

DEPARTMENT OF ENVIRONMENTAL QUALITY
AIR QUALITY DIVISION
ACTIVITY REPORT: Scheduled Inspection

A649739807

FACILITY: Forterra Brick, LLC		SRN / ID: A6497
LOCATION: 3820 E. Serr Rd., CORUNNA		DISTRICT: Lansing
CITY: CORUNNA		COUNTY: SHIAWASSEE
CONTACT: Jerry Greger, Supervisor		ACTIVITY DATE: 05/15/2017
STAFF: Michelle Luplow	COMPLIANCE STATUS: Compliance	SOURCE CLASS: MAJOR
SUBJECT: Scheduled, unannounced inspection to determine compliance with Meridian Brick's ROP, MI-ROP-A6497-2015.		
RESOLVED COMPLAINTS:		

Inspected by: Michelle Luplow

Personnel Present: Jerry Greger (jerry.greger@forterrabp.com), Supervisor

Bill Stevens, Kiln Operator (bill.stevens@forterrabp.com), Kiln fireman

Other relevant personnel:

Robert Clements (Robert.clements@forterrabp.com), Plant Manager

Purpose: Conduct an unannounced, scheduled, partial compliance evaluation (PCE) inspection by determining compliance with Meridian Brick's ROP, MI-ROP-A6497-2015. This activity was done as part of a full compliance evaluation (FCE).

Safety PPE: High visibility vests, hard hats, steel-toed boots and hearing protection (near the whirl-wet) are required to be worn.

Facility Background/Regulatory Overview: Meridian Brick, according to J. Greger, is the only brick manufacturer in Michigan. It was formerly named Forterra Brick up until May 2017, and prior to that, Hanson Brick. Its on-site shale mining operation, located in Shiawassee County, produces shale used for brick manufacturing for residential construction, primarily purchased by Detroit distributors. A primary crusher crushes the raw material into an acceptable size for the grinding plant. The size is then further reduced by grinding the material down to an acceptable mesh size for the pug mixers and brick extruders. Extruded bricks are placed into a drying oven to remove moisture prior to being fired in the natural gas-fired kilns (EUKILN01 and EUKILN02 – FGKILNS).

Meridian Brick is a major source of SO₂ and PM₁₀ and the HAP, HF. Sulfur from the bricks is released as SO₂ upon firing them in the kiln. The exhaust stream from the kilns is injected with lime to neutralize the SO₂ (as sulfuric acid), in addition to HF and any particulate generated (including lime particulate) is collected with Goretex baghouse fabric filters.

Because they are a major source of HAPs, Meridian Brick is subject to the MACT Subpart JJJJJ for Brick and Structural Clay Products Manufacturing (BSCP), published on October 25, 2015 (prior to this date, the subpart was vacated). In 2010, per request by EPA, stack testing was conducted at Meridian Brick to determine HF emissions as part of the input process for developing the MACT Subpart JJJJJ. D. McKeown, Meridian's Regional Environmental Manager, provided me with the stack test results during a previous inspection which reported that HF is emitted at 0.997 kg/hr or 0.138 kg/Mg of product. D. McKeown provided me with a Potential to Emit (PTE) calculation based on the 0.997 kg/hr, resulting in emissions of 19.26 tons of HF per year for both kilns.

Based on the stack test emission rate of 0.997 kg/hr, Meridian Brick is a major source of HAP (HF) and is therefore subject to the MACT Subpart JJJJJ. Dennis Dunlap, AQD's Compliance Assurance Monitoring (CAM) Specialist, explained that some of the MACT requirements will replace the CAM conditions in the ROP. The MACT Subpart JJJJJ will be incorporated into the ROP during the 2020 ROP Renewal.

In 2014 Meridian Brick reinstalled the baghouse for Kiln 1, because prior to this, Kiln 1's roof had caved in and been repaired. Both Kiln 1 and its particulate control device are now functional. As of February 2017 Kiln 1 has been operating, thus both kilns are now operated to meet demand. J. Greger said the kilns operate 24 hours/day, 7 days per week, every month of the year.

Inspection: At approximately 8:15 a.m. on May 15, 2017 I met with J. Greger and B. Stevens. I provided J. Greger with the updated January 2017 Permit to Install Exemptions Handbook.

EUCRUSHING

This emission unit is composed of process equipment that is used to decrease the size of the mined shale, the equipment used to handle and transport the crushed material, and control methods, including enclosures within a building, water spray, and drop chutes to for fugitive dust mitigation.

The primary crusher is located underground and the grinding plant feed belt is an enclosed conveyor located on the outside of the building. The secondary crusher is equipped with a baghouse which exhausts to the in-plant environment.

J. Greger said that they generally crush the mined shale 8 hours per day, 7 days per week, all year long in order to provide the materials necessary to produce brick. He said as long as the kilns are operating they will need to produce and process shale. He said there have been no new installations to EUCRUSHING.

Meridian Brick has a material limit of 225,000 tons of material throughput in EUCRUSHING per 12-month rolling time period. I requested 12-month rolling records from April 2016 – March 2017. The total tons processed during this period was 101,569.3 tons. Meridian Brick is currently in compliance with EUCRUSHING material limits at this time.

