

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: 07 2 0 1 0 - 0 0 6

Project Number: 2010-04-067

Parent Company: Sandidge Concrete LLC

Parent Company Address: 58948 Molly Branch Road, Russellville, MO 65074

Installation Name: Sandidge Concrete LLC - Jefferson City

Installation ID: 027-0066

Installation Address: 12415 Renz Farm Road, Jefferson City, MO 65101

Location Information: Callaway County, LG 2666

Application for Authority to Construct was made for:

A stationary 30 ton per hour truck mix concrete plant. 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.

JUL 14 2010

EFFECTIVE DATE

A handwritten signature in black ink, appearing to read "James C. Kavanagh".

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 start up of this (these) air contaminant source(s). 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 start up of this (these) air contaminant source(s).

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 source(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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| Project No. | 2010-04-067 |

**SITE SPECIFIC SPECIAL CONDITIONS:**

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

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*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."*

1. Best Management Practices Requirement  
Sandidge Concrete LLC - Jefferson City shall control fugitive emissions from all of the haul roads and vehicular activity areas at this site by performing Best Management Practices as defined in Attachment AA.
2. Ambient Air Impact Limitation
  - A. Sandidge Concrete LLC - Jefferson City shall not cause an exceedance of the National Ambient Air Quality Standard (NAAQS) for particulate matter less than ten microns in aerodynamic diameter (PM<sub>10</sub>) of 150.0 µg/m<sup>3</sup> 24-hour average in ambient air.
  - B. Sandidge Concrete LLC - Jefferson City shall demonstrate compliance with special condition 2.A using Attachment A or another equivalent form that has been approved by the Air Pollution Control Program, including an electronic form.
3. Control Device Requirement-Baghouse
  - A. Sandidge Concrete LLC - Jefferson City shall control emissions from the equipment listed below using baghouses as specified in the permit application.
    - 1.) Cement Silo
    - 2.) Supplement Silo
    - 3.) Weigh Hopper
    - 4.) Truck Mix Loadout (shroud vented to baghouse)
  - B. The baghouses shall be operated and maintained in accordance with the manufacturer's specifications. The baghouse shall be equipped with a gauge or meter, which indicates the pressure drop across the control device. These gauges or meters shall be located such that the Department of Natural Resources employees may easily observe them.
  - C. 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).

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**SITE SPECIFIC SPECIAL CONDITIONS:**

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

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- D. Sandidge Concrete LLC - Jefferson City shall monitor and record the operating pressure drop across the baghouses at least once every 24 hours. The operating pressure drop shall be maintained within the design conditions specified by the manufacturer's performance warranty.
  
- E. Sandidge Concrete LLC - Jefferson City shall maintain an operating and maintenance log for the baghouses which shall include the following:
  - 1.) Incidents of malfunction, with impact on emissions, duration of event, probable cause, and corrective actions; and
  - 2.) Maintenance activities, with inspection schedule, repair actions, and replacements, etc.
  
- 4. Minimum Distance to Property Boundary Requirement  
The primary emission point shall be located at least 50 feet from the nearest property boundary.
  
- 5. Record Keeping Requirement  
Sandidge Concrete LLC - Jefferson City shall maintain all records required by this permit for five years and make them available to any Missouri Department of Natural Resources personnel upon request.
  
- 6. Reporting Requirement  
Sandidge Concrete LLC - Jefferson City shall report to the Air Pollution Control Program Enforcement Section P.O. Box 176, Jefferson City, MO 65102, no later than ten days after any exceedances of the limitations imposed by this permit.

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

Project Number: 2010-04-067  
Installation ID Number: 027-0066  
Permit Number:

Sandidge Concrete LLC - Jefferson City  
12415 Renz Farm Road  
Jefferson City, MO 65101

Complete: April 26, 2010

Parent Company:  
Sandidge Concrete LLC  
58948 Molly Branch Road  
Russellville, MO 65074  
Callaway County, LG 2666

PROJECT DESCRIPTION

Sandidge Concrete LLC has applied for authority to construct a stationary, truck-mix concrete batch plant rated at 30 tons per hour. The plant is a Stephens Manufacturing Company portable plant being permitted as a stationary plant. The plant is powered from the electric grid. It is equipped with baghouse control at cement and supplement silos, mixer, weigh hopper, and truck loadout. The site is approximately 1 acre in size, and the plant will be located approximately 50 feet from the property boundary. No other plants will be located at this site.

