corrective actions taken to eliminate the visible fugitive emissions. These reports shall be submitted to the Canton City Health Department, Air Pollution Control Division by January 31, April 30, July 31, and October 31 of each year and shall cover the previous calendar quarter.
3. The permittee shall submit annual reports that specify the amount of ground material stored, in tons, and the total particulate emissions from this emissions unit during the previous calendar year. These reports shall be submitted by January 31 of each year.

V. Testing Requirements

1. Compliance with the emission limitations in sections A.I.1 and A.I.2 of these terms and conditions shall be determined in accordance with the following methods:

V. Testing Requirements (continued)

1.a Emission Limitation:

32.2 tpy of total particulate emissions from the totally enclosed buildings

Applicable Compliance Method:

This emission limitation was established using emission factors and the maximum production rate of this emissions unit of 111,000 tons per year which requires the processing of 1,000,000 tons of materials per year.

Grinding:

The emission factor to utilize is 76.0 pounds of particulate emissions/ton of material processed for SCC 3-05-008-02 from FIRE 6.22. The capture efficiency of the collection system is 90%. The fabric filter has a collection efficiency of 99.5%.

$(1,000,000 \text{ tons/year}) \times (76.0 \text{ pounds of particulate emissions/ton}) \times (1 - 0.90) \times (1 - 0.995) \times (1 \text{ ton}/2,000 \text{ lbs}) = 19.0 \text{ tpy of particulate emissions}$

Screening:

The emission factor to utilize is 20.0 pounds of particulate emissions/ton processed for SCC 3-05-003-08 from EPA 450/4-90-003. The capture efficiency of the collection system is 75%. The fabric filter has a collection efficiency of 99.5%.

$(1,000,000 \text{ tons/year}) \times (20.0 \text{ pounds of particulate emissions/ton}) \times (1 - 0.75) \times (1 - 0.995) \times (1 \text{ ton}/2,000 \text{ lbs}) = 12.5 \text{ tpy of particulate emissions}$

Storage:

The ground and screened material is stored in steel vessels with containment efficiency of 99.999%. Based on the screen size, an average of 35% of the material becomes airborne during storage.

$(111,000 \text{ tons/year}) \times (0.35) \times (1 - 0.99999) = 0.39 \text{ tpy of particulate emissions}$

Total Emissions:

Total Emissions = $(19.0 + 12.5 + 0.39) \text{ tpy of particulate emissions}$

Total Emissions = 31.89 tpy of particulate emissions

Compliance may be determined by emission factors and the production records in section A.III.3.

1.b Emission Limitation:

For affected facilities not enclosed in a building: there shall be no visible fugitive emissions which exhibit greater than 10% opacity as a 6-minute average.

Applicable Compliance Method:

Compliance shall be demonstrated based upon the requirements specified in 40 CFR Part 60, Appendix A, Method 9 and the procedures specified in 40 CFR 60.11.

V. Testing Requirements (continued)

1.c Emission Limitation:

There shall be no visible particulate emissions of fugitive dust escaping from the totally enclosed buildings housing the affected facilities.

Applicable Compliance Method:

Compliance shall be demonstrated based upon the requirements specified in 40 CFR Part 60, Appendix A, Method 22, the procedures in 40 CFR 60.675(d), and section A.III.2 of this permit.

2. The permittee shall conduct, or have conducted, emission testing for this emissions unit in accordance with the following requirements:

a. The emission testing shall be conducted on an annual basis.

b. The emission testing shall be conducted to demonstrate compliance with the visible particulate emission limitations for fugitive dust specified in sections A.I.2.b.i and A.I.2.b.ii.

c. The following test methods shall be employed to demonstrate compliance with the visible particulate emissions limitations: for the visible fugitive emissions limitation which includes a percent opacity in section A.I.2.b.i, Method 9 of 40 CFR Part 60, Appendix A, and for the visible fugitive emissions limitation which states no visible fugitive emissions in section A.I.2.b.ii, Method 22 of 40 CFR Part 60, Appendix A as described in 40 CFR 60.675(d). Alternative U.S. EPA approved test methods may be used with prior approval from the Ohio EPA.

d. The tests shall be conducted while the emissions unit is operating at or near its maximum capacity, unless otherwise specified or approved by the Canton City Health Department, Air Pollution Control Division.

Not later than 30 days prior to the proposed test date(s), the permittee shall submit an "Intent to Test" notification to the Canton City Health Department, Air Pollution Control Division. The "Intent to Test" notification shall describe in detail the proposed test methods and procedures, the emissions unit operating parameters, the time(s) and date(s) of the test(s) and the person(s) who will be conducting the test(s). Failure to submit such notification for review and approval prior to the test(s) may result in the Canton City Health Department, Air Pollution Control Division's refusal to accept the results of the emission test(s).

Personnel from the Canton City Health Department, Air Pollution Control Division shall be permitted to witness the test(s), examine the testing equipment, and acquire data and information necessary to ensure that the operation of the emissions unit and the testing procedures provide a valid characterization of the emissions from the emissions unit and/or the performance of the control equipment.

A comprehensive written report on the results of the emissions test(s) shall be signed by the person or persons responsible for the tests and submitted to the Canton City Health Department, Air Pollution Control Division within 30 days following completion of the test(s).

VI. Miscellaneous Requirements

None

B. State Enforceable Section

I. Applicable Emissions Limitations and/or Control Requirements

1. The specific operation(s), property, and/or equipment which constitute this emissions unit are listed in the following table along with the applicable rules and/or requirements and with the applicable emissions limitations and/or control measures. Emissions from this unit shall not exceed the listed limitations, and the listed control measures shall be employed. Additional applicable emissions limitations and/or control measures (if any) may be specified in narrative form following the table.

<u>Operations, Property, and/or Equipment</u>	<u>Applicable Rules/ Requirements</u>	<u>Applicable Emissions Limitations/Control Measures</u>
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2. Additional Terms and Conditions

None

II. Operational Restrictions

None

III. Monitoring and/or Record Keeping Requirements

None

IV. Reporting Requirements

None

V. Testing Requirements

None

VI. Miscellaneous Requirements

None

Part III - Terms and Conditions for Emissions Units

Emissions Unit ID: Tunnel kiln #4 (P014)

Activity Description: Natural gas fired Tunnel Kiln firing unglazed ceramic quarry tiles to a temperature of 2200°F

A. State and Federally Enforceable Section

1. Applicable Emissions Limitations and/or Control Requirements

1. The specific operation(s), property, and/or equipment which constitute this emissions unit are listed in the following table along with the applicable rules and/or requirements and with the applicable emissions limitations and/or control measures. Emissions from this unit shall not exceed the listed limitations, and the listed control measures shall be employed. Additional applicable emissions limitations and/or control measures (if any) may be specified in narrative form following the table.