Meridian Brick must not operate EUCRUSHING, EUSTORAGE, or EUTRUCKTRAFFIC unless the Fugitive Dust Control Plan in Appendix 10 is implemented and maintained:

Site Roadways/Plant Yard

J. Greger said water is still used for dust suppression. An old fire truck, with a capacity of 3,000 gallons of water, is used to spray all dirt roads within the plant. J. Greger keeps water application records which describe the date and areas watered at Meridian Brick. The plant yard was well-watered when I arrived and entered the facility. Opacity generated from driving on this surface was less than 5%. I noticed, however, that the quarry road, which runs parallel, alongside Serr Rd, was generating opacity greater than 20% with Meridian Brick's truck traffic. I did not conduct Method 9 readings, but it appeared that Meridian Brick was not meeting the 5% opacity requirement under EUTRUCKTRAFFIC. J. Greger said that it was the first day this year that they've used the quarry road and he said he will work on getting it watered within the current week. He said they focus on keeping this road watered in order to reduce track-out onto Serr Rd (quarry trucks travel between the quarry site and the crushing site by crossing Serr Rd).

The plan also requires that all paved roadways and the plant yards be swept as needed and any spillage on roads shall be cleaned up immediately. During past inspections I noted the many piles of finely crushed shale pushed off to the sides of the plant yard near the buildings and other process equipment. Since that time, J. Greger has ensure that all piles have been removed and the paved portions of the plant yard had been swept clean to come into compliance with the fugitive dust plan requirements. Meridian is meeting the Site Roadways/Plant Yard requirements at this time.

Plant

Drop distances between transfer points must be kept at a minimum; however there were no transfer operations taking place during the inspection to verify this.

Storage Piles – includes verification of compliance with EUSTORAGE conditions for open area stock piles

Stockpiling of the nonmetallic minerals occurs behind the facility. I did not witness the process of stockpiling during the inspection and therefore could not determine compliance with the requirement to conduct stockpiling with a minimum drop distance.

Storage piles must generate no more than 5% opacity. I saw no opacity generated from the storage piles during the inspection. J. Greger said that they've never had to water the storage piles because there is enough water in the material to keep the piles from releasing fugitive dust. I observed while onsite that the piles do appear to retain moisture, and fugitive dust is not released.

Truck Traffic – includes verification of compliance with EUTRUCKTRAFFIC conditions for onsite transport of materials

There was no unloading/loading of trucks during the inspection, thus compliance with the requirement to properly load the trucks was not able to be determined.

For EUSTORAGE and EUTRUCKTRAFFIC, Meridian is required to perform and record the results of a 6-minute visible emission observation at least once per calendar month. J. Greger said that he is not currently Method 9-certified, but if there is a problem he said that Meridian Brick's consultant, Bureau Veritas, has certified Method 9 readers that they can call in the event a Method 9 is necessary. J. Greger keeps records of "Monthly Truck Traffic Visible Emissions" readings, and provided me with VE's for May, June, July, and September 2016 (see attachment). These records also include the required VE readings from the Pit Road, Plant road/yard, and Storage piles, labeled #1, #2, #3, respectively, on the "Monthly Truck Traffic Visible Emissions" form. All recorded readings were 0% opacity for each 6-minute average. EUTRUCKTRAFFIC and EUSTORAGE are limited to 5% opacity per 6-minute average.

For EUCRUSHING, Meridian is also required to perform and records the results of a 6-minute visible emission observation once per month on the crushing and grinding operations. J. Greger provided me VE readings for June 2016 on the crusher and grinder. 0% opacity was recorded for the 6-minute average.

Meridian Brick is currently in compliance with all requirements under the Fugitive Dust Control Plan, aside from the opacity that was seen from the quarry road during the inspection, as well as the conditions in EUTRUCKTRAFFIC and EUSTORAGE at this time.

Meridian is required to label all equipment using company ID numbers. The equipment was verified that it was ID'ed during a previous inspection, the ID's are located on the belt guards. J. Greger verified that there have been no additions, removals or modifications to the EUCRUSHING equipment. The crushing equipment was operating during the inspection, but no visible emissions were seen from any of its processes. Table 1 contains the type of equipment, equipment ID, Opacity Limit, control device and visible emissions observed during the inspection for EUCRUSHING. Meridian is in compliance with EUCRUSHING visible emission limits at this time.

Table 1. EUCRUSHING equipment (Appendix 9 of ROP)

Equipment Description	ID Number	Opacity Limit (Percent)	Control Device	Visible Emissions
Primary Crusher	462-76	15	N/A - None	None
Grinding Plant Feed Belt	No. 1	10	Equipment enclosure	None
Stedman Impact grinder	SGR-1	0	Enclosed in Building	None
Steadman Grinder exit belt	No. 7	0	Enclosed in Building	None
Elevator belt to screens	No. 8	0	Enclosed in Building	None
Screen feed/plow belt	No. 9	0	Enclosed in Building	None
Finished belt under screens	No. 10	0	Enclosed in Building	None
Finished short cross conveyor	No. 11	0	Enclosed in Building	None
First finished elevator conveyor	No. 12	0	Enclosed in Building	None
Second finished elevator conveyor	No. 13	0	Enclosed in Building	None
Finished shuttle car conveyor	No. 14	0	Enclosed in Building	None
Coarse return belt	No. 4	0	Enclosed in Building	None
Coarse return elevator belt	No. 5	0	Enclosed in Building	None
Coarse return short feed belt	No. 6	0	Enclosed in Building	None
Reclaimer system	REC-1	0	Enclosed in Building	None
Reclaimer conveyor belt	Belt A	0	Enclosed in Building	None
Belt to splitting tower	Belt B	0	Enclosed in Building	None
Leahy screen #1	Screen 1	0	Enclosed in Building	None
Leahy screen #2	Screen 2	0	Enclosed in Building	None
Leahy screen #3	Screen 3	0	Enclosed in Building	None
Leahy screen #4	Screen 4	0	Enclosed in Building	None

Equipment Description	ID Number	Opacity Limit (Percent)	Control Device	Visible Emissions
Simplicity Screen #5	Screen 5	0	Enclosed Building in	None
Simplicity Screen #6	Screen 6	0	Enclosed Building in	None

Meridian Brick is in compliance with all conditions under EUCRUSHING, EUTRUCKTRAFFIC and EUSTORAGE at this time.

