

STATE OF MISSOURI



DEPARTMENT OF NATURAL RESOURCES

MISSOURI AIR CONSERVATION COMMISSION

PERMIT TO CONSTRUCT

Under the authority of RSMo 643 and the Federal Clean Air Act the applicant is authorized to construct the air contaminant source(s) described below, in accordance with the laws, rules and conditions as set forth herein.

Permit Number: 082013-005

Project Number: 2013-05-055
Installation Number: 186-0044

Parent Company: Holcim (US) Inc.

Parent Company Address: 201 Jones Road, Waltham, MA 02451

Installation Name: Holcim (US) Inc. - Ste. Genevieve Plant

Installation Address: 2942 US Hwy 61, Bloomsdale, MO 63627

Location Information: Ste. Genevieve County, NE, S9, T39N, R07E

Application for Authority to Construct was made for:
Link building dust collection system upgrade. This review was conducted in accordance with Section (5), Missouri State Rule 10 CSR 10-6.060, *Construction Permits Required*.

Standard Conditions (on reverse) are applicable to this permit.

Standard Conditions (on reverse) and Special Conditions are applicable to this permit.

AUG - 9 2013

EFFECTIVE DATE



DIRECTOR OR DESIGNEE
DEPARTMENT OF NATURAL RESOURCES

STANDARD CONDITIONS:

Permission to construct may be revoked if you fail to begin construction or modification within two years from the effective date of this permit. Permittee should notify the Air Pollution Control Program if construction or modification is not started within two years after the effective date of this permit, or if construction or modification is suspended for one year or more.

You will be in violation of 10 CSR 10-6.060 if you fail to adhere to the specifications and conditions listed in your application, this permit and the project review. In the event that there is a discrepancy between the permit application and this permit, the conditions of this permit shall take precedence. Specifically, all air contaminant control devices shall be operated and maintained as specified in the application, associated plans and specifications.

You must notify the Department's Air Pollution Control Program of the anticipated date of startup of these air contaminant sources. The information must be made available within 30 days of actual startup. Also, you must notify the Department of Natural Resources Regional office responsible for the area within which you are located within 15 days after the actual startup of these air contaminant sources.

A copy of this permit and permit review shall be kept at the installation address and shall be made available to Department of Natural Resources' personnel upon request.

You may appeal this permit or any of the listed special conditions to the Administrative Hearing Commission (AHC), P.O. Box 1557, Jefferson City, MO 65102, as provided in RSMo 643.075.6 and 621.250.3. If you choose to appeal, you must file a petition with the AHC within 30 days after the date this decision was mailed or the date it was delivered, whichever date was earlier. If any such petition is sent by registered mail or certified mail, it will be deemed filed on the date it is mailed. If it is sent by any method other than registered mail or certified mail, it will be deemed filed on the date it is received by the AHC.

If you choose not to appeal, this certificate, the project review and your application and associated correspondence constitutes your permit to construct. The permit allows you to construct and operate your air contaminant sources(s), but in no way relieves you of your obligation to comply with all applicable provisions of the Missouri Air Conservation Law, regulations of the Missouri Department of Natural Resources and other applicable federal, state and local laws and ordinances.

The Air Pollution Control Program invites your questions regarding this air pollution permit. Please contact the Construction Permit Unit at (573) 751-4817. If you prefer to write, please address your correspondence to the Missouri Department of Natural Resources, Air Pollution Control Program, P.O. Box 176, Jefferson City, MO 65102-0176, attention: Construction Permit Unit.

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SPECIAL CONDITIONS:

The permittee is authorized to construct and operate subject to the following special conditions:

The special conditions listed in this permit were included based on the authority granted the Missouri Air Pollution Control Program by the Missouri Air Conservation Law (specifically 643.075) and by the Missouri Rules listed in Title 10, Division 10 of the Code of State Regulations (specifically 10 CSR 10-6.060). For specific details regarding conditions, see 10 CSR 10-6.060 paragraph (12)(A)10. "Conditions required by permitting authority."