The applicant is using one of the methods described in Attachment AA, "Best Management Practices," to control emissions from haul roads and vehicular activity areas. This installation is located in Callaway County, an attainment area for all criteria pollutants. This installation is not on the List of Named Installations found in 10 CSR 10-6.020(3)(B), Table 2. The installation's major source level is 250 tons per year and fugitive emissions are not counted toward major source applicability. No permits have been issued to Sandidge Concrete LLC - Jefferson City from the Air Pollution Control Program.

TABLES

The table below summarizes the emissions of this project. The potential emissions of the application represent the emissions of all equipment and activities assuming continuous operation (8,760 hours per year).

Table 1: Emissions Summary (tons per year)

| Air Pollutant    | De Minimis Level/ SMAL | <sup>1</sup> Existing Potential Emissions | <sup>2</sup> Uncontrolled Potential Emissions of the Process Equipment | <sup>3</sup> Controlled Potential Emissions of the Application | Conditioned Potential Emissions |
|------------------|------------------------|---|--|--|---------------------------------|
| PM <sub>10</sub> | 15.0                   | N/A                                       | 16.69  | 4.17   | N/A                             |
| SO <sub>x</sub>  | 40.0                   | N/A                                       | N/D  | 0.07   | N/A                             |
| NO <sub>x</sub>  | 40.0                   | N/A                                       | N/D  | 0.59   | N/A                             |
| VOC              | 40.0                   | N/A                                       | N/D  | 0.04   | N/A                             |
| CO               | 100.0                  | N/A                                       | N/D  | 0.34   | N/A                             |
| Total HAPs       | 25.0                   | N/A                                       | N/D  | 0.04   | N/A                             |

N/A = Not Applicable

<sup>1</sup>No existing potential or existing actual emissions as this is a new installation

<sup>2</sup>Excludes haul roads, storage piles, and controls

<sup>3</sup>Includes haul roads, storage piles, and controls

Table 2: Ambient Air Quality Impact Analysis

| Pollutant                     | <sup>1</sup> NAAQS (µg/m <sup>3</sup> ) | Averaging Time | <sup>2</sup> Maximum Modeled Impact (µg/m <sup>3</sup> ) | Limited Impact (µg/m <sup>3</sup> ) | Background (µg/m <sup>3</sup> ) | <sup>3</sup> Daily Limit (tons/day) |
|-------------------------------|---|----------------|--|-------------------------------------|---------------------------------|-------------------------------------|
| <sup>4</sup> PM <sub>10</sub> | 150.0                                   | 24-hour        | 300.08   | 130.0                               | 20.0                            | 356                                 |

<sup>1</sup>National Ambient Air Quality Standards (NAAQS)

<sup>2</sup>Modeled impact at maximum capacity with controls

<sup>3</sup>Indirect limit based on compliance with NAAQS

<sup>4</sup>Solitary operation

## EMISSIONS CALCULATIONS

As of July 1, 2009, potential emissions for construction permit applicability are calculated only considering inherent control devices. Therefore permit need was based upon the plant not operating a baghouse for the cement and supplement silos, weigh hopper, and truck loading. Resulting PM<sub>10</sub> emissions were above the de minimis level.

Emissions for the project were calculated using emission factors found in the United States Environmental Protection Agency (EPA) document AP-42 *Compilation of Air Pollutant Emission Factors, Volume 1: Stationary Point and Area Sources*, Fifth Edition (AP-42).

Emissions from the concrete batch plant were calculated using emission factors from AP-42 Section 11.12 "Concrete Batching," June 2006. This section cites Equation (1) in Section 13.2.4 "Aggregate Handling and Storage Piles," November 2006 for calculating the emissions from aggregate and sand transfer. The cement and supplement silos are controlled with baghouses, so the controlled emission factors were used. Emissions from the aggregate weigh hopper were calculated using AP-42 Section 13.2.4, Equation (1). These emissions are controlled by a baghouse so a 99% control factor was applied to the calculation. Emissions from truck mix loading are controlled by a shroud vented to a baghouse, so the controlled emission factor was used.