<u>Operations, Property, and/or Equipment</u>	<u>Applicable Rules/ Requirements</u>	<u>Applicable Emissions Limitations/Control Measures</u>
natural gas-fired tunnel kiln to produce unglazed quarry tile; kiln #4; maximum input capacity 11.2 mmBtu/hr; maximum raw material feed rate 3.97 TPH; tile production capacity 3.67 TPH, vented to a common stack for emissions units P004, P005, P006, and P014	OAC rule 3745-17-07(A)	See A.1.2.a below.
	OAC rule 3745-17-11(B)	See A.1.2.b below.
	OAC rule 3745-18-06(E)(1)	See A.1.2.c below.
	OAC rule 3745-31-05(A)(3) (PTI 15-1173)	See A.1.2.d and A.1.2.e below. Compliance with this rule also includes compliance with OAC rule 3745-17-07(A).

2. Additional Terms and Conditions

- 2.a Visible particulate emissions from any stack shall not exceed 20% opacity, as a 6-minute average, except as provided by the rule.
- 2.b The particulate emission limitation required by OAC rule 3745-17-11(B) is less stringent than the particulate emission limitation established pursuant to the best available technology requirement specified in OAC rule 3745-31-05(A)(3).
- 2.c The sulfur dioxide (SO₂) emission limitation required by OAC rule 3745-18-06(E)(1) is less stringent than the SO₂ emission limitation established pursuant to the best available technology requirement specified in OAC rule 3745-31-05(A)(3).

2. Additional Terms and Conditions (continued)

- 2.d The following emission limitations shall apply to emissions units P004 (kiln #1), P005 (kiln #2), P006 (kiln #3), and P014 (kiln #4), combined:

21.65 lbs/hr of particulate emissions
94.14 tpy of particulate emissions

16.06 lbs/hr of nitrogen oxides (NOx)
70.34 tpy of NOx

76.65 lbs/hr of SO₂
12,877 lbs/wk of SO₂
306.53 tpy of SO₂

6.5 lbs/hr of fluorides
28.47 tpy of fluorides

- 2.e The height of the stack serving this emissions unit shall be a minimum of 45 meters from the ground level.

II. Operational Restrictions

1. The permittee shall burn only natural gas as fuel in this emissions unit.
2. The total amount of sulfur in the raw materials used in emissions units P004, P005, P006, and P014 shall not exceed 8,220 pounds in any one week. The amount of sulfur shall be determined by multiplying the tons of raw material (dry weight) used in a week, times the weighted-average sulfur content of the raw materials. See section A.VI.1 for an explanation of the calculation of this weekly sulfur (in the feed) value. This restriction shall change, in accordance with section A.VI.1 if the current sulfur emission factor changes.
3. The total amount of sulfur fed to emissions units P004, P005, P006, and P014 shall not exceed 97,900 pounds in any one quarter. The amount of sulfur shall be determined by multiplying the tons (dry weight) of raw materials fed to these emissions units during that quarter, times the weighted-average sulfur content of the raw materials. See section A.VI.1 for an explanation of the calculation of this quarterly sulfur (in the feed) value. This restriction shall change, in accordance with section A.VI.1 if the current sulfur emission factor changes.

III. Monitoring and/or Record Keeping Requirements

1. The permittee shall perform checks, at least once every two-week period and within 15 days of the last check performed, when the emissions unit is in operation and when the weather conditions allow, for any visible particulate emissions from the stack serving this emissions unit. The presence or absence of any visible emissions shall be noted in an operations log. If visible emissions are observed, the permittee shall also note the following in the operations log:
 - a. the color of the emissions;
 - b. whether the emissions are representative of normal operations;
 - c. if the emissions are not representative of normal operations, the cause of the abnormal emissions;
 - d. the total duration of any visible emission incident; and
 - e. any corrective actions taken to eliminate the visible emissions.
2. For each day during which the permittee burns a fuel other than natural gas in this emissions unit, the permittee shall maintain a record of the type and quantity of fuel burned.
3. The permittee shall comply with the following monitoring and record keeping requirements for the purpose of determining the weekly and average hourly SO₂ emissions from emissions units P004, P005, P006, and P014, combined:

III. Monitoring and/or Record Keeping Requirements (continued)

- 3.a** The following procedures shall be used to obtain a representative sample of the total daily amount of fireclay and shale fed to emissions units P004, P005, P006, and P014:
- i. Daily samples shall be taken of the raw materials (fireclay and shale) used in tile production. A daily grab sample of fireclay shall be taken from the belt conveyor leading from one of the two ground fireclay storage tanks which feed the conveyor belts which feed the pug mixers. A daily grab sample of shale shall be taken from the belt conveyor leading from one of the two ground shale storage tanks which feed the conveyor belts which feed the pug mixers. One of these pug mixers supplies mixed raw materials to emissions units P004 and P005 and the other pug mixer supplies mixed raw materials to emissions units P006 and P014.
 - ii. The two individual daily samples from the conveyor belts shall be mixed in proportion to the daily production rates in emissions units P004, P005, P006, and P014 to obtain a representative daily composite sample.
 - iii. The daily composite sample shall be placed in a composite bottle with lid to produce a weekly composite sample. The weekly composite shall be mixed thoroughly so that a sample may be taken from the bottle to represent the whole week's production from the four emissions units.
 - iv. The permittee shall maintain the following daily records:
 - (a) the production schedule indicating what product is being produced in each of the four kilns including the amount, in grams, of the clay and shale used to make the daily composite sample;
 - (b) the production rate of each product being produced, and the number of kiln cars processed per day in each kiln; and
 - (c) the total daily production rate.
 - v. The permittee shall maintain weekly records of the production schedules indicating what products are produced in emissions units P004 and P005 combined, and indicating what products are produced in emissions units P006 and P014 combined.
- 3.b** The following procedures shall be used to determine the sulfur content of each weekly composite sample:
- i. The weekly composite sample shall be analyzed for sulfur content each week.
 - ii. The weekly composite sample shall be analyzed using the permittee's Laboratory Equipment Corporation (LECO) analysis equipment that utilizes ASTM Test Method D1552 or E350-97 to determine the corrected, weighted-average sulfur content of the raw materials.
 - iii. For quality assurance of the LECO equipment and its analytical methods, the permittee shall perform a calibration test before the weekly composite sample is analyzed for sulfur content. Two standard calibration rings with known sulfur concentration shall be analyzed for sulfur content utilizing the LECO equipment. The two sulfur content results shall be averaged to obtain the calibration correction factor. The analysis of the weekly composite sample shall utilize the calibration correction factor to obtain the corrected, weighted-average, sulfur content result.
 - iv. The permittee shall maintain the following weekly records:
 - (a) the value of the corrected, weighted-average sulfur content of the raw materials used to make tile that week;
 - (b) the sulfur concentration of the rings used to calibrate the LECO equipment each week;
 - (c) the measured sulfur concentrations of the calibration rings; and
 - (d) the calibration correction factors.