Holcim (US) Inc. - Ste. Genevieve Plant
Ste. Genevieve County, NE, S9, T39N, R07E

1. Control Device Requirement-Baghouse
 - A. Holcim (US) Inc. - Ste. Genevieve Plant shall control emissions from 361-04 and 362-04 [Transfer from rejects bin (361-B11/362-B11) to belt conveyor (361-BC1)] using baghouses (331-BF2 and 332-BF2) as specified in the permit application.
 - B. The permittee shall not emit more than 0.004 grains per dry standard cubic foot (DSCF) of particulate matter from these baghouses.
 - C. The baghouses shall be operated and maintained in accordance with the manufacturer's specifications.
 - D. One complete set of replacement filters for the baghouses shall be kept on hand at all times. The bags shall be made of fibers appropriate for operating conditions expected to occur (i.e. temperature limits, acidic and alkali resistance, and abrasion resistance).
 - E. Holcim (US) Inc. - Ste. Genevieve Plant shall monitor visible emissions (VE) in accordance with the requirements of PCMACT at 40 CFR §63.1350 (i.e. monthly visible emission observations with appropriate follow up in the event of VE is observed).
 - F. Holcim (US) Inc. - Ste. Genevieve Plant shall include the associated baghouses in the *Operations and Maintenance Plan* as required by PCMACT.
2. Record Keeping and Reporting Requirements
 - A. Holcim (US) Inc. - Ste. Genevieve Plant shall maintain all records required by this permit for not less than five years and shall make them available immediately to any Missouri Department of Natural Resources' personnel upon request.

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SPECIAL CONDITIONS:

The permittee is authorized to construct and operate subject to the following special conditions:

- B. Holcim (US) Inc. - Ste. Genevieve Plant shall report to the Air Pollution Control Program's Compliance/Enforcement Section, P.O. Box 176, Jefferson City, MO 65102, no later than ten days after the end of the month during which any record required by this permit show an exceedance of a limitation imposed by this permit.

REVIEW OF APPLICATION FOR AUTHORITY TO CONSTRUCT AND OPERATE
SECTION (5) REVIEW

Project Number: 2013-05-055
Installation ID Number: 186-0044
Permit Number:

Holcim (US) Inc. - Ste. Genevieve Plant
2942 US Hwy 61
Bloomsdale, MO 63627

Complete: May 21, 2013

Parent Company:
Holcim (US) Inc.
201 Jones Road
Waltham, MA 02451

Ste. Genevieve County, NE, S9, T39N, R07E

REVIEW SUMMARY

- Holcim (US) Inc. - Ste. Genevieve Plant has applied for authority to construction the link building dust collection system upgrade to improve performance.
- HAP emissions are not expected from the proposed equipment.
- Portland cement plants are not among the source types regulated by 40 CFR Part 61, the National Emission Standards for Hazardous Air Pollutants (NESHAPs).
- The Maximum Achievable Control Technology (MACT) standard, 40 CFR Part 63, Subpart LLL, *National Emission Standards for the Portland Cement Manufacturing Industry* applies to the proposed equipment.
- This type of installation (Portland Cement Plant) is on the "List of Named Installations" found at 10 CSR 10-6.020 subsection (3)(B), Table 2.
- Baghouses are being used to control particulate matter emissions from the equipment in this permit.
- This review was conducted in accordance with Section (5) of Missouri State Rule 10 CSR 10-6.060, *Construction Permits Required*. The controlled potential emissions of particulate matter are conditioned (control device conditions) below de minimis levels.
- This installation is located in Ste. Genevieve County, an attainment area for all criteria pollutants. Part of Jefferson County is a nonattainment area for lead. This installation is not located in the Jefferson County lead nonattainment area.

- Ambient air quality modeling was not performed since potential emissions of the application are below de minimis levels and no appreciable change in off property air quality is expected.
- A Part 70 Operating Permit application revision is required for this project within one (1) year of equipment startup.
- Approval of this permit is recommended with special conditions.