Emissions from haul roads and vehicular activity areas were calculated using the predictive equation from AP-42 Section 13.2.2 "Unpaved Roads," November 2006. A 90% control efficiency is applied to the emission calculations for the use of BMPs. Emissions from load-in and load-out of storage piles were calculated using the predictive equation from AP-42 Section 13.2.4. The default moisture content of the aggregate is 0.7% weight. Emissions from wind erosion of storage piles were calculated using an equation found in the Air Pollution Control Program's Emissions Inventory Questionnaire Form 2.8 "Storage Pile Worksheet."

The plant is equipped with a 950,000 Btu per hour propane fired water heater for use in cold months. Emissions from this heater were calculated using the emission factors from AP-42 Section 1.5 "Liquified Petroleum Gas Combustion", July 2008. The site is equipped with a 300 gallon diesel storage tank for refueling concrete delivery trucks. Emissions from the tank were calculated using TANKS software version 4.09D.

### AMBIENT AIR QUALITY IMPACT ANALYSIS

An ambient air quality impact analysis (AAQIA) was performed to determine the impact of the pollutants listed in Table 2. The Air Pollution Control Program requires an AAQIA of PM<sub>10</sub> for all asphalt, concrete, and rock-crushing plants regardless of the level of PM<sub>10</sub> emissions if a permit is required. An AAQIA is required for other pollutants if their emissions exceed their respective de minimis or screening model action level (SMAL). The AAQIA was performed using the Air Pollution Control Program's generic nomographs. For each pollutant that was modeled, the maximum concentration that occurs at or beyond the site boundary was compared to the National Ambient Air Quality Standard (NAAQS) or Risk Assessment Level (RAL) for the pollutant. If during continuous operation the modeled concentration of a pollutant is greater than the applicable NAAQS or RAL, the plant's production is limited to ensure compliance with the standard.

This plant uses BMPs to control emissions from haul roads and vehicular activity areas, so emissions from these sources were not included in the AAQIA. Instead they were addressed as a background concentration of 20 µg/m<sup>3</sup> of PM<sub>10</sub> in accordance with the Air Pollution Control Program's BMPs interim policy.

### 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 PM<sub>10</sub> are conditioned below de minimis levels by complying with the NAAQS.

### APPLICABLE REQUIREMENTS

Sandidge Concrete LLC - Jefferson City 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 these emission standards, 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. The emission fee is the amount established by the Missouri Air Conservation Commission annually under Missouri Air Law 643.079(1). Submission of an Emissions Inventory Questionnaire (EIQ) is required June 1 for the previous year's emissions.
- No Operating Permit is required for this installation.
- *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
- *Restriction of Emission of Odors*, 10 CSR 10-3.090

## SPECIFIC REQUIREMENTS

- None of the New Source Performance Standards (NSPS) apply to the installation.
- None of the National Emission Standards for Hazardous Air Pollutants (NESHAPS) or National Emission Standards for Hazardous Air Pollutants for Source Categories (MACTS) apply to the proposed equipment.

## 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.

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David Little  
Environmental Engineer

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Date

## PERMIT DOCUMENTS

The following documents are incorporated by reference into this permit:

- The Application for Authority to Construct form April 20, 2010, received April 26, 2010, designating Sandidge Concrete LLC as the owner and operator of the installation.
- U.S. EPA document AP-42, *Compilation of Air Pollutant Emission Factors*, Fifth Edition.
- Northeast Regional Office Site Survey, dated May 12, 2010.



## Attachment AA: Best Management Practices

Haul roads and vehicular activity areas shall be maintained in accordance with at least one of the following options when the portable plant is operating.

1. Pavement
  - A. The operator shall pave the area with materials such as asphalt, concrete or other materials approved by the Air Pollution Control Program. The pavement will be applied in accordance with industry standards to achieve control of fugitive emissions<sup>1</sup> while the plant is operating.
  - B. Maintenance and repair of the road surface will be conducted as necessary to ensure that the physical integrity of the pavement is adequate to achieve control of fugitive emissions from these areas while the plant is operating.
  - C. The operator shall periodically wash or otherwise clean all of the paved portions of the haul roads as necessary to achieve control of fugitive emissions from these areas while the plant is operating.
  