III. Monitoring and/or Record Keeping Requirements (continued)

3.c The following procedures shall be used for the sampling and analysis of the tile processed in emissions units P004, P005, P006, and P014 during the emission tests:

- i. From each kiln, the permittee shall collect one piece of unfired tile from each kiln car (the device upon which the unfired clay is stacked and which moves the clay through the fired kiln for curing) that will be located in the firing section of each kiln during each of the three hours of the next day's emission testing. The set of unfired samples from each hour of the testing shall be crushed and mixed together.
- ii. The twelve mixed samples (one from each hour from each kiln) of uncured tile shall be analyzed by the permittee or its contractor for sulfur content using a published method for the determination of sulfur content which is suitable for uncured and cured tile materials. These analyses shall give the amount of sulfur entering each kiln in the uncured tile, in units of pounds of sulfur per hour per kiln, in each of the three hours of the test.
- iii. From each kiln, the permittee shall collect one piece of fired tile from each kiln car (the device upon which the unfired clay is stacked and which moves the clay through the fired kiln for curing) that was located in the firing section of each kiln during each of the three hours of the emission testing. The set of fired samples from each hour of the testing shall be crushed and mixed together.
- iv. The twelve mixed samples (one from each hour from each kiln) of cured tile shall be analyzed by the permittee or its contractor for sulfur content using a published method for the determination of sulfur content which is suitable for uncured and cured tile materials. These analyses shall give the amount of sulfur exiting each kiln in the cured tile, in units of pounds of sulfur per hour per kiln, in each of the three hours of the test.
- v. The sulfur converted to SO₂ (out the stack) to the sulfur (in the feed) emission factor (the sulfur emission factor), that is, the ratio of the amount of sulfur converted to SO₂ and emitted from the stack (lbs S) to sulfur in the feed (lbs S), shall be calculated by averaging the three individual sulfur emission factors from each of the three hours of the SO₂ emission testing required in section A.V.2. The individual sulfur emission factors shall be calculated by taking the sulfur in the feed (lbs S/hr) minus sulfur retained in the fired tile (sulfur not converted to SO₂) (lbs S/hr), and dividing by the sulfur in the feed (lbs S/hr) for each hour to give a ratio for each of the three individual testing hours. The sulfur retained in the fired tile (lbs S/hr) shall be determined by subtracting the measured sulfur content (lbs S/hr) of the fired tile from the unfired tile used during the hour of the emission test. The amount of sulfur in the feed (lbs S/hr) shall be determined from the sulfur content measurement of the unfired tile used during the hour of the emission test. The three individual sulfur emission factors shall be averaged together to obtain the sulfur emission factor (lbs S/lbs S).

The weekly SO₂ emission rate from the combined emissions units (lbs SO₂/week), calculated by multiplying the weekly amount of sulfur usage in the combined emissions units (lbs S), times the current sulfur emission factor (lbs S/lbs S), and times 2.00 (lbs SO₂/lb S) (stoichiometric ratio).

vi. The permittee shall maintain the following records:

- (a) the sulfur content of the crushed and mixed unfired sample from each hour of the test;
- (b) the calculations performed to obtain the sulfur emission factor; and
- (c) the final sulfur emission factor.

III. Monitoring and/or Record Keeping Requirements (continued)

4. The permittee shall maintain records of the following information for emissions units P004, P005, P006, and P014, combined:
 - a. the total amount of sulfur in the raw materials used in the combined emissions unit in any one week, calculated by multiplying the tons of feed (dry weight) to the combined emissions units during that week, times the weighted-average sulfur content for that week;
 - b. the weekly SO₂ emission rate from the combined emissions units (lbs SO₂/week), calculated by multiplying the weekly amount of sulfur usage in the combined emissions units (lbs S), times the current sulfur emission factor (lbs S/lbs S), and times 2.00 (lbs SO₂/lb S) (stoichiometric ratio);
 - c. the average SO₂ emission rate from the combined emissions units (lbs SO₂/hr), calculated as the weekly amount of sulfur usage in the combined emissions units (lbs S), times the current sulfur emission factor, divided by the hours of operation for the combined emissions units for the week; and
 - d. the total amount of sulfur in the raw materials used in the combined emissions units in any one quarter, calculated by summing the weekly values of the total amount of sulfur in the raw materials used in the combined emissions units (from section A.III.4.a. above) for all the weeks during that quarter.
5. The sulfur emission factor to be used in determining the pounds of SO₂ emitted per week, the average pounds of SO₂ emitted per hour, the total amount of sulfur fed to emissions units P004, P005, P006, and P014, combined, per week, and the total amount of sulfur fed to emissions units P004, P005, P006, and P014, combined, per quarter shall be based upon the most recent emission testing. The change from the old sulfur emission factor to the new one shall take place at the start of the quarter immediately following the quarter in which the emission testing took place.
6. The permittee shall maintain a monthly record of the hours of operation for emissions units P004, P005, P006, and P014, combined.

IV. Reporting Requirements

1. The permittee shall submit quarterly written reports that (a) identify all days during which any visible particulate emissions were observed from the stack serving this emissions unit and (b) describe any corrective actions taken to eliminate the visible particulate emissions. These reports shall be submitted to the Director (the Canton City Health Department, Air Pollution Control Division) by January 31, April 30, July 31, and October 31 of each year and shall cover the previous 3-month period.
2. The permittee shall submit quarterly deviation (excursion) reports that include an identification of each week during which the average hourly SO₂ emissions from the raw materials used in tile production in emissions units P004, P005, P006, and P014, combined, exceeded 76.65 lbs/hr. The actual average hourly SO₂ emissions for each such week shall also be reported.
3. The permittee shall submit deviation (excursion) reports that identify each day when a fuel other than natural gas was burned in this emissions unit. Each report shall be submitted within 30 days after the deviation occurs. It shall not be necessary to submit a deviation report for any quarter in which no deviations occurred.
4. The permittee shall submit quarterly deviation (excursion) reports that identify each week during which the total weight of sulfur in the raw materials used in emissions units P004, P005, P006, and P014, combined, exceeded the operational restriction defined in section A.II.2 (current value of 8,220 pounds) and the actual pounds of sulfur used in the raw materials for emissions units P004, P005, P006, and P014, combined, for each such week.
5. The permittee shall submit quarterly deviation (excursion) reports that identify each quarter during which the total weight of sulfur in the raw materials used in emissions units P004, P005, P006, and P014, combined, exceeded the operational restriction defined in section A.II.3 (current value of 97,900 pounds) and the actual pounds of sulfur used in the raw materials for emissions units P004, P005, P006, and P014, combined, for each such quarter.