INSTALLATION DESCRIPTION

Holcim is a large cement manufacturer in the United States, with eleven (11) Portland cement plants currently operating across the country. Holcim is a wholly owned subsidiary of Holcim Ltd. of Switzerland. Holcim operates its Ste. Genevieve Plant, a new Portland cement manufacturing facility, east of the township of Danby in Ste. Genevieve County, Missouri.

The Ste. Genevieve Plant employs approximately 220 personnel, and have an annual clinker production capacity of 4,828,074 tons. Based on present specifications in the United States, the Ste. Genevieve Plant has an annual Portland cement production capacity of 5,082,183 tons. Operational units that will accommodate this level of production include an on-site quarry, raw material storage, crushing and milling, solid fuel (coal and petroleum coke) storage and milling, liquid fuel storage, one preheater/precalciner cement kiln system, product milling, product storage, and loading and unloading systems.

Cement manufacturing involves chemical and physical processing of large quantities of raw materials. The raw materials used include sources of calcium, silica, alumina and iron. These are the components necessary for the manufacture of the cement chemicals dicalcium silicate, tricalcium silicate, tricalcium aluminate, and tetra-calcium aluminoferrite. The raw feed is prepared for use in the kiln system by sizing, grinding and blending the various raw materials to produce the necessary mix for quality production. The prepared raw feed is introduced to the kiln system where it is physically and chemically transformed into cement clinker, the intermediate product of Portland cement. In the kiln system, the raw materials are exposed to temperatures reaching up to 3,500° F through a countercurrent process in the kiln and a co-current process in the preheater. The raw materials are heated to 2,650° F, the temperature required to produce quality clinker.

Raw materials utilized for cement kiln feed at the Lee Island plant will be supplied from both on-site and off-site sources. Quarry resources include limestone and shale deposits that will comprise part of the raw material blend to become clinker, the principal product. Holcim will receive other raw materials from off-site suppliers at the Lee Island plant by rail, truck, and barge via the Mississippi River. Materials received from off-site may include limestone, iron ore, clay, bottom ash, fly ash, bauxite, diaspor, gypsum and other materials as necessary. An important source of raw materials is non-hazardous waste materials from other industries that have the proper chemical and physical properties to be used as a raw material source. The Ste. Genevieve Plant is

designed for, and plans to utilize, these types of materials as sources of calcium, silica, alumina and iron. Preparation of raw materials, depending on its source and physical properties, involves primary and secondary crushing, and screening, blending and grinding in the raw mills prior to entrance into the preheater tower of the cement kiln system.

Holcim uses coal and petroleum coke as the primary fuels for the cement manufacturing process at the Ste. Genevieve Plant. Holcim uses a single coal mill to prepare raw coal/coke for firing in the precalciner and the kiln. Solid fuels are at the facility by truck, rail, and river barge. Holcim does not utilize hazardous wastes at the facility.

Liquid oils and similar non-hazardous materials are used as a secondary fuel in critical situations such as start-up and back-up. The facility's equipment design also allows Holcim to beneficially use many other sources of energy bearing, non-hazardous waste materials to fuel the process. As an example, Holcim will use whole or shredded tires as a fuel supplement, when available. As other sources of fuel become available, Holcim will review their chemical and physical properties to assess their potential for providing the necessary thermal energy to the pyroprocess.

The preheater/precalciner pyroprocess is a state-of-the-art design that features five-stage cyclone-type preheater tower, low-NOx precalciners, and a rotary kiln. The preheater/precalciner portion of the system will be located in a tall tower adjacent to the kiln. The low-NOx precalciners will be located at the base of the tower. The precalciners allow the burning fuel to be thoroughly mixed with the kiln feed. Excess heated air from the clinker cooler (tertiary air) will provide combustion air for the precalciners. Preheater/precalciner kilns feature greater thermal efficiency as compared to long dry or long wet kilns. This results in significantly lower emissions and decreased fuel consumption per ton of clinker produced. To increase energy efficiency even further, hot exhaust gases from the preheater tower will be utilized to dry kiln feed in the raw mills and fuel in the coal mill.