EUPUG-90

The EUPUG-90 is equipment used to add color and texture to the brick, depending on the customer's requests. A pulse-jet baghouse is equipped to the mixer/extruder.

There are no material limits associated with this unit, nor visible emission limits (other than that 20% opacity limit established in General Condition 11).

A baghouse is required to be installed and operating properly for this process. During the inspection EUPUG-90 was operating, and a pressure drop of 8 inches H₂O was recorded, which is within Meridian Brick's operating range for the baghouse pressure drop.

VE readings are required once per calendar month. J. Greger says he checks for opacity once per month and showed me the "Monthly dust collector Visible Emissions" for May 2016, June 2016, July 2016, and September 2016. There was 0% opacity during each of the 6-minute observations for these months. While onsite, I did not see any signs of opacity from this unit.

A record of repairs and maintenance on the baghouse collector semi-annually is required to supplement required semi-annual maintenance checks. Although the ROP for EUPUG-90 does not require that records of the inspections of the baghouse itself be kept, only maintenance and repairs, J. Greger showed me that they do document their semi-annual maintenance checks on EUPUG-90's baghouse. The only repairs/maintenance that were conducted on the baghouse was replacing the bags on 10/13/13, as reported in the previous inspection.

Meridian Brick is in compliance with all conditions for EUPUG-90 at this time.

FGKILNS (KILN01, KILN02)

FGKILNS is composed of two parallel natural gas-fired tunnel kilns. Both kilns were operating during the inspection. Kiln 1 was brought back into production in February 2017. Prior to this, only Kiln 2 had been operating because Kiln 1 had to be repaired (the ceiling caved in) and after repairs there wasn't enough demand to operate the second kiln.

Bricks are first sent through a 610°F dryer to remove moisture, which prevents the bricks from exploding in the kiln. After being dried, they are called "dry bricks," while bricks post-kiln are called "fired bricks" (as referenced in Appendices 5 and 7 of the ROP).

Emissions from firing bricks in the kiln include SO₂, particulate matter, hydrofluoric acid (HF) and hydrochloric acid (HCl). Each kiln is equipped with a baghouse (Goretex bags) and hydrated lime injection. The lime injection neutralizes the acids from the process before it is collected in the baghouse. The gases are diverted from the kilns to a tower where the hydrated lime is injected into the gas stream, from here it is sent to a cooling tower where the gas is cooled via air infiltration to 450°F, a temperature at which the Goretex bags can withstand, prior to entry into the baghouse. The temperature in the baghouses are required to be maintained 15°F below bag degradation temperature. B. Stevens said that the Goretex bag degradation temperature is 500°F, which means the baghouse cannot be operated higher than 485°F.

An alarm is required to sound if the temperature in the baghouse gets within 25°F of the bag degradation temperature. B. Stevens said that the alarm set point is 475°F. According to J. Greger, Goretex bags were bought because they withstood higher temperatures. B. Stevens also said the cooling tower alarm is set at 450°F and that if the cooling tower temperature reaches 450 °F the kiln operator has 30 minutes to bring the temperature down before the baghouse alarm sounds. B. Stevens said that if the temperature in the fabric filter collectors reaches 475°F, the alarm sounds, and the kiln exhaust and kiln shut down automatically, thus Meridian Brick is in compliance with this condition.

Emission Limits

Meridian Brick keeps an electronic spreadsheet of the SO₂ emission calculations, as spelled-out in Appendix 7. D. McKeown said that Meridian Brick produces standard-sized bricks and larger. Because of the variance in brick size, Meridian uses "brick equivalents" to calculate the brick tonnage using the brick weight determined during the monthly brick sulfur content

test, which is then used in the Appendix 7 SO₂ emissions formula. The brick equivalents are noted as "SBE," or "standard brick equivalents," in the spreadsheet (see attached).

Meridian Brick is limited to 241 lbs SO₂/hour (averaged over a calendar month) combined for both kilns. Between January 2016 and March 2017, the month with the highest hourly emissions was March 2017 at 118.6 lb/hr from both kilns combined.

There is also a calendar year limit of 650 tons SO₂ combined for both kilns. From January 2016 – December 2016, total post-control SO₂ emissions from both kilns was 256 tons.

Process/Operational Restrictions

The kilns can only be operated if a Preventative Maintenance Program (PMP) has been implemented and is maintained. Meridian Brick's Preventative Maintenance Plan was originally drafted May 1, 2003. During the ROP renewal, Meridian Brick included an updated version of their PMP in the ROP renewal application. The new PMP was updated December 15, 2014. The Preventative Maintenance Plan inspections for the Cooling Tower were changed from quarterly to semi-annually (refer to pages 4, 8, & 9 of PMP).

J. Greger said that the cooling tower is still being used, but it doesn't use water to cool the air anymore, because the gortex bags can withstand a higher heat. He said that Meridian Brick only has to bleed ambient air into the tower to cool down the process air to an acceptable temperature before it enters the baghouse. J. Greger said that the cooling water would erode the inside of the tower, which then required more inspections and maintenance to be done. Without the water there is less of a need for quarterly inspections of the tower. It is AQD's position, therefore, that semi-annual inspections of the cooling tower are acceptable. The new PMP has been approved by AQD and is officially implemented at Meridian Brick.