IV. Reporting Requirements (continued)

6. The quarterly deviation reports shall be submitted in accordance with the requirements specified in Part 1 - General Term and Condition A.1.c.ii.
7. The permittee shall also submit annual reports that specify the total particulate, SO₂, NO_x, and fluoride emissions from emissions units P004, P005, P006, and P014, combined, in tons, for the previous calendar year. These reports shall be submitted by January 31 of each year.

V. Testing Requirements

1. Compliance with the emission limitations in sections A.I.1 and A.I.2 of these terms and conditions shall be determined in accordance with the following methods:

- 1.a Emission Limitation:

Visible particulate emissions from any stack shall not exceed 20% opacity, as a 6-minute average, except as provided by the rule.

Applicable Compliance Method:

Compliance shall be demonstrated based upon visible particulate emission observations performed on the common stack serving emissions units P004, P005, P006, and P014 in accordance with 40 CFR Part 60, Appendix A, Method 9 and the procedures specified in OAC rule 3745-17-03(B)(1).

- 1.b Emission Limitation:

21.65 lbs/hr of particulate emissions for emissions units P004, P005, P006, and P014, combined.

Applicable Compliance Method:

Compliance with this emission limitation shall be demonstrated based upon emission testing performed in accordance with the requirements specified in 40 CFR Part 60, Appendix A, Methods 1 through 5 and section A.V.2 below.

- 1.c Emission Limitation:

94.14 tpy of particulate emissions for emissions units P004, P005, P006, and P014, combined

Applicable Compliance Method:

Compliance with this emission limitation shall be demonstrated based upon the production records required pursuant to section A.III and the data from the most recent emission tests that demonstrated that the emissions unit(s) was (were) in compliance.

- 1.d Emission Limitation:

16.06 lbs/hr of NO_x for emissions units P004, P005, P006, and P014, combined

Applicable Compliance Method:

Compliance with this emission limitation shall be demonstrated based upon emission testing performed in accordance with the requirements specified in 40 CFR Part 60, Appendix A, Methods 1 through 4 and 7 and section A.V.2 below.

V. Testing Requirements (continued)

1.e Emission Limitation:

70.34 tpy of NOx for emissions units P004, P005, P006, and P014, combined

Applicable Compliance Method:

This emission limitation was established by multiplying the hourly NOx emission limitation for emissions units P004, P005, P006, and P014 by 8760 and dividing by 2000 lbs/ton. Compliance with this emission limitation may be assumed provided that the permittee complies with the hourly NOx emission limitation. Compliance with this emission limitation shall be demonstrated based upon the production records required pursuant to section A.III and the data from the most recent emission tests that demonstrated that the emissions unit(s) was (were) in compliance.

1.f Emission Limitation:

76.65 lbs/hr of SO2 for emissions units P004, P005, P006, and P014, combined

Applicable Compliance Method:

Compliance with this emission limitation may be demonstrated based upon the records required pursuant to section A.III. Compliance with this emission limitation shall be demonstrated based upon emission testing performed in accordance with the requirements specified in 40 CFR Part 60, Appendix A, Methods 1 through 4 and 7 and section A.V.2 below.

1.g Emission Limitation:

306.53 tpy of SO2 for emissions units P004, P005, P006, and P014, combined

Applicable Compliance Method:

Compliance with this emission limitation shall be demonstrated based upon the applicable production records required pursuant to section A.III.

1.h Emission Limitation:

6.5 lbs/hr of fluorides for emissions units P004, P005, P006, and P014, combined

Applicable Compliance Method:

Compliance with this emission limitation shall be demonstrated based upon emission testing performed in accordance with the requirements specified in 40 CFR Part 60, Appendix A, Methods 1 through 4 and 13A and section A.V.2 below.

1.i Emission Limitation:

28.47 tpy of fluorides for emissions units P004, P005, P006, and P014, combined

Applicable Compliance Method:

This emission limitation was established by multiplying the hourly fluorides emission limitation for emissions units P004, P005, P006, and P014 by 8760 and dividing by 2000 lbs/ton. Compliance with this emission limitation may be assumed provided that the permittee complies with the hourly fluorides emission limitation. Compliance with this emission limitation shall be based upon the production records required pursuant to section A.III and the data from the most recent emission tests that demonstrated that the emissions unit(s) was (were) in compliance.

V. Testing Requirements (continued)

- 2.** The permittee shall conduct, or have conducted, emission testing for emissions units P004, P005, P006, and P014 in accordance with the following requirements:
- 2.a** The emission testing shall be conducted no later than 6 months after issuance of the permit and within 27 to 33 months after issuance of the permit.
- 2.b** The emission testing shall be conducted to demonstrate compliance with the visible particulate emission limitation in section A.I.2.a and with the allowable, hourly mass emission rates for particulates, SO₂, NO_x, and fluorides in section A.I.2.d.
- 2.c** The following test methods shall be employed to demonstrate compliance with the visible particulate emissions limitation and the allowable mass emission rates:

for visible particulate emissions - Method 9 of 40 CFR Part 60, Appendix A;
for particulates - Methods 1 through 5 of 40 CFR Part 60, Appendix A;
for SO₂ - Methods 1 through 4 and 6 of 40 CFR Part 60, Appendix A;
for NO_x - Methods 1 through 4 and 7 of 40 CFR Part 60, Appendix A; and
for fluorides (total gaseous and particulate fluorides which do not include fluorocarbons) - Methods 1 through 4 and 13A of 40 CFR Part 60, Appendix A.

- 2.d** The following parameters, at a minimum, shall be monitored or analyzed and recorded during the emission testing: the process weight rate of each kiln, in pounds per hour; the sulfur content, in weight-percent sulfur of the raw materials used to make tile in each kiln; the amount of sulfur, in pounds, entering each kiln in the uncured tile in each of the three hours of the testing; the sulfur content, in weight-percent sulfur of the fired tile made in each kiln; and the amount of sulfur, in pounds, exiting each kiln in the cured tile in each of the three hours of the testing.
- 2.e** The emission tests should be conducted while emissions units P004, P005, P006, and P014 are concurrently operating at or near their maximum capacities unless otherwise specified or approved by the Canton City Health Department, Air Pollution Control Division.

Not later than 30 days prior to the proposed test date(s), the permittee shall submit an "Intent to Test" notification to the Canton City Health Department, Air Pollution Control Division. The "Intent to Test" notification shall describe in detail the proposed test methods and procedures, the emissions unit operating parameters, the time(s) and date(s) of the test(s), and the person(s) who will be conducting the test(s). Failure to submit such notification for review and approval prior to the test(s) may result in the Canton City Health Department, Air Pollution Control Division's refusal to accept the results of the emission test(s).

Personnel from the Canton City Health Department, Air Pollution Control Division shall be permitted to witness the test(s), examine the testing equipment, and acquire data and information necessary to ensure that the operation of the emissions unit and the testing procedures provide a valid characterization of the emissions from the emissions unit and/or the performance of the control equipment.