Holcim will prepare cooled clinker product for distribution in the finish mill system, which employs four (4) vertical roller mills, dust collectors, material bins and feeders, and material handling equipment. The clinker will be mixed with gypsum and other additives, then ground to prepare Portland cement. The finished product will be loaded into trucks, railcars and barges for shipment to customers.

Virtually all areas of operation at the Ste. Genevieve Plant will incorporate emission controls that serve to prevent air pollutant emissions.

The following New Source Review permits have been issued to Holcim (US) Inc. - Ste. Genevieve Plant from the Air Pollution Control Program.

Table 1: Project History

Project#	Project Type	Status	Description
AP200310026	Banking Requests	ERC Request Approved	Procure ERC Credits
AP200312115	Banking Requests	ERC Request Approved	1.5 T VOC and 318.3T NOx
AP200401042	Banking Requests	ERC Request Approved	Receive 51 Tons VOC from Printpack
AP200401062	Banking Requests	ERC Request Approved	Receive 160 Tons VOC from Dow Chemical
AP200812055	Corrections & Amendments	Amendment Approved	As Built Changes to Original Construction Permit
AP200903079	Temporary or Pilot Plant Permit	Temporary Permit Issued	Crusher and Screen
AP200812062	Special Project	Special Project Complete	Haul Road Dust
AP201003038	Corrections & Amendments	Amendment Approved	NSR Request: Haul Road Operating Times
AP201010037	Applicability Determination Request	No Permit Required	Finish Mill Conveyors - reconfiguration
AP201101034	Corrections & Amendments	Amendment Approved	
AP201106039	Applicability Determination Request	No Permit Required	Tanks
AP201108047	Sec 5 & 6: Deminimis and Minor	Permit Issued	Track-Mounted Crusher
AP201208037	Applicability Determination Request	Permit Required	Barge Loading Spouts
AP201208060	Sec 5 & 6: Deminimis and Minor	Permit Issued	Barge Loading Spouts

PROJECT DESCRIPTION

In order to correct a design flaw, Holcim is proposing to separate the air from the raw material feed belt and the air from the rejects bin of the raw material and add a new collector to each raw mill side. The hot moist dust generated from the mill rejects will be collected in a new set of dust collectors (361-BF2/362-BF2) and the dry ambient dust from the mill feed will continue to be collected in the existing dust collector (331-BF1/332-BF1) system. Dust collection piping will be optimized to reduce dropout and the present dust collectors will be modified to a live bottom screw extraction unit to provide better discharge transportation. The two new dust collectors will also have live bottoms to separate the collected dust before and after the mill rejects are combined with fresh feed. This project does not propose to change the material handling or throughput, other than dust collection.

The new emission points are under roof in the same vicinity as the existing dust collectors. Therefore, they will not impact the off-site concentrations. Here are two site plans with the new and existing dust collector locations indicated. The new dust collectors will sit almost directly below the two existing dust collectors, however they will be within the Link Building, in contrast to the existing collectors which sit on top of the building.

The existing baghouses, upstream of these additional baghouses, are the subjects of the BACT analysis performed as a part of the original Prevention of Significant Deterioration (PSD) permit review. Because of that, these replacement baghouses are equivalent to the BACT standard. They also comply with the NSPS or state requirement, whichever is more stringent. In this case, the BACT equivalent standard is more stringent.

EMISSIONS/CONTROLS EVALUATION

The PM₁₀ emission estimate will be approximately 0.303 pounds per hour per baghouse (see Table 2 below). These baghouse control devices are required as a condition of this permit.

The actual emissions are expected decrease (since the permittee will eliminate the incidence of fugitives when the existing dust collectors plug).