The PMP generally contains items to be monitored, corrective actions that can be taken in the event of abnormal operation, and what should be inspected and how often it should be inspected (daily, weekly, quarterly, semi-annually and bi-annually). J. Greger provided me with the inspection logs for January 2016 (daily, weekly, quarterly, semi-annually) which demonstrates that inspections have been occurring; however, the old PMP forms are being used. I will inform J. Greger of this, and remind him that they must use the updated inspection log sheets for all inspections going forward. Meridian Brick is in compliance with the PMP at this time.

Kilns must not be operated if the pressure drop across the kiln fabric filter is less than 2 inches H₂O or greater than 6 inches H₂O. An alarm should sound if the pressure drop exceeds 6 inches H₂O for longer than 2 hours. B. Stevens explained that the pressure drop only exceeds 6 inches H₂O when the fan speed is increased to keep smoke out of the plant and that an alarm does sound when this occurs.

Operation of the kilns is also contingent upon whether the lime feed rate is being maintained at the appropriate rate, as determined in Appendices 5 and 7 of MI-ROP-A6497-2015. Per the Appendices, Meridian is required to test one dry brick and one fired brick, processed in the same month, to determine sulfur emissions per brick. This number is used in a series of statistical equations (using 95% confidence level upper and lower limit sulfur contents) to calculate a lb/hr lime feed rate. The lime feed rate that is calculated is used for the following month's SO₂ control. The number of bricks and standard brick equivalents are considered in addition to the car push rate in order to determine lime feed rates. Meridian is required to monitor and record the lime feed rate on a continuous basis.

J. Greger provided me with a Lime Feed rate sheet for January 2016 and May 2017; this sheet contains the calculated lime feed rates based on varying car push rates. The higher the number of cars per day, the greater the lime feed rate. B. Stevens said that for each charge of bricks that is sent through the kiln, the kilnmen do a hands-on lime feed rate check to ensure that the feed rate is accurate. B. Stevens said that for 30 seconds they will catch the lime in a bag, weigh the bag and then extrapolate the lbs per 30 seconds to lbs/hour. They then correlate this to the dial on the lime feed rate monitoring system. For example, "34.5" on the lime feed rate monitor for kiln 2 during the inspection would equate to 116 lb/hr. The required lime feed rate for May at a 7 car push rate is 114 lb/hr. Meridian meets the lime feed rate calculation requirements at this time.

During the inspection I recorded the operating parameters for both kilns, including lime feed rate and temperature for the baghouses. See Table 2. Meridian Brick meets all of the Process restrictions for pressure drop, temperature, and lime feed rate at this time.

Table 2. Operating parameters recorded on 5/15/17

	2-6" H ₂ O ?P	Baghouse Temperature (°F)	Lime feed rate	Cooling Tower Temperature (°F)
Kiln 1	5.09	381	*23.7 (116 lb/hr)	407
Kiln 2	5.31	381	*34.5 (116 lb/hr)	408

*Note that dialed in feed rates can be different due to the differences in feed rate equipment mechanics

Design/Equipment Parameters

Meridian Brick is required to install, maintain, and operate in a satisfactory manner, the fabric filter collectors; a temperature monitoring device to continuously monitor and record the temperature; and devices to continuously monitor and record the pressure differential for each fabric filter during operation of FGKILNS.

B. Stevens showed me the digital continuous monitor readout screens which contain baghouse pressure drop, baghouse temperature, lime feed rate, and cooling tower temperatures for both kiln systems (see attached photo). Additionally, the data from these continuous monitors can be uploaded to a computer (see attached photo). Prior to the digital monitors, Meridian had strip chart recorders to record the data. Meridian Brick is meeting all Design/Equipment Parameter requirements at this time.

Testing/Sampling

Within 12 months of issuance of MI-ROP-A6497-2015, Meridian Brick was required to verify particulate matter and sulfur dioxide emission rates from either EUKILN01 or EUKILN02. The ROP was issued October 29, 2015, thus testing should have been conducted by October 29, 2016. Testing was not conducted. While this is technically a violation of the ROP, the standard testing language in ROP's require testing to be conducted once per permitting cycle. I will let J. Greger, David McKeown, and Robert Clements aware of this requirement, and require that they test before October 29, 2020 (MI-ROP-A6497-2015 expiration date), but also to report a deviation in their semi-annual deviation reporting for not conducting the testing according to the requirements established in the ROP.

Meridian is also required to test and record monthly the average total sulfur content of at least one dry brick and one fired brick. J. Greger provided me with February, March, and May 2016 brick tests. I also verified that these numbers were used in calculating the monthly SO₂ emissions. Meridian is in compliance with this requirement.

Monitoring/Recordkeeping

As previously discussed, the temperature, lime feed rate, baghouse pressure drop and cooling tower temperatures are recorded on a continuous basis for each kiln system in a manner and with instrumentation acceptable to the AQD. Meridian is also required to ensure that the temperature entering each baghouse remains 15°F below the bag degradation temperature, and if it doesn't, to report the temperature exceedance as an excursion. I reviewed data on B. Stevens' computer from 2015 – 2016 to ensure that the temperature did not exceed 485°F, and did not find any temperatures exceeding 480°F. Although the graphed data is compact and individual data points cannot be discerned from the graph, the chart is suitable for determining whether 485°F threshold has ever been exceeded. The manner and instrumentation for recording the temperature data is therefore acceptable.

Pressure drop is recorded in a similar fashion to the temperature and therefore is also recorded in a manner and with instrumentation that is acceptable. Based on my review of the data onsite, the pressure drop has also been maintained within the 2 – 6 inches H₂O. I will recommend, however, that Meridian separate the cooling tower temperature data from the pressure drop data, as they overlap each other and it is difficult at times to see the pressure drop data. Pressure drops recorded outside of the operating range are required to be reported as excursions.