A comprehensive written report on the results of the emission test(s) shall be signed by the person or persons responsible for the tests and submitted to the Canton City Health Department, Air Pollution Control Division within 30 days following completion of the test(s). The permittee may request additional time for the submittal of the written report, where warranted, with prior approval from the Canton City Health Department, Air Pollution Control Division.

VI. Miscellaneous Requirements

1. Following are the calculations for the permitted amount of sulfur in the raw feed materials used in emissions units P004, P005, P006, and P014.

The sulfur emission factor (EF). The sulfur EF relates the ratio of the amount of sulfur converted to SO₂ and emitted from the stack (lbs S) to sulfur in the raw feed materials (lbs S).

The sulfur EF = sulfur (out the stack)/sulfur (in the feed) = pounds of S converted to SO₂/pound of S in the feed.

The sulfur EF = 0.783 pound of S converted to SO₂/pound of S in the feed, based upon the 6/15/00 emission testing results.

The allowable SO₂ emission limitation = 306.53 tons of SO₂ emitted/year.

The allowable SO₂ emission limitation = (306.53 tons of SO₂ emitted/year) X (2000 lbs/ton).

The allowable SO₂ emission limitation = 613,060 lbs of SO₂ emitted/year.

Using the sulfur EF and stoichiometry,

613,060 lbs SO₂ emitted/year = (0.783 lb S emitted/lb S in the feed) X (Allowable lbs S in the feed) X (1 mole S emitted/32 lbs S emitted) X (1 mole SO₂ emitted/1 mole S emitted) X (64 lbs SO₂ emitted/mole SO₂ emitted)

Solving the above equation for the Allowable lbs S in the feed,

Allowable lbs S in the feed = (613,060 lbs SO₂ emitted/year) X (1 lb S in the feed/0.783 lb S emitted) X (32 lbs S emitted/mole S emitted) X (mole S emitted/mole SO₂ emitted) X (mole SO₂ emitted/64 lbs SO₂ emitted)

Allowable lbs S in the feed = 391,481 lbs S in the feed per year

Allowable lbs S in the feed = (391,481 lbs S/year) X (1 year/4 quarters) = 97,870 lbs S/quarter

rounding

Allowable lbs S in the feed = 97,900 lbs S/quarter

The allowable SO₂ emission limitation = 12,877 lbs of SO₂ emitted/week.

Again, using the sulfur EF and stoichiometry and solving for the Allowable lbs S in the feed,

Allowable lbs S in the feed = (12,877 lbs SO₂ emitted/week) X (1 lb S in the feed/0.783 lb S emitted) X (32 lbs S emitted/mole S emitted) X (mole S emitted/mole of SO₂ emitted) X (mole SO₂ emitted/64 lbs SO₂ emitted)

Allowable lbs S in the feed = 8,223 lbs S in the feed,

rounding

Allowable lbs S in the feed = 8,220 lbs S in the feed.

The rounded values are the values used in this permit.

B. State Enforceable Section

I. Applicable Emissions Limitations and/or Control Requirements

1. The specific operation(s), property, and/or equipment which constitute this emissions unit are listed in the following table along with the applicable rules and/or requirements and with the applicable emissions limitations and/or control measures. Emissions from this unit shall not exceed the listed limitations, and the listed control measures shall be employed. Additional applicable emissions limitations and/or control measures (if any) may be specified in narrative form following the table.

<u>Operations, Property, and/or Equipment</u>	<u>Applicable Rules/ Requirements</u>	<u>Applicable Emissions Limitations/Control Measures</u>
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2. Additional Terms and Conditions

None

II. Operational Restrictions

None

III. Monitoring and/or Record Keeping Requirements

None

IV. Reporting Requirements

None

V. Testing Requirements

None

VI. Miscellaneous Requirements

None

Facility Name: Ironrock Capital Inc.

Facility ID: 15-76-05-1149

Emissions Unit: Tunnel Kiln #5 (P015)

Part III - Terms and Conditions for Emissions Units

Emissions Unit ID: Tunnel Kiln #5 (P015)

Activity Description: Natural gas fired Tunnel kiln firing glazed and unglazed ceramic tiles and shapes to a temperature of 2200°F

A. State and Federally Enforceable Section

I. Applicable Emissions Limitations and/or Control Requirements

1. The specific operation(s), property, and/or equipment which constitute this emissions unit are listed in the following table along with the applicable rules and/or requirements and with the applicable emissions limitations and/or control measures. Emissions from this unit shall not exceed the listed limitations, and the listed control measures shall be employed. Additional applicable emissions limitations and/or control measures (if any) may be specified in narrative form following the table.

<u>Operations, Property, and/or Equipment</u>	<u>Applicable Rules/ Requirements</u>	<u>Applicable Emissions Limitations/Control Measures</u>
Natural gas-fired tunnel kiln to produce glazed and unglazed ceramic tiles; kiln #5, Keith tunnel kiln; maximum raw material feed rate 0.474 TPH; tile production capacity 0.409 TPH; the raw material fed to this emissions unit is the same raw material fed to emissions units P004, P005, P006, and P014; vented to a stack serving this emissions unit only	OAC rule 3745-31-05(A)(3) (PTI 15-1343)	0.685 lb/hr of particulate emissions 3.0 tpy of particulate emissions 3.04 lbs/hr of sulfur dioxide (SO ₂) 13.3 tpy of SO ₂ 0.086 lb/hr of volatile organic compounds (VOC) 0.377 tpy of VOC 0.385 lb/hr of nitrogen oxides (NO _x) 1.69 tpy of NO _x 0.063 lb/hr of carbon monoxide (CO) 0.276 tpy of CO 0.385 lb/hr of hydrogen fluoride (HF) 1.69 tpy of HF See A.I.2.a and A.I.2.b below. Compliance with this rule also includes compliance with OAC rule 3745-17-07(A). See A.I.2.c below. See A.I.2.d below. See A.I.2.d below.
	OAC rule 3745-17-07(A)	See A.I.2.c below.
	OAC rule 3745-17-11(B)	See A.I.2.d below.
	OAC rule 3745-18-06(E)(1)	See A.I.2.d below.

2. Additional Terms and Conditions

- 2.a The permittee shall only burn natural gas as fuel in this emissions unit.
- 2.b The height of the stack serving this emissions unit shall be a minimum of 60 feet from the ground level.

2. Additional Terms and Conditions (continued)

- 2.c Visible particulate emissions from any stack shall not exceed 20% opacity as a 6-minute average, except as provided by the rule.
- 2.d The emission limitation specified in this applicable rule is less stringent than the emission limitation established pursuant to the best available technology (BAT) requirement specified in OAC rule 3745-31-05(A)(3).