Table 2: Project PM₁₀ Emission Estimate

Dust Collector ID	Model ID	Exhaust Flow Rate (acm/min)	Exhaust Temperature (°C)	Exhaust Flow Rate (dscm/s)	Exhaust Flow Rate (dscm/hr)	Exhaust Flow Rate (dscf/min)	Outlet Grain Loading Rate (gr/dscf)	PM ₁₀ Emission Rate (lb/hr)	PM ₁₀ Emission Rate (tpy)
331BF2	331BF2	292	40	4.17	15,026	6,844	0.004	0.303	1.33
332BF2	332BF2	292	40	4.17	15,026	6,844	0.004	0.303	1.33
Totals:								0.61	2.7

The following table provides an emissions summary for this project. Existing potential emissions were taken from previous construction permit. The PM_{2.5} potential to emit was estimated by using the ratio of reported actual emissions of PM₁₀ to PM_{2.5}. This was done because in many cases the maximum hourly design rate and emission factor method is not applicable. This is due to the extensive use of baghouses and the tested (guaranteed) outlet grain emissions. Existing actual emissions were taken from the installation's 2012 MoEIS. Potential emissions of the application represent the potential of the new equipment, assuming continuous operation (8760 hours per year, refer to Table 2).

Table 3: Emissions Summary (tons per year)

Pollutant	Regulatory <i>De Minimis</i> Levels	Existing Potential Emissions	Existing Actual Emissions (2012 MoEIS)	Potential Emissions of the Application	New Installation Conditioned Potential ¹
PM	25.0	963.1	450.7	2.7	965.8
PM ₁₀	15.0	963.1	450.7	2.7	965.8

¹ The true emission increase is expected to be zero, due to the reduction of fugitive emissions during the previous plugging events.

Pollutant	Regulatory <i>De Minimis</i> Levels	Existing Potential Emissions	Existing Actual Emissions (2012 MoEIS)	Potential Emissions of the Application	New Installation Conditioned Potential ¹
PM _{2.5}	10.0	437.4 ²	208.3	1.6 ³	439.0
SOx	40.0	3,041	327.3	N/A	3,041
NOx With ICT	40.0	5,755 5,194	2,368.8	N/A	5,755 5,194
VOC	40.0	798	281.6	N/A	798
CO	100.0	14,488	1,132.6	N/A	14,488
HAPs ⁴	10.0/25.0	125.8	35.6	N/A	125.8

ICT=Innovative Control Technology

PERMIT RULE APPLICABILITY

This review was conducted in accordance with Section (5) of Missouri State Rule 10 CSR 10-6.060, *Construction Permits Required*. Potential emissions of particulate matter are conditioned below the de minimis levels.

APPLICABLE REQUIREMENTS

Holcim (US) Inc. - Ste. Genevieve Plant shall comply with the following applicable requirements. The Missouri Air Conservation Laws and Regulations should be consulted for specific record keeping, monitoring, and reporting requirements. Compliance with the Specific Requirements, based on information submitted in the application, has been verified at the time this application was approved.

GENERAL REQUIREMENTS

- *Submission of Emission Data, Emission Fees and Process Information*, 10 CSR 10-6.110
- *Operating Permits*, 10 CSR 10-6.065
- *Restriction of Particulate Matter to the Ambient Air Beyond the Premises of Origin*, 10 CSR 10-6.170
- *Restriction of Emission of Visible Air Contaminants*, 10 CSR 10-6.220

² Estimated by using the reported ratio of PM₁₀ to PM_{2.5} values.

³ Estimated by using the reported ratio of PM₁₀ to PM_{2.5} values.

⁴ Does not include HAPs reported as VOC or PMs.

- *Restriction of Emission of Odors*, 10 CSR 10-6.165

SPECIFIC REQUIREMENTS

- *Restriction of Emission of Particulate Matter From Industrial Processes*, 10 CSR 10-6.400
- *MACT Regulations*, 10 CSR 10-6.075
National Emission Standards for Hazardous Air Pollutants From the Portland Cement Manufacturing Industry, 40 CFR Part 63, Subpart LLL

STAFF RECOMMENDATION

On the basis of this review conducted in accordance with Section (5), Missouri State Rule 10 CSR 10-6.060, *Construction Permits Required*, I recommend this permit be granted with special conditions.