2. Application of Chemical Dust Suppressants
  - A. The operator shall apply a chemical dust suppressant (such as magnesium chloride, calcium chloride, lignosulfonates, etc.) to unpaved areas.
  - B. The quantities of the chemical dust suppressant shall be applied and maintained in accordance with the manufacturer's recommendation (if available) and in sufficient quantities to achieve control of fugitive emissions from these areas while the plant is operating.
  - C. The operator shall record the time, date and the amount of material applied for each application of the chemical dust suppressant agent on the above areas. The operator shall keep these records with the plant for not less than five (5) years and make these records available to Department of Natural Resources personnel upon request.
  
3. Application of Water-Documented Daily
  - A. The operator shall apply water to unpaved areas. Water shall be applied at a rate of 100 gallons per day per 1,000 square feet of unpaved or untreated surface area while the plant is operating.
  - B. Precipitation may be substituted for watering if the precipitation is greater than one quarter of one inch and is sufficient to control fugitive emissions.
  - C. Watering may also be suspended when the ground is frozen, during periods of freezing conditions when watering would be inadvisable for traffic safety reasons, or when there will be no traffic on the roads.
  - D. The operator shall record the date, volume of water application and total surface area of active haul roads or the amount of precipitation that day. The operators shall also record the rationale for not watering (e.g. freezing conditions or not operating).
  - E. The operator shall keep these records with the plant for not less than five (5) years, and the operator shall make these records available to Department of Natural Resources personnel upon request

<sup>1</sup>For purposes of this document, Control of Fugitive Emissions means to control particulate matter that is not collected by a capture system and visible emissions to the extent necessary to prevent violations of the air pollution law or regulation. (Note: control of visible emission is not the only factor to consider in protection of ambient air quality.)

**Attachment BB: Emission Calculations**  
Sandidge Concrete LLC - Jefferson City  
2010-04-067

| Description                       | <sup>1</sup> MHDR | MHDR Units  | <sup>2</sup> PM <sub>10</sub> EF | EF Units    | Control Eff. % | Emissions (lb/hr) | <sup>3</sup> Modeling Rate (lb/hr) |
|-----------------------------------|-------------------|-------------|----------------------------------|-------------|----------------|-------------------|------------------------------------|
| Aggregate Transfer MC 0.7         | 14.10             | tph         | 0.01199                          | lb/ton      | 0.00           | 0.17              | 0.084                              |
| Sand Transfer MC 4.17             | 10.50             | tph         | 0.00099                          | lb/ton      | 0.00           | 0.01              | 0.005                              |
| Cement Unloading to Silo          | 3.60              | tph         | 0.00034                          | lb/ton      | 0.00           | 0.00              | 0.001                              |
| Supplement Unloading (pneumatic)  | 0.60              | tph         | 0.00490                          | lb/ton      | 0.00           | 0.00              | 0.001                              |
| Weight Hopper Loading             | 24.60             | tph         | 0.00565                          | lb/ton      | 99.00          | 0.00              | 0.001                              |
| Truck Mix Loading                 | 4.20              | tph         | 0.01600                          | lb/ton      | 0.00           | 0.07              | 0.033                              |
| Storage Pile - Load In MC 0.7     | 24.60             | tph         | 0.01200                          | lb/ton      | 0.00           | 0.30              | 0.146                              |
| Storage Pile - Load Out MC 0.7    | 24.60             | tph         | 0.01200                          | lb/ton      | 0.00           | 0.30              | 0.146                              |
| Storage Pile - Wind Erosion       | 0.70              | acres       | 0.08917                          | lb/acre-hr  | 0.00           | 0.06              | 0.031                              |
| Storage Pile - Vehicular Activity | 0.04              | VMT/hr      | 2.403682                         | lb/VMT      | 90.00          | 0.01              | 0.005                              |
| Haul Road material                | 0.05              | VMT/hr      | 2.12840                          | lb/VMT      | 90.00          | 0.01              | 0.005                              |
| Haul Road product                 | 0.08              | VMT/hr      | 2.26350                          | lb/VMT      | 90.00          | 0.02              | 0.009                              |
| Propane Fueled Water Heater       | 0.01              | 1000 gal/hr | 0.70000                          | lb/1000 gal | 0.00           | 0.01              | 0.004                              |

<sup>1</sup>Maximum Hourly Design Rate (MHDR)

<sup>2</sup>Emission Factor (EF)

<sup>3</sup>The Modeling