II. Operational Restrictions

- 1. The total amount of sulfur in the raw materials used in this emissions unit shall not exceed 326 pounds in any one week. The amount of sulfur shall be determined by multiplying the tons of raw material (dry weight) used in a week, times the weighted-average sulfur content of the raw materials. See section A.VI.1 for an explanation of the calculation of this weekly sulfur (in the feed) value. This restriction shall change, in accordance with section A.VI.1, if the current sulfur emission factor changes.

III. Monitoring and/or Record Keeping Requirements

- 1. In order to verify that the weekly sulfur operational restriction listed in section A.II.1 has not been exceeded, the procedures in section A.III.1.a shall be used to obtain a representative sample of the fireclay and a representative sample of the shale fed to emissions unit P015, and, a composite sample of fireclay and of shale, accumulated from a 7-day period, shall be analyzed to determine the weighted-average sulfur content of the fireclay and shale fed to emissions unit P015, as described in section A.III.1.b.
- 1.a Daily samples shall be taken of the raw materials (fireclay and shale) used in emissions units P004, P005, P006, P014, and P015. A daily grab sample of fireclay shall be taken from the belt conveyor leading from one of the two ground fireclay storage tanks which feed the conveyor belts which feed the pug mixers. A daily grab sample of shale shall be taken from the belt conveyor leading from one of the two ground shale storage tanks which feed the conveyor belts which feed the pug mixers. One of these pug mixers feeds emissions units P004 and P005 and the other pug mixer feeds emissions units P006 and P014. Depending on production schedules, one or the other of the pug mixers also feeds emissions unit P015.

Each day, ten grams of the daily fireclay grab sample shall be mixed in a weekly composite fireclay bottle to obtain a weekly, composite, fireclay sample. The weekly composite fireclay sample shall be mixed thoroughly so that a sample may be taken from the bottle to represent the whole week's fireclay production from emissions unit P015.

Each day, ten grams of the daily shale grab sample shall be mixed in a weekly composite shale bottle to obtain a weekly, composite, shale sample. The weekly composite shale sample shall be mixed thoroughly so that a sample may be taken from the bottle to represent the whole week's shale production from emissions unit P015.

The permittee shall maintain daily records of the production schedule indicating what products are being produced in emissions unit P015 and the amount of each product.

III. Monitoring and/or Record Keeping Requirements (continued)

- 1.b The following procedures shall be used to determine the sulfur content of each weekly composite fireclay sample and shale sample:
- i. The weekly composite fireclay sample and shale sample shall be analyzed for sulfur content each week.
 - ii. Both weekly composite samples shall be analyzed using the permittee's Laboratory Equipment Corporation (LECO) analysis equipment that utilizes ASTM Test Method D1552 or E350-97 to determine the corrected, weighted-average sulfur content of the raw materials.
 - iii. For quality assurance of the LECO equipment and its analytical methods, the permittee shall perform a calibration test before the weekly composite sample is analyzed for sulfur content. Two standard calibration rings with known sulfur concentration shall be analyzed for sulfur content utilizing the LECO equipment. The two sulfur content results shall be averaged to obtain the calibration correction factor. The analysis of the weekly composite sample shall utilize the calibration correction factor to obtain the corrected, weighted-average, sulfur content result.
 - iv. The permittee shall maintain the following records:
 - (a) the sulfur concentration of the rings used to calibrate the LECO equipment each week;
 - (b) the measured sulfur concentrations of the calibration rings; and
 - (c) the correction factors.
2. The permittee shall maintain weekly records of the following:
- a. the weighted-average sulfur content of raw materials, in percent;
 - b. the production rate, in tons, for the kiln; and
 - c. the amount of sulfur in the raw materials, in pounds, used in this kiln.
3. The permittee shall perform checks, at least once every two-week period and within 15 days of the last check performed, when the emissions unit is in operation and when the weather conditions allow, for any visible particulate emissions from the stack serving this emissions unit. The presence or absence of any visible emissions shall be noted in an operations log. If visible emissions are observed, the permittee shall also note the following in the operations log:
- a. the color of the emissions;
 - b. whether the emissions are representative of normal operations;
 - c. if the emissions are not representative of normal operations, the cause of the abnormal emissions;
 - d. the total duration of any visible emission incident; and
 - e. any corrective actions taken to eliminate the visible emissions.
4. For each day during which the permittee burns a fuel other than natural gas in this emissions unit, the permittee shall maintain a record of the type and quantity of fuel burned.
5. The permittee shall maintain a monthly record of the hours of operation for this emissions unit.

IV. Reporting Requirements

1. The permittee shall submit quarterly deviation (excursion) reports that identify each week during which the amount of sulfur in the raw materials employed in this kiln exceeded the allowable amount of sulfur in the raw materials weekly operational restriction (currently 326 pounds), and the actual amount of sulfur in the raw materials for each such week.
2. The quarterly deviation reports shall be submitted in accordance with the requirements specified in Part 1 - General Term and Condition A.1.c.ii.

IV. Reporting Requirements (continued)

3. The permittee shall submit semiannual written reports that (a) identify all days during which any visible particulate emissions were observed from the stack serving this emissions unit and (b) describe any corrective actions taken to eliminate the visible particulate emissions. These reports shall be submitted to the Director (the Canton City Health Department, Air Pollution Control Division) by January 31 and July 31 of each year and shall cover the previous 6-month period.
4. The permittee shall submit deviation (excursion) reports that identify each day when a fuel other than natural gas was burned in this emissions unit. Each report shall be submitted within 30 days after the deviation occurs. It shall not be necessary to submit a deviation report for any quarter in which no deviations occurred.
5. The permittee shall also submit annual reports that specify the total particulate, SO₂, VOC, NO_x, CO, and HF emissions from this emissions unit, in tons, for the previous calendar year. These reports shall be submitted by January 31 of each year.

V. Testing Requirements

1. Compliance with the emission limitations in sections A.I.1 and A.I.2 of these terms and conditions shall be determined in accordance with the following methods:

- 1.a Emission Limitation:

0.685 lb/hr of particulate emissions

Applicable Compliance Method:

If required, compliance shall be demonstrated based upon emission tests performed in accordance with the requirements specified in 40 CFR Part 60, Appendix A, Methods 1 through 5.

- 1.b Emission Limitation:

3.04 lbs/hr of SO₂

Applicable Compliance Method:

Compliance with this emission limitation may be demonstrated based upon the records required pursuant to section A.III. If required, compliance shall be demonstrated based upon emission tests performed in accordance with the requirements specified in 40 CFR Part 60, Appendix A, Methods 1 through 4 and 6.

- 1.c Emission Limitation:

0.086 lb/hr of VOC

Applicable Compliance Method:

If required, compliance shall be demonstrated based upon emission tests performed in accordance with the requirements specified in 40 CFR Part 60, Appendix A, Methods 1 through 4 and Method 25A.

- 1.d Emission Limitation:

0.385 lb/hr of NO_x

Applicable Compliance Method:

If required, compliance shall be demonstrated based upon emission tests performed in accordance with the requirements specified in 40 CFR Part 60, Appendix A, Methods 1 through 4 and Method 7.