Randy E. Raymond
Environmental Technician

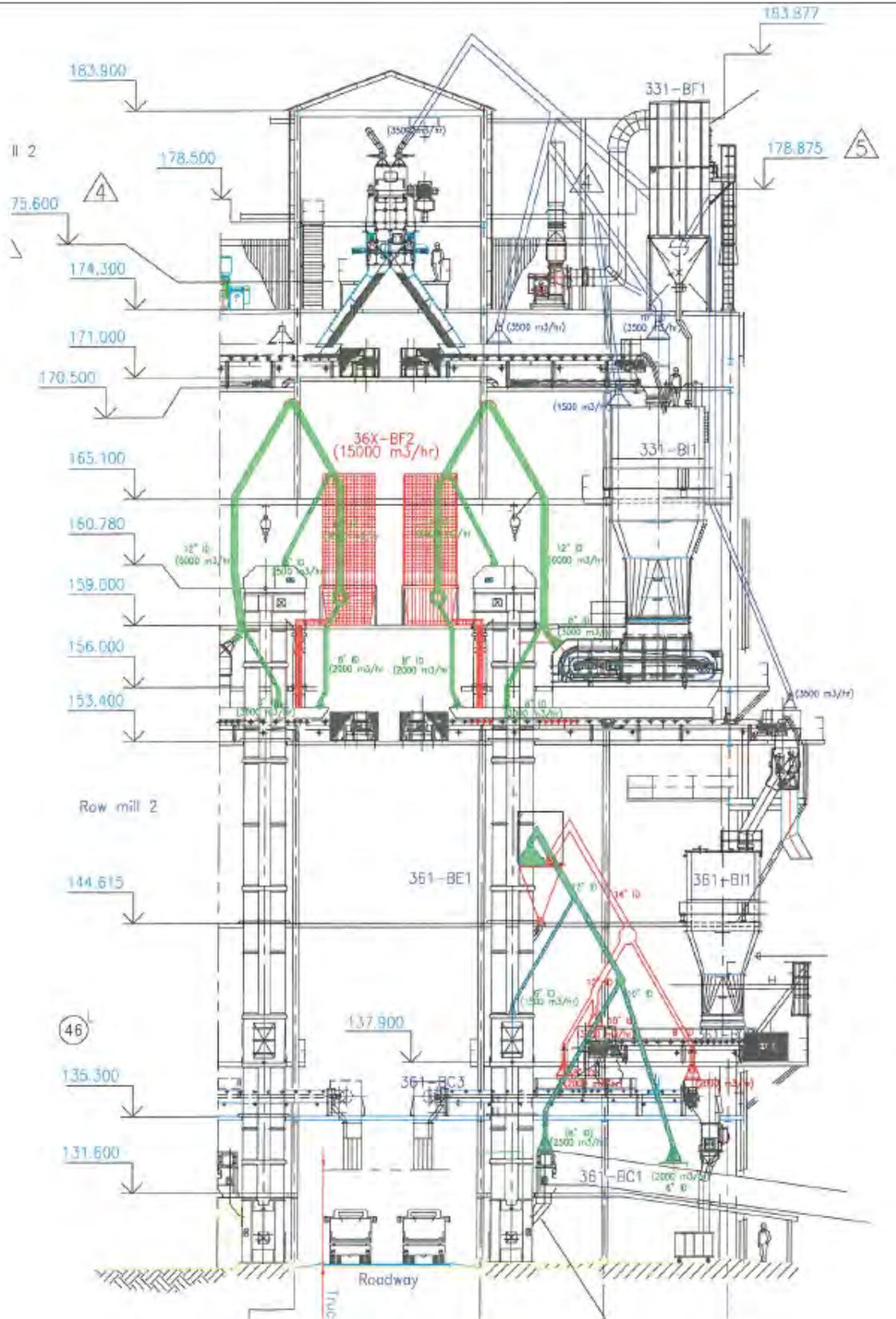
Date

PERMIT DOCUMENTS

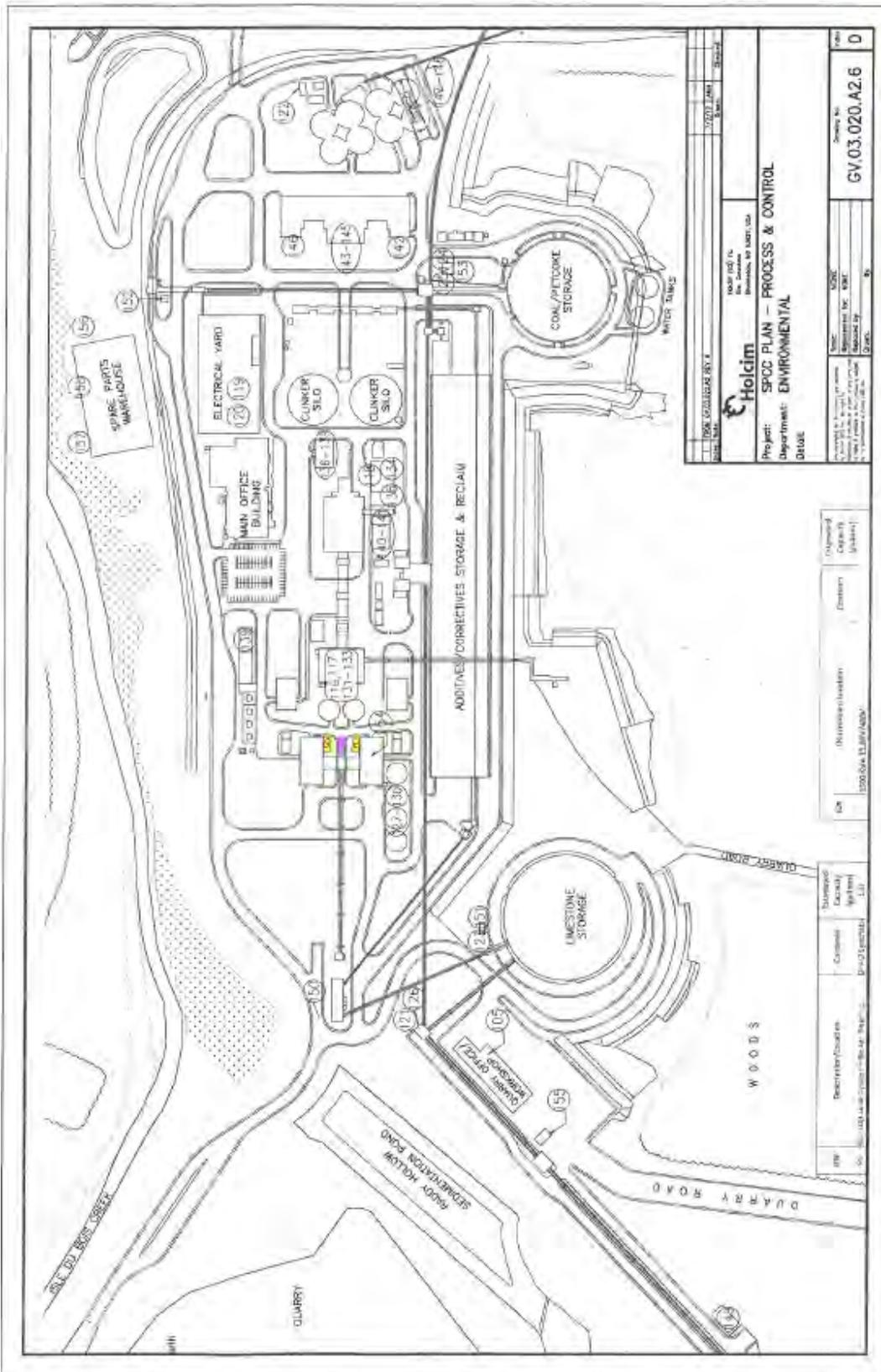
The following documents are incorporated by reference into this permit:

- The Application for Authority to Construct form, dated May 13, 2013, received May 21, 2013, designating Holcim (US) Inc. as the owner and operator of the installation.
- U.S. EPA document AP-42, *Compilation of Air Pollutant Emission Factors*, Fifth Edition.