Lastly, the lime feed rate is also recorded on the same program as the temperature and pressure drop; however, the lime feed rate is recorded according to the equipment rate rather than the actual lb/hr. I will request that Meridian also supply a conversion chart that relates the equipment rate to its corresponding lb/hr rate, or to change the data readout to be recorded in lb/hr.

B. Stevens said that all monitoring variables (date, time, cooling tower temperature, baghouse temperature, pressure drop and lime feed rate) are also hand-recorded before each car of bricks charged into the kilns. He said the maximum number of carts they can get through the kiln in a day is 18, resulting in 18 records of monitoring variables per 24-hour day. I was provided with a copy of this documentation for January 1, 2016 and took a photo of this documentation for May 15, 2017.

Meridian Brick is in compliance with all FGKILNS conditions at this time.

FGPLANT1

The FGPLANT1 consists of a paddle mixer, sand dryer system, 30 pug line (with small mixer and extruder), and a 50 pug line (with mixer and extruder). All of these processes are vented to the same control device: a wet cyclone separator which Meridian Brick refers to as a "Whirl Wet." J. Greger said this process does not operate all the time; but was operating during the inspection.

The whirl wet was operating at 8.5 inches H₂O, which is in the permitted range of 7 – 9 inches H₂O. Meridian is required to record the pressure drop on a weekly basis. For the months of May, June, July, September 2016 weekly pressure drop records were provided. All readings were within the permitted limits.

Meridian Brick is required to do Method 9 readings once per month. J. Greger provided me with copies of VE readings done in May, June, July and September 2016 – there was a 0% average opacity for the 6-minute interval (see attachment). There were no visible emissions from the whirl wet exhaust during the inspection, only water (see attached photo). Meridian Brick is in compliance with this condition.

Meridian Brick is in compliance with all FGPLANT1 conditions at this time.

FGPARTSWASHER

There are 3 parts washers located onsite at Meridian Brick that J. Greger said are rented from Vesco Oil: one in the Maintenance Room, one in the Machine Shop, and one in the Garage. Each of them holds approximately 25 – 30 gallons. Each parts washer tub is attached to a drum where the solvent is stored through a drain at the bottom of the wash tub (no chemicals are stored in the washer itself), which meets the design requirement of equipping the washer with a draining device.

Mineral spirits is still the cleaning solvent used in all 3 parts washers; according to the MSDS submitted to me by J. Greger, the only halogenated compound present is trace amounts (<0.1%) of tetrachloroethylene (perchloroethylene) (see attachment). According to the ROP, the cleaning solvents must not exceed 5% by weight of this compound.

J. Greger said that Vesco is the company who maintains the parts washers. The parts washers are also swapped out with other parts washers. The maintenance on the units is also performed by Vesco.

Each of the cold cleaners has an air/vapor interface of approximately 3.75 ft² (1.5 ft x 2.5 ft) and therefore meets the design requirement of not exceeding 10 ft² of air/vapor interface.

All 3 cold cleaners were equipped with lids. During the inspection all lids were closed and operating instructions were posted for each unit.

Meridian Brick is currently in compliance FGPARTSWASHER requirements at this time.

MACT Subpart JJJJJ: NESHAP for Brick and Structural Clay Products Manufacturing

The federal regulation MACT Subpart JJJJJ was finalized and published October 26, 2015. Meridian Brick is subject to this regulation. Their "affected sources" are the 2 tunnel kilns, which J. Greger and B. Stevens believed were considered "large tunnel kilns" according to the Brick MACT because the design capacity for each is greater than or equal to 9.07 Mg/hr (10 tons/hr). I will verify with D. McKeown that this is correct.

B. Stevens also classified the air pollution control device (APCD) as a DIFF – dry lime injection fabric filter, which according to the Brick MACT is an APCD that includes continuous injection of hydrated lime or other sorbent into a duct or reaction chamber followed by a fabric filter.

The initial notification was required to be submitted by June 22, 2016, which Meridian Brick has done. The initial compliance report is due postmarked by July 31, 2019 for the reporting period December 26, 2018 – June 30, 2019 and must contain the items established in 40 CFR 63.8485(c).

Per my review of the Brick MACT, it appears that there are various applicable emission limits and work practice standards for existing sources that must be met by December 26, 2018:

Table 1 of Brick MACT

- HF, HCl and Cl₂ emissions should not exceed 26 kg/hr (57 lb/hr) HCl equivalent (equations 2 and 3) – Collectively from all kilns
- [large tunnel kilns] PM emissions must not exceed 0.036 lb/ton of fired product (0.018 kg/Mg) OR not exceed 6.6 mg/dscm (0.0029 gr/dscf) at 17% O₂ or non-Hg HAP metals emissions must not exceed 0.0026 kg/hr (0.0057 lb/hr)
- [large tunnel kilns] Hg emissions must not exceed 2.1x10⁻⁵ kg/Mg (4.1x10⁻⁵ lb/ton) of fired product OR Hg emissions must not exceed 7.7 ug/dscm at 17% O₂ or Hg emissions must not exceed 2.5E-4 kg/hr (5.5E-4 lb/hr)
- [small tunnel kilns] PM emissions must not exceed 0.19 kg/Mg (0.37 lb/ton) of fired product OR PM emissions must not exceed 4.8 mg/dscm (0.0021 g/dscf) at 17% O₂ or non-Hg HAP metals emissions must not exceed 0.047 kg/hr (0.11 lb/hr)
- [small tunnel kilns] Hg emissions must not exceed 1.7 E-4 kg/Mg (3.3 E-4 lb/ton) of fired product OR Hg emissions must not exceed 91 ug/dscm at 17% O₂ or Hg emissions must not exceed 8.5E-4 kg/hr (0.0019 lb/hr)

Table 2 of Brick MACT

- Tunnel kiln with DIFF: If a bag leak detection system is used, initiate corrective action within 1 hour of a bag leak detection system alarm and complete corrective actions in accordance with your OM&M plan; operate and maintain the fabric filter such that the alarm is not engaged for more than 5% of the total operating time in a 6-month block reporting period; or maintain no VE from the DIFF and maintain the free-flowing lime in the feed hopper or silo and to the APCD at all times for continuous injection systems; maintain the feeder setting (on a per ton of fired product basis) at or above the level established during the HF/HCl/Cl₂ performance test for continuous injection systems in which compliance was demonstrated.

Table 3 of Brick MACT

- Existing tunnel kilns: Minimize dioxin/furan emissions – maintain and inspect the burners and associated combustion controls as applicable and tune the specific burner type to optimize combustion.

- Existing tunnel kilns during periods of startup: Minimize HAP emissions – Establish the startup push rate for each kiln, the minimum APCD inlet temperature for each APCD, and temperature profile for each kiln without an APCD and include them in your first compliance report (specified in 8485(c)(8)); and after initial charging of the kiln with loaded kiln cars, remain at or below the startup push rate for the kiln until the kiln exhaust reaches the minimum APCD inlet temperature for a kiln with an APCD or until the kiln temperature profile is attained for a kiln with no APCD; and if your kiln has an APCD, begin venting the exhaust from the kiln through the APCD by the time the kiln exhaust temperature reaches the minimum APCD inlet temperature
- Existing tunnel kilns during periods of shutdown: Minimize HAP emissions – Do not push loaded kiln cars into the kiln once the kiln exhaust temperature falls below the minimum APCD inlet temperature if the kiln is controlled by an APCD; and if your kiln has an APCD, continue to vent the exhaust from the kiln through the PACD until the kiln exhaust temperature falls below the minimum inlet temperature for the APCD.
- Existing tunnel kilns during periods of routine control device maintenance: Minimize HAP emissions – Develop and use a temperature profile for each kiln and develop and follow maintenance procedures for each kiln that, at a minimum, specify the frequency of inspection and maintenance of temperature monitoring devices and controls that regulate air-to-fuel ratios and develop and maintain records for each kiln as specified in 63.8490(a)(3)

The requirements of this Brick MACT will be rolled into the ROP during the 2020 renewal (where an administratively complete application is due between April 29, 2019 and April 29, 2020). By the time the renewal period approaches Meridian will have also nearly completed its initial compliance period.

For the inspector:

If you are going into the crushing/screening/belt conveying building it is recommended you ask Meridian Brick to provide one of their dust masks to you prior to entering or avoid the area altogether. It is visibly dusty.

Compliance Statement:

Meridian Brick is in compliance with all MI-ROP-A6497-2015 requirements at this time.

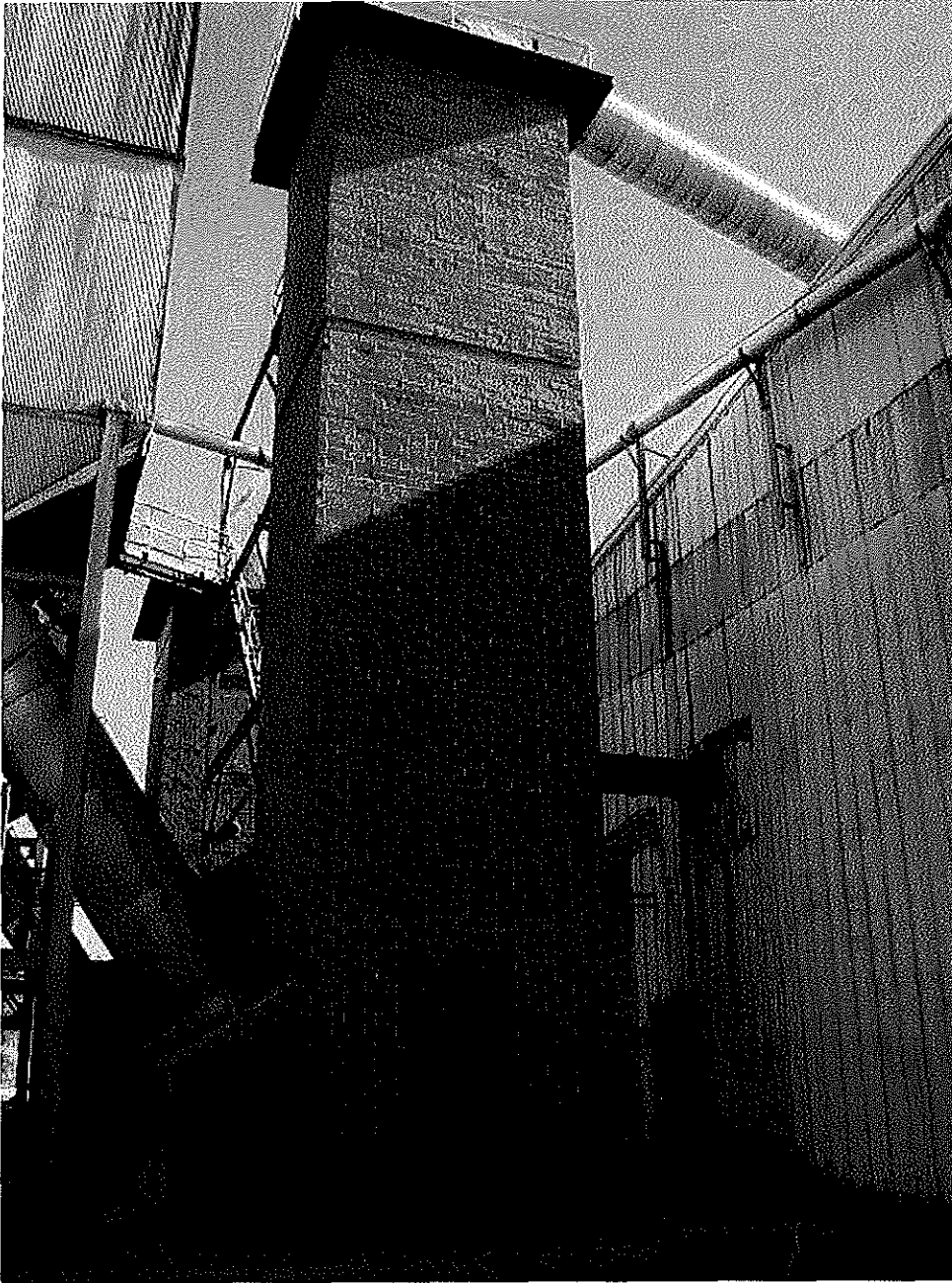


Image 1(Lime Injection) : Lime injection structure. Lime feeds from structure adjacent to this one.



Image 2(Cooling Tunnel) : (Center structure). Lime-laden exhaust air sent to cooling tunnel to be cooled prior to entering baghouse.

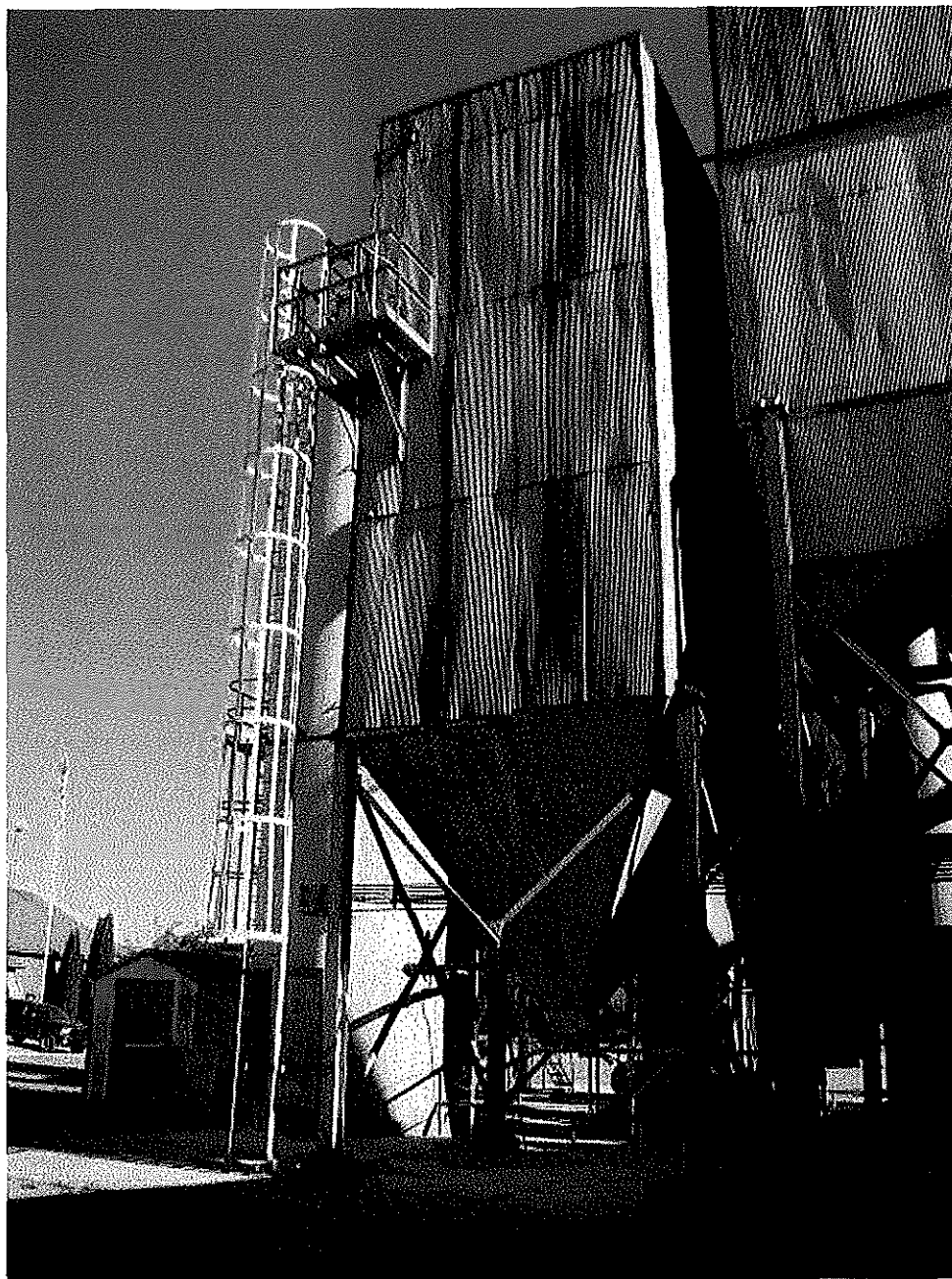


Image 3(Baghouse) : Collected particulate captured here.



Image 4(Lime Feed Tower) : Lime is stored and transferred from this location into exhaust stream via piping.

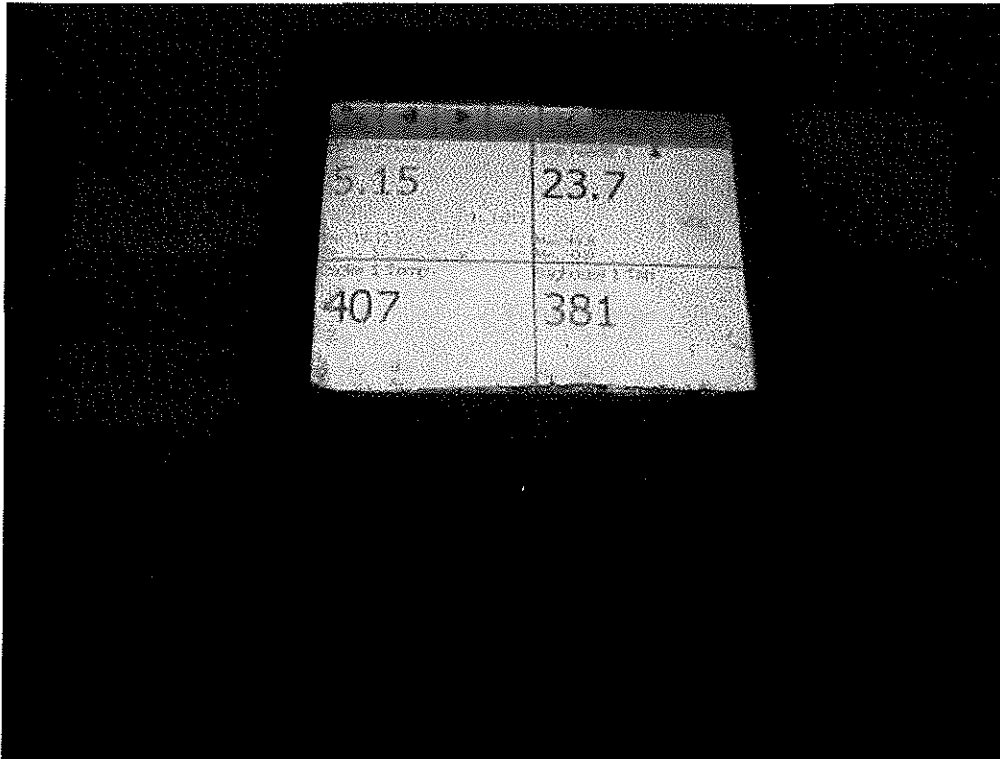


Image 5(Continuous Monitors) : Monitors that continuously monitor pressure drop, lime feed rate, baghouse temperature and cooling tower temperature. High limits are posted near monitor.



Image 6(Whirl Wet) : Whirl Wet exhaust - 0% opacity



Image 7(Shale Storage Piles) : Mined shale storage piles. Note 0% opacity.

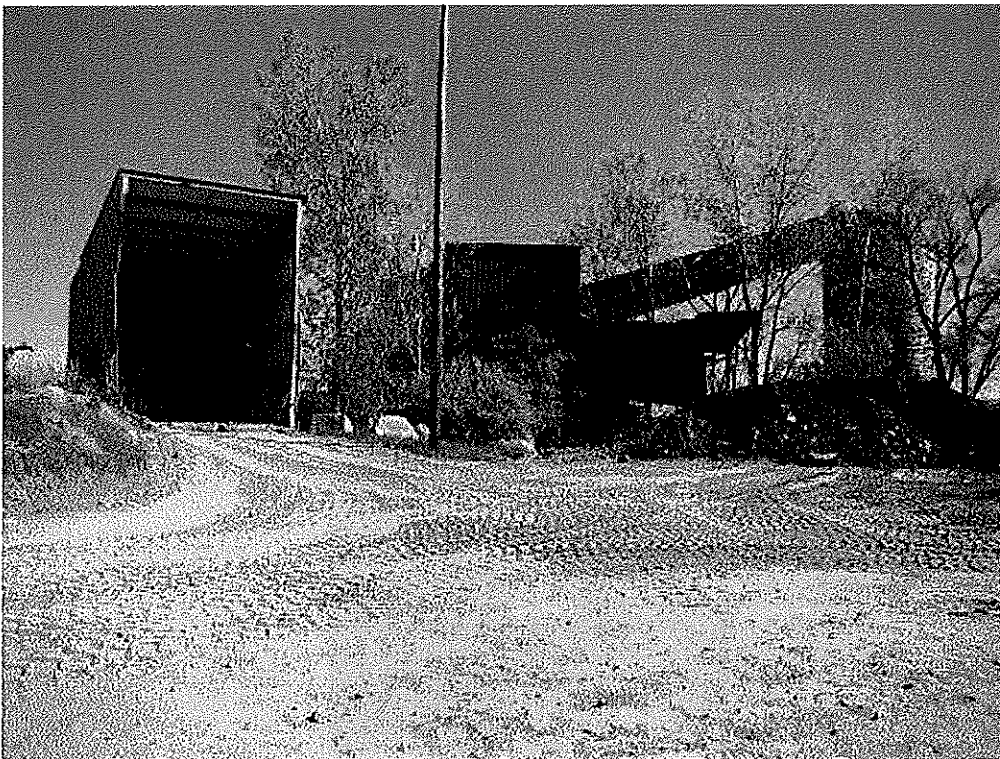


Image 8(Crushing structure) : Structure (left) is where loaders will dump mined shale into a pit which conveys shale to crusher underneath. Crushed shale is then sent to the crushing building

NAME Mark Lpm

DATE 6/27/17

SUPERVISOR B. M.