V. Testing Requirements (continued)

1.e Emission Limitation:

0.063 lb/hr of CO

Applicable Compliance Method:

If required, compliance shall be demonstrated based upon emission tests performed in accordance with the requirements specified in 40 CFR Part 60, Appendix A, Methods 1 through 4 and Method 10.

1.f Emission Limitation:

0.385 lb/hr of HF

Applicable Compliance Method:

If required, compliance shall be demonstrated based upon emission tests performed in accordance with the requirements specified in 40 CFR Part 60, Appendix A, Methods 1 through 4 and Method 13A.

1.g Emission Limitations:

3.0 tpy of particulate emissions

13.3 tpy of SO₂

0.377 tpy of VOC

1.69 tpy of NO_x

0.276 tpy of CO

1.69 tpy of HF

Applicable Compliance Method:

For particulate, NO_x, SO₂, and HF emissions, compliance may be demonstrated by multiplying the pollutant rate, in pounds per hour, determined during the most recent emission tests that demonstrated that emissions units P004, P005, P006, and P014 were in compliance, by the actual annual operating hours for this emissions unit, and then dividing by 2,000 lbs/ton to obtain the annual emissions, in tons.

For VOC and CO, compliance may be demonstrated by multiplying the appropriate allowable hourly emission limitation by the actual annual hours of operation, and then dividing by 2,000 lbs/ton.

1.h Emission Limitation:

20% opacity as a 6-minute average

Compliance Method:

Compliance shall be demonstrated based upon the emission testing specified in section A.V.2.

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Emissions Unit: **Tunnel Kiln #5 (P015)**

V. Testing Requirements (continued)

2. The permittee shall conduct, or have conducted, emission testing for this emissions unit in accordance with the following requirements:
 - a. The emission testing shall be conducted to demonstrate compliance with the visible particulate emission limitations on an annual basis.
 - b. The following test method and procedures shall be employed to demonstrate compliance with the visible particulate emission limitations: Method 9 of 40 CFR Part 60, Appendix A, and the procedures specified in OAC rule 3745-17-03(B).
 - c. The Method 9 observations shall be performed on the stack serving this emissions unit.
 - d. The tests shall be conducted while the emissions unit is operating at or near its maximum capacity, unless otherwise specified or approved by the Canton City Health Department, Air Pollution Control Division.

Not later than 30 days prior to the proposed test date(s), the permittee shall submit an "Intent to Test" notification to the Canton City Health Department, Air Pollution Control Division. The "Intent to Test" notification shall describe in detail the proposed test methods and procedures, the emissions unit operating parameters, the time(s) and date(s) of the test(s) and the person(s) who will be conducting the test(s). Failure to submit such notification for review and approval prior to the test(s) may result in the Canton City Health Department, Air Pollution Control Division's refusal to accept the results of the emission test(s).

Personnel from the Canton City Health Department, Air Pollution Control Division shall be permitted to witness the test(s), examine the testing equipment, and acquire data and information necessary to ensure that the operation of the emissions unit and the testing procedures provide a valid characterization of the emissions from the emissions unit and/or the performance of the control equipment.

A comprehensive written report on the results of the emission test(s) shall be signed by the person or persons responsible for the tests and submitted to the Canton City Health Department, Air Pollution Control Division within 30 days following completion of the test(s).

VI. Miscellaneous Requirements

1. Following are the calculations for the permitted amount of sulfur in the raw feed materials used in this emissions unit.

The sulfur emission factor (EF). The sulfur emission factor, relates the ratio of the amount of sulfur converted to SO₂ and emitted from the stack (lbs S) to sulfur in the raw feed materials (lbs S).

The sulfur EF = sulfur (out the stack)/sulfur (in the feed) = pounds of S converted to SO₂/pound of S in the feed.

The sulfur EF = 0.783 pound of S converted to SO₂/pound of S in the feed, from the 6/15/00 emission testing results for emissions units P004, P005, P006, and P014. The sulfur EF for this emissions unit is assumed to be 0.783, the same as for emissions units P004, P005, P006, and P014.

The allowable SO₂ emission limitation = 3.04 lbs of SO₂ emitted/hour.

The allowable SO₂ emission limitation = (3.04 lbs of SO₂ emitted/hour) X (168 hours/week).

The allowable SO₂ emission limitation = 511 lbs of SO₂ emitted/week.

Using the sulfur EF and stoichiometry,

511 lbs SO₂ emitted /week = (0.783 lb S emitted/lb S in the feed) X (Allowable lbs S in the feed) X (1 mole S emitted/32 lbs S emitted) X (1 mole SO₂ emitted/1 mole S emitted) X (64 lbs SO₂ emitted/mole SO₂ emitted)

Solving the above equation for the Allowable lbs S in the feed,

Allowable lbs S in the feed = (511 lbs SO₂ emitted/week) X (1 lb S in the feed/0.783 lb S emitted) X (32 lbs S emitted/mole S emitted) X (mole S emitted/mole of SO₂ emitted) X (mole SO₂ emitted/64 lbs SO₂ emitted)

Allowable lbs S in the feed = 326.3 lbs S in the feed,

rounding

Allowable lbs S in the feed = 326 lbs S in the feed.

The rounded values are the values used in this permit.

B. State Enforceable Section

I. Applicable Emissions Limitations and/or Control Requirements

1. The specific operation(s), property, and/or equipment which constitute this emissions unit are listed in the following table along with the applicable rules and/or requirements and with the applicable emissions limitations and/or control measures. Emissions from this unit shall not exceed the listed limitations, and the listed control measures shall be employed. Additional applicable emissions limitations and/or control measures (if any) may be specified in narrative form following the table.

<u>Operations, Property, and/or Equipment</u>	<u>Applicable Rules/ Requirements</u>	<u>Applicable Emissions Limitations/Control Measures</u>
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2. Additional Terms and Conditions

None

II. Operational Restrictions

None

III. Monitoring and/or Record Keeping Requirements

None

IV. Reporting Requirements

None

V. Testing Requirements

None

VI. Miscellaneous Requirements

None

Part III - Terms and Conditions for Emissions Units

Emissions Unit ID: ASC Glazing Line (P017)
Activity Description: Engobe and glazes applied to ceramic shapes and tile

A. State and Federally Enforceable Section

I. Applicable Emissions Limitations and/or Control Requirements

1. The specific operation(s), property, and/or equipment which constitute this emissions unit are listed in the following table along with the applicable rules and/or requirements and with the applicable emissions limitations and/or control measures. Emissions from this unit shall not exceed the listed limitations, and the listed control measures shall be employed. Additional applicable emissions limitations and/or control measures (if any) may be specified in narrative form following the table.