Attachment A – Baghouse Elevation View



Attachment A – Site Location of Project



EXISTING (2011-01-13) 2011-01-13
 Proposed (2011-01-13) 2011-01-13

APPENDIX A

Abbreviations and Acronyms

%	percent	m/s	meters per second
°F	degrees Fahrenheit	Mgal	1,000 gallons
acfm	actual cubic feet per minute	MW	megawatt
BACT	Best Available Control Technology	MHDR	maximum hourly design rate
BMPs	Best Management Practices	MMBtu	Million British thermal units
Btu	British thermal unit	MMCF	million cubic feet
CAM	Compliance Assurance Monitoring	MSDS	Material Safety Data Sheets
CAS	Chemical Abstracts Service	NAAQS ...	National Ambient Air Quality Standards
CEMS	Continuous Emission Monitor System	NESHAPs	National Emissions Standards for Hazardous Air Pollutants
CFR	Code of Federal Regulations	NO_x	nitrogen oxides
CO	carbon monoxide	NSPS	New Source Performance Standards
CO₂	carbon dioxide	NSR	New Source Review
CO_{2e}	carbon dioxide equivalent	PM	particulate matter
COMS	Continuous Opacity Monitoring System	PM_{2.5}	particulate matter less than 2.5 microns in aerodynamic diameter
CSR	Code of State Regulations	PM₁₀	particulate matter less than 10 microns in aerodynamic diameter
dscf	dry standard cubic feet	ppm	parts per million
EQ	Emission Inventory Questionnaire	PSD	Prevention of Significant Deterioration
EP	Emission Point	PTE	potential to emit
EPA	Environmental Protection Agency	RACT	Reasonable Available Control Technology
EU	Emission Unit	RAL	Risk Assessment Level
fps	feet per second	SCC	Source Classification Code
ft	feet	scfm	standard cubic feet per minute
GACT	Generally Available Control Technology	SIC	Standard Industrial Classification
GHG	Greenhouse Gas	SIP	State Implementation Plan
gpm	gallons per minute	SMAL	Screening Model Action Levels
gr	grains	SO_x	sulfur oxides
GWP	Global Warming Potential	SO₂	sulfur dioxide
HAP	Hazardous Air Pollutant	tpy	tons per hour
hr	hour	tpy	tons per year
hp	horsepower	VMT	vehicle miles traveled
lb	pound	VOC	Volatile Organic Compound
lbs/hr	pounds per hour		
MACT	Maximum Achievable Control Technology		
µg/m³	micrograms per cubic meter		

Ms. Michelle Ferguson
Sr. Environmental Manager
Holcim (US) Inc. - Ste. Genevieve Plant
2942 US Hwy 61
Bloomsdale, MO 63627

RE: New Source Review Permit - Project Number: 2013-05-055

Dear Ms. Ferguson:

Enclosed with this letter is your permit to construct. Please study it carefully and refer to Appendix A for a list of common abbreviations and acronyms used in the permit. Also, note the special conditions, if any, on the accompanying pages. The document entitled, "Review of Application for Authority to Construct," is part of the permit and should be kept with this permit in your files. Operation in accordance with these conditions, your new source review permit application and with your amended operating permit is necessary for continued compliance. The reverse side of your permit certificate has important information concerning standard permit conditions and your rights and obligations under the laws and regulations of the State of Missouri.

If you have any questions regarding this permit, please do not hesitate to contact Randy E. Raymond, at the Department of Natural Resources' Air Pollution Control Program, P.O. Box 176, Jefferson City, MO 65102, or by telephone at (573) 751-4817. Thank you for your attention to this matter.

Sincerely,

AIR POLLUTION CONTROL PROGRAM

Susan Heckenkamp
New Source Review Unit Chief

SH:rrl

Enclosures

c: Southeast Regional Office
PAMS File: 2013-05-055

Permit Number: