TECHNICAL REVIEW DOCUMENT
for
OPERATING PERMIT 97OPDE189
to be issued to:

Robinson Brick Company
Denver County
Source ID 0311447

Prepared by Ashley L. Kendall
August 10, 1998

Revised by Michael E. Jensen
October 13, 2000

I. Purpose:

This document will establish the basis for decisions made regarding the Applicable Requirements, Emission Factors, Monitoring Plan and Compliance Status of Emission Units covered within the Operating Permit proposed for this site. It is designed for reference during review of the proposed permit by the EPA, the public and other interested parties. The conclusions based on this report are based on information provided in the original application submittal of August 6, 1997, additional technical submittals of August 7, 1998, May 10, 1999 and July 28, 1999 as well as site visit information and review of Division files. This narrative is intended only as an adjunct for the reviewer and has no legal standing.

On April 16, 1998 the Colorado Air Quality Control Commission directed the Division to implement new procedures regarding the use of short term emission and production/throughput limits on Construction permits. These procedures are being directly implemented in all operating permits that had not started their Public Comment period as of April 16, 1998. All short term emission and production/throughput limits that appeared in the construction permits associated with this facility that are not required by a specific State or Federal standard or by the above referenced Division procedures have been deleted and all annual emission and production/throughput limits converted to a rolling 12 month total. Note that, If applicable, appropriate modeling to demonstrate compliance with the National Ambient Air Quality Standards was conducted as part of the Construction Permit processing procedures. If required by this permit, portable monitoring results and/or EPA reference test method results will be multiplied by 8760 hours for comparison to annual emission limits unless there is a specific condition in the permit restricting hours of operation.

Any revisions made to the underlying construction permits associated with this facility made in conjunction with the processing of this operating permit application have been reviewed in accordance with the requirements of Regulation No. 3, Part B, Construction Permits, and have been found to meet all applicable substantive and procedural requirements. This operating permit incorporates and shall be considered to be a combined

construction/operating permit for any such revision, and the permittee shall be allowed to operate under the revised conditions upon issuance of this operating permit without applying for a revision to this permit or for an additional or revised Construction Permit.

II. Source Description:

This source is classified as a brick manufacturing company which falls into the Standard Industrial Classification 3251. The manufacturing processes include storage and handling of various clay, sand, petroleum-contaminated soil, and reclaim material. The storage yard for the materials is unpaved. When necessary, a calciner is used to calcine the raw clay. The emissions from the calciner are controlled by a wet dust collector. The clay is fed from the stock piles to a hopper and associated crusher (primary crusher). The hopper and crusher are not enclosed by any building. The crushed clay then enters the grinding plant where it is pulverized, screened and mixed. The grinding plant is totally enclosed to limit emissions created during these processes. A rotary dryer (inside the grinding plant) is used when moisture levels are above acceptable standards. The rotary dryer is rarely used and exhausts through its own stack with a wet scrubber for control. The clay is conveyed, by partially enclosed belts, to the manufacturing building where it is mixed with water in a pug mill. The mixed clay is molded, textured and cut into final size. The bricks are further dried and fired in one of two kilns. The source operates two identical firing circuits each containing a drying room and kiln. Heat is generated for the entire firing circuit by natural gas burners located in the "hot zone" of the kiln. The kilns each have their own stack with no controls. Each drying room has two stacks, but most of the air in the drying rooms is recycled. After cooling, the bricks are stacked and stored outside until purchased. Some bricks are cut or tumbled. The overall operation utilizes five (5) solvent cleaning sinks for various purposes.

The facility is located in south Denver, Colorado, Denver County within the metro non-attainment area for CO and PM_{10}. Although the Denver metropolitan area was previously designated for nonattainment for the 1-hour ozone standard, this standard was revoked in June of 1998. However, all SIP-approved requirements continue to apply in order to prevent backsliding under the provisions of Section 110(I) of the Federal Clean Air Act. A July 20, 2000, Federal Register (see Fed. Reg. 45182) indicated the 1-hour ozone non-attainment designation will be reinstated on January 16, 2001. In addition, based upon preliminary data, it appears that Denver recently violated the new 8-hour ozone standard and it is the Division's understanding that EPA will issue a non-attainment designation Federal Register notice for the metropolitan area even though the EPA's ability to implement the standard is under judicial review as of the issuance date of this permit.

This facility is within 100 km of a Class I area, Rocky Mountain National Park but there are no states within 50 miles. In the Title V application Robinson Brick certified that they were a 112(r) source. However, during the development of the permit the sources addresses by 112(r) were removed. Robinson Brick is no longer subject to the 112(r) provisions. The source is not subject to a Maximum Achievable Control Technology (MACT) standard at the time of issuance of this permit. Some new equipment added in 1983 is subject to the

provisions of the New Source Performance Standards, 40 CFR Part 60, Subpart OOO – "Standards of Performance for Nonmetallic Mineral Processing Plants". Facility wide emissions are as follows:

Pollutant	Potential to Emit (tpy)	Actual (tpy)
PM	446.36	183.7
PM10	196.54	97.1
SO2	66.67	52.8
NOx	75.36	27.8
VOC	47.07	6.0
CO	128.26	94.6
HAPs	62.76	43.0
Fluorides	58.7	46.5

Potential emissions are based on permit limits for permitted sources and uncontrolled emissions at the maximum design rates for grandfathered and non-permitted units. Actual emissions are based on the most current APENs submitted to the Division on August 7, 1998 and the calculations included in Appendix A of the application including fugitive dust (not part of PTE).

The nature of the operation provides potential for significant opacity of the emissions. None of the sources are required to be equipped with continuous opacity monitors to demonstrate compliance. Therefore, the compliance monitoring has to be based on EPA Method 9. A two step opacity monitoring procedure is to be used. A visual observation, not requiring a certified observer, is to be made daily for any visible emissions. Visible emissions persisting for longer than six (6) consecutive minutes may indicate a potential exceedance of the opacity limit. The persistent visible emissions require Method 9 observations as necessary to demonstrate compliance. After a year of experience with the opacity monitoring Robinson Brick may wish to review the information and use the information as the basis to request the Division modify the opacity monitoring requirements.

III. Emission Sources:

The following sources are specifically regulated under terms and conditions of the Operating Permit for this Site:

<u>Units F001 and F005</u> - Fugitive Dust Emissions From Loader to Feeder, Storage Piles and Unpaved Roads

Discussion:

1. Applicable Requirements- The sources of fugitive emissions began operation in 1964. In 1992, the source submitted a control plan for fugitive particulate emissions. Applicable requirements include following the control plan dated December 30, 1992, Regulation No. 1, Part III.D requirements and APEN reporting in accordance with Regulation No. 3, Part A, Section II. In addition, a Special Environmental Project (SEP) resulting from a Compliance on Consent Order, requires paving of an identified amount of roads and parking lots. The paved areas are to be swept with a power sweeper and/or washed with a water truck as needed to minimized dirt buildup or dust.

2. Emission Factors- Fugitive emissions are emissions that cannot reasonably pass through a stack or vent. The presence of outdoor storage and handling of relatively fine particulate matter subjected to wind and mechanical devices results in fugitive emissions. The pollutants of concern are Particulate Matter (PM) and Particulate Matter smaller than 10 microns (PM10). Fugitive dust emissions from roads and storage piles are subject to APEN reporting requirements but are not subject to annual fees.

3. Monitoring Plan- The fugitive particulate emission sources are subject to the requirements of Colorado Regulation No. 1, Section III.D, which requires existing sources to employ control measures and operating procedures to minimize fugitive particulate emissions using all available practical methods that are technologically feasible and economically reasonable. The source will annually certify that they have complied with their control plan measures. Records of controls used shall be maintained and made available to the Division upon request.

The source requested to modify their fugitive control plan to include watering as needed rather than twice a day.

4. Compliance Status- Current APENs are on file with the Division for these units. The source has certified to being in compliance with all current requirements. A records search indicated no outstanding compliance issues for this source. Therefore, these units are currently considered to be in compliance with all applicable requirements.

<u>Units F002</u> - Primary Crusher, Design Rated at 90 tons/hr.

Discussion:

1. Applicable Requirements- This unit was installed and began operation in 1964. Therefore, it is grandfathered from construction permitting requirements. The only applicable requirements for this unit are: 20% opacity, Regulation No. 1 PM standards; and APEN reporting in accordance with Regulation No. 3, Part A, Section II.

2. Emission Factors- Emissions from this unit are produced during the crushing of materials. The pollutants of concern are Particulate Matter (PM) and Particulate Matter smaller than 10 microns (PM10). The emission factors requested by the source are from AP-42 Section 11.3 (8/97).

3. Monitoring Plan- The source will be required to calculate emissions on an annual basis and conduct daily visual observations (not Method 9). If persistent emissions are observed, EPA Reference Method 9 observations are to be performed as necessary to monitor compliance with the 20% opacity standard.

This equipment cannot exceed the particulate limit based on calculations using the design rate of the equipment and the AP-42 emission factors. Therefore, specific periodic monitoring will not be included in the operating permit.

4. Compliance Status- A current APEN is on file with the Division for this unit. The source has certified to being in compliance with all current requirements. A records search indicated no outstanding compliance issues for this source. Therefore, this unit is currently considered to be in compliance with all applicable requirements.

<u>Unit F003</u> - Grinding and Screening Operations Located in an Enclosed Building, Design Rated at 90 tons/hr.

Discussion:

1. Applicable Requirements- This equipment was originally installed in 1964. A crusher was replaced and one screen and three conveyors were added in 1983. The new crusher is subject to the provisions to obtain a construction permit and the new equipment, including the crusher, is subject to the provisions of 40 CFR Part 60, Subpart OOO, "Standards of Performance for Nonmetallic Mineral Processing Plants". Because it is difficult to separate the contribution of the new equipment emissions from the contribution of the existing equipment emissions, the emissions exiting the building during operation will be subject to permitting requirements and the provisions of 40 CFR Subpart OOO §60.672(e). Maintenance activities may require doors on the building to be kept open for access to the equipment. If the

maintenance is performed while the source is operating the Subpart OOO requires apply. If the source is not operating during maintenance, emissions from the building will be considered fugitive dust. If the fugitive dust from the building is identified as a persistent problem by the Division, a dust control plan may be required.

2. Emission Factors- Emissions from these units are produced during the processing, storage and handling of materials. The pollutants of concern are Particulate Matter (PM) and Particulate Matter smaller than 10 microns (PM10). Emission factors requested by the source are from AP-42 Section 11.3 (8/97).

3. Monitoring Plan- The source will be required to record throughput and calculate emissions monthly to be used in a 12-month rolling total to compare with the annual limitations. The source shall also comply with NSPS Subpart OOO requirements including standards for particulate emissions, reporting and record keeping. The reporting and record keeping requirements have to be customized to the source. To this end, the Operating Permit includes copies of the relevant sections NSPS provisions for guidance in developing the reports and reporting procedures.

4. Compliance Status- A current APEN is on file with the Division for this unit. The source has certified to being in compliance with all current requirements. Subpart OOO states that the stack emission limits apply to any vent from the building. Subpart OOO defines a vent as an opening through which there is mechanically induced air flow for the purpose of exhausting from a building air carrying particulate matter emissions from one or more affected facilities. These definitions allow Robinson Brick to demonstrate compliance with the stack test provisions by demonstrating that no stack or vent exists to discharge particulate emissions from the grinding/screen operation. Robinson Brick has certified they are in compliance with NSPS Subpart OOO, therefore this unit is currently considered to be in compliance with all applicable requirements.

<u>Unit F004</u> - Partially Enclosed Conveyor, Design Rated at 90 tons/hr.

Discussion:

1. Applicable Requirements- This equipment was originally installed in 1964. Therefore, it is grandfathered from construction permitting requirements. A current APEN is on file with the Division. The only applicable requirements for this unit are: 20% opacity, Regulation No. 1 PM standards; and APEN reporting in accordance with Regulation No. 3, Part A, Section II.

2. Emission Factors- Emissions from this unit are produced during the handling of materials. The pollutants of concern are Particulate Matter (PM) and Particulate Matter smaller than 10 microns (PM10). Emission factors requested by the source are from AP-42 13.2.4 (1/95).

3. Monitoring Plan- The source will be required to calculate emissions on an annual basis and conduct monthly EPA Reference Method 9 observations to monitor compliance with the 20% opacity standard.

This equipment cannot exceed the particulate limit based on calculations using the design rate of the equipment and the AP-42 emission factors. Therefore, specific periodic monitoring will not be included in the operating permit.

4. Compliance Status- Current APENs are on file with the Division for these units.

The source has certified to being in compliance with all current requirements. A records search indicated no outstanding compliance issues for this source. Therefore, these units are currently considered to be in compliance with all applicable requirements.

Unit S001- Rotary Dryer, Maximum Design Rate 20 MMBtu/hr with Wet Dust Collector, Natural Gas Fired.

Discussion:

1. Applicable Requirements- The rotary dryer is used to dry raw materials after crushing and prior to manufacturing. This equipment was originally installed in 1964. Therefore, it is grandfathered from construction permitting requirements. A current APEN is on file with the Division. The only applicable requirements for this unit are: 20% opacity, Regulation No. 1 PM standards; and APEN reporting in accordance with Regulation No. 3, Part A, Section II.

2. Emission Factors- Emissions from this unit are produced during the combustion process, and are dependent upon operating conditions and specific properties of the natural gas being burned. The pollutants of concern are Nitrogen Oxides (NO_X), Carbon Monoxide (CO), and Volatile Organic Compounds (VOC). Small quantities of Hazardous Air Pollutants (HAPs) are also emitted dependent upon the makeup of the fuel and combustion efficiency. Particulate Matter (PM and PM_{10}) is emitted from the handling of the material. Emission factors for PM and PM10 are from AP-42, Clay Processing (1/95) assuming a 99% control efficiency from the wet dust collector and the combustion emissions are from AP-42 Section 1.4 (9/98) for natural gas combustion.

3. Monitoring Plan- The source will be required to calculate emissions on an annual basis. Proper control equipment maintenance shall be done to comply with the particulate and opacity standards.

4. Compliance Status- A current APEN is on file with the Division for this unit. The source has certified to being in compliance with all current requirements. A records search indicated no outstanding compliance issues for this source. Therefore, this unit is currently considered to be in compliance with all applicable requirements.

Unit S002-S005- Two Tunnel Dryers and Two Kilns

Discussion:

1. Applicable Requirements- These units were installed and began operation in 1962 except for the Kiln #2 Dryer which was installed in 1979. The tunnel dryers dry

the bricks to the proper moisture before firing in the kilns. These operations were first permitted in December 1993 (93DE557) to allow the addition of contaminated soils to the kilns and remain a synthetic minor source with respect to fluorides (a criteria pollutant). EPA emission factor changes added hydrogen fluoride (HF), a hazardous air pollutant, as one of the air pollutants emitted from the clay processing. In 1996 the permit was modified due to the change in emission factors as well as an increase in total brick production. The applicable requirements for this unit are as follows:

Visible emissions shall not exceed twenty percent (20%) opacity.

Emissions of air pollutants shall not exceed the following limitations:

Particulate Matter	152.60 tons per year
Particulate Matter < 10 m (PM10)	130.80 tons per year
Sulfur Dioxide	54.70 tons per year
Nitrogen Oxides	65.40 tons per year
Volatile Organic Compounds	40.98 tons per year
Carbon Monoxide	119.90 tons per year
Fluorides	32.70 tons per year

EPA emission factors changed once again with the 1997 Brick Manufacturing section. SO2, VOC and fluoride limits have been increased to the following levels as a result of these new emission factors:

Sulfur Dioxide	66.67 tons per year
Volatile Organic Compounds	43.37 tons per year
Fluorides	58.71 tons per year

Consumption of clay and sand shall not exceed 218,000 dry tons per year.
Consumption of natural gas shall not exceed 938 MMscf per year.

Consumption of clay and sand at 218,000 dry tons per year corresponds to 199,000 tons of bricks produced. Since all emissions factors are based on brick production, the brick production limit of 199,000 tons will be included in the operating permit.

The Volatile Organic Compounds (VOC) concentration in the soil received shall not exceed 90,000 ppm by weight. Records of actual Total Petroleum Hydrocarbon (TPH) concentration and quantities of incoming soils shall be maintained by the applicant and made available to the Division for inspection upon request. Emissions of VOCs shall be considered equal to the amount of TPH in all contaminated soils received. The applicant shall not accept more than 40 tons per year (rolling total) of TPH in soils.

APEN Reporting in accordance with Regulation 3, Part A.II.

In addition, these units are subject to Regulation No. 6, Part B, Section III.C, Standards of Performance for New Manufacturing Processes.

The due date of the first semi-annual monitoring report required by this operating permit will be more than 180 days after the initial approval construction permit was issued and/or the equipment commenced operation. Therefore, the Division considers that the Responsible Official certification submitted with that report will serve as the self-certification for construction permit 93DE557 and the appropriate provisions of the construction permit have been directly incorporated into this operating permit.

2. Emission Factors- Emissions from these units are produced during the combustion process, and are dependent upon operating conditions and specific properties of the natural gas being burned. The pollutants of concern are Nitrogen Oxides (NO_X), Carbon Monoxide (CO), Volatile Organic Compounds (VOC), Sulfur Oxides (SO_X), and Particulate Matter (PM and PM_{10}). Small quantities of Hazardous Air Pollutants (HAPs) are also emitted dependent upon the makeup of the fuel and combustion efficiency. Fluorides are also emitted from the clay. The emission factors used to determine limitations are from AP-42, Section 11.3 (8/97) for Bricks and Related Clay Products. The emission factors are as follows:

Pollutant	E.F. (lb/ton produced)
PM	0.96
PM10	0.87
SO2	0.67
NOx	0.35
VOC	0.054
CO	1.2
Fluorides	0.59

The emissions above include combustion emissions and emissions coming from the brick production. The combustion of natural gas and propane releases similar emissions. Therefore, these emissions factors will be used for either natural gas or propane combustion during the firing of the clay bricks.

HAP Emissions
This information is listed to inform the operator of the Division's analysis of the specific compounds. This information is listed on the Division's emission inventory system.

C.A.S. #	SUBSTANCE	EMISSIONS (LB/YR)
7664-39-3	Hydrogen Fluoride	58,275
7647-01-0	Hydrogen Chloride	26,775
71-43-2	Benzene	457
117-81-7	Bis(2-ethylhexyl) Phthalate	315
7782-50-5	Chlorine	205

3. Monitoring Plan- The source shall calculate emissions on a monthly basis using the emission factors listed above and the monthly brick production. Compliance with the opacity standard shall be monitored by daily visual observations that may trigger maintenance procedures as well as EPA Reference Method 9 observations.

4. Compliance Status- A current APEN is on file with the Division for this unit. The source has certified to being in compliance with all current requirements. A records search indicated no outstanding compliance issues for this source. Therefore, this unit is currently considered to be in compliance with all applicable requirements.

Unit S006- Natural Gas Fired Rotary Calciner with wet dust collector.

Discussion:

1. Applicable Requirements- This equipment was originally installed in 1964. Therefore, it is grandfathered from construction permitting requirements. A current APEN is on file with the Division. The only applicable requirements for this unit are: 20% opacity, Regulation No. 1 PM standards; and APEN reporting in accordance with Regulation No. 3, Part A, Section II.

2. Emission Factors- Emissions from this unit are produced during the combustion process, and are dependent upon operating conditions and specific properties of the natural gas being burned. The fuel combustion pollutants of concern are Nitrogen Oxides (NO_X) and Carbon Monoxide (CO). The levels of the emissions emitted are dependent upon the makeup of the fuel and combustion efficiency. Particulate Matter (PM and PM_{10}) is emitted from the handling of the material. Emission factors for PM and PM10 are from AP-42, Clay Processing (1/95) assuming a 99% control efficiency from the wet dust collector and the combustion emissions are from AP-42 Section 1.4 (9/98) for natural gas combustion.

3. Monitoring Plan- The source will be required to calculate emissions on an annual

basis. Proper control equipment maintenance shall be done to comply with the particulate and opacity standards.

4. Compliance Status- A current APEN is on file with the Division for this unit. The source has certified to being in compliance with all current requirements. A records search indicated no outstanding compliance issues for this source. Therefore, this unit is currently considered to be in compliance with all applicable requirements.

IV. Insignificant Activities

In-house analytical laboratory used for QA/QC of finished brick products
Four (4) propane tanks, 40,000 gallons each
Commercial heating units, < 10 MMBtu/hr each
Two (2) Diesel fuel tanks (6,000 gallons and 5,000 gallons)
Landscaping equipment
Forklifts
Storage of lubricating oils
Janitorial activities
Architectural painting
Welding operations
Air conditioning and ventilating systems
Calciner material handling
Reclaim conveyors
Clean-up vacuum
Gasoline pump and tank
Four (4) remote reservoir cold solvent degreasers

V. Alternative Operating Scenarios

No alternative operating scenarios were requested.

VI. Permit Shield

Robinson Brick requested the permit shield from Regulation No 3, Part B, Section IV.D.2 (NSR). Robinson Brick noted the source is an existing major stationary source for CO and PM10 with respect to the New Source Review (NSR) provisions. The justification for the shield request from the NSR provisions was that prior modifications at this facility had not triggered major NSR requirements. The Division is not able to grant the shield because, as stated, this source is a major stationary source with respect to the NSR provisions and, thus, subject to the provisions. Being subject to the provisions, any changes, modifications, construction, reconstruction, or similar activities for any of the emission sources have to be reviewed for potential application of specific NSR provisions.

VII. Short Term Limits

As noted at the start of this review document, new procedures resulted in the removal of short term emission and production/throughput limits from Construction Permits. The short term limits replaced in the permits are summarized in the following table.

Construction Permit	Emission Point	NOx, lb/hr	PM & PM_{10} lb/hr	SO_2, lb,hr	VOC lb/mn	CO lb/hr	Process Rate
97DE0739	Metal Part Cleaning Sinks				283.3		166.7 gallon per hour

VIII. Miscellaneous

From time to time published emission factors are changed based on new or improved data. A logical concern is what happens if the use of the new emission factor in a calculation results in a source being out of compliance with a permit limit. For this operating permit, the emission factors or emission factor equations included in the permit are considered to be fixed until changed by the permit. Obviously factors dependent of the fuel sulfur content or heat content can not be fixed and will vary with the test results. The formula for determining the emission factors is, however, fixed. It is the responsibility of the permittee to be aware of changes in the factors The permittee must notify the Division, in writing, of any need to modify the permit requirements when there is an increase in the estimated emissions based on the new factors. Upon notification, the Division will work with the permittee to address the situation.