<u>Operations, Property, and/or Equipment</u>	<u>Applicable Rules/ Requirements</u>	<u>Applicable Emissions Limitations/Control Measures</u>
Three glazing/engobing ceramic tile and shapes spray booths controlled with two wet filter systems with vacuum collection that are vented inside the building. See section A.VI.1 for additional information.	OAC rule 3745-31-05 (PTI 15-1343)	0.70 lb/hr of particulate emissions escaping from the building
		3.06 tpy of particulate emissions escaping from the building
		Compliance with this rule also includes compliance with OAC rule 3745-17-07(B)(1). See A.I.2.a below.
	OAC rule 3745-17-07(B)(1)	See A.I.2.a below.
	OAC rule 3745-17-08(B)	See A.I.2.b below.

2. Additional Terms and Conditions

- 2.a Visible particulate emissions of fugitive dust escaping from the building enclosing this emissions unit shall not exceed 20% opacity as a 3-minute average.
- 2.b The control measures specified in this rule are less stringent than the control measures established pursuant to the best available technology (BAT) requirement specified in OAC rule 3745-31-05(A)(3).

II. Operational Restrictions

1. There shall be no volatile organic compounds (VOC) present in either the glaze or the engobe sprayed.
2. At least 99% of the overspray from the three spray booths shall be captured and vented to the two wet filter systems.
3. The exhaust from each of the wet filter systems shall be vented inside the building.

III. Monitoring and/or Record Keeping Requirements

1. The permittee shall perform checks once every two weeks when the emissions unit is in operation and when weather conditions allow, for any visible particulate emissions of fugitive dust escaping from the building. Any required check that is not performed due to weather conditions shall be performed as soon as such events have ended or within one week of the missed check. The presence or absence of any visible particulate emissions shall be noted in an operations log. If visible particulate emissions are observed, the permittee shall also note the following in the operations log:
 - a. the color of the emissions;
 - b. whether the emissions are representative of normal operations;
 - c. if the emissions are not representative of normal operations, the cause of the abnormal emissions;
 - d. the total duration of any visible particulate emissions incident; and
 - e. any corrective actions taken to eliminate the visible particulate emissions.
2. The permittee shall maintain daily records in the operations log if any glaze or engobe is sprayed that contains VOC. These records shall contain the following information:
 - a. the date such glaze or engobe is sprayed;
 - b. the name or identification of such glaze or engobe;
 - c. the percent, by volume or weight, of the VOC in such glaze or engobe;
 - d. the amount, by volume or weight, of such glaze or engobe sprayed; and
 - e. the amount of VOC emissions per hour when such glaze or engobe is sprayed.
3. The permittee shall maintain a monthly record of the hours of operation for this emissions unit.

IV. Reporting Requirements

1. The permittee shall submit quarterly written reports that identify all days during which any visible particulate emissions of fugitive dust were observed escaping the building, and, describe any corrective actions taken to eliminate the visible particulate emissions of fugitive dust. These reports shall be submitted to the Canton City Health Department, Air Pollution Control Division by January 31, April 30, July 31, and October 31 of each year and shall cover the previous 3-month period.
2. The permittee shall submit quarterly written deviation (excursion) reports that identify all days during which glaze or engobe was sprayed which contained VOC. These reports shall contain all the information specified in section A.III.2 above.
3. The deviation reports shall be submitted in accordance with the requirements specified in Part 1 - General Term and Condition A.1.c.ii., except that no quarterly written deviation (excursion) reports need be submitted if no glaze or engobe was sprayed that contained VOCs in a particular quarter.

V. Testing Requirements

1. Compliance with the emission limitations in sections A.I.1 and A.I.2 of these terms and conditions shall be determined in accordance with the following methods:

V. Testing Requirements (continued)

1.a Emission Limitation:

0.70 lb/hr of particulate emissions escaping from the building

Applicable Compliance Method:

Compliance may be demonstrated by the following calculations.

Emissions from the wet filter systems:

$[360 \text{ g/sq ft (maximum glaze usage rate)}] \times [1 \text{ lb/454 g}] \times [178 \text{ sq ft/hr (maximum tile rate)}] \times [0.5 \text{ (transfer efficiency of spraying)}] \times [0.99 \text{ (capture efficiency of the wet filter control systems)}] \times [0.01 \text{ (operating control efficiency of the wet filter control systems)}] \times [0.5 \text{ (control efficiency of the building)}]$
= 0.35 lb/hr of particulate emissions.

Emissions not collected by the wet filter control systems:

$[360 \text{ g/sq ft (maximum glaze usage rate)}] \times [1 \text{ lb/454 g}] \times [178 \text{ sq ft/hr (maximum tile rate)}] \times [0.5 \text{ (transfer efficiency of spraying)}] \times [0.01 \text{ (capture efficiency of the wet filter control systems)}] \times [0.5 \text{ (control efficiency of the building)}]$ = 0.35 lb/hr of particulate emissions.

Total emissions = 0.35 lb/hr plus 0.35 lb/hr = 0.70 lb/hr of particulate emissions.

1.b Emission Limitation:

3.06 tpy of particulate emissions escaping from the building

Applicable Compliance Method:

Compliance may be demonstrated by multiplying the allowable hourly particulate emission limitation by the actual annual hours of operation, and then dividing by 2,000 lbs/ton.

1.c Emission Limitation:

20% opacity as a 3-minute average, for fugitive emissions

Applicable Compliance Method:

If required, compliance shall be demonstrated based upon visible particulate emissions observations performed in accordance with 40 CFR Part 60, Appendix A, Method 9 and the procedures specified in OAC rule 3745-17-03(B)(3).

VI. Miscellaneous Requirements

1. Note that PTI 15-1343 (issued 9/10/98) allowed the installation of six glazing/engobing ceramic tile and shapes spray booths. In addition, three wet filter systems were required. Only three glazing/engobing ceramic tile and shapes spray booths were installed, along with two wet filter systems. The hourly and annual particulate emission limitations from the PTI have been reduced by one half in this Title V permit to account for only half of the equipment being installed.

B. State Enforceable Section

I. Applicable Emissions Limitations and/or Control Requirements

1. The specific operation(s), property, and/or equipment which constitute this emissions unit are listed in the following table along with the applicable rules and/or requirements and with the applicable emissions limitations and/or control measures. Emissions from this unit shall not exceed the listed limitations, and the listed control measures shall be employed. Additional applicable emissions limitations and/or control measures (if any) may be specified in narrative form following the table.

<u>Operations, Property, and/or Equipment</u>	<u>Applicable Rules/ Requirements</u>	<u>Applicable Emissions Limitations/Control Measures</u>
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2. Additional Terms and Conditions

None

II. Operational Restrictions

None

III. Monitoring and/or Record Keeping Requirements

None

IV. Reporting Requirements

None

V. Testing Requirements

None

VI. Miscellaneous Requirements

None

Facility Name: **Ironrock Capital inc.**
Facility ID: **15-76-05-1149**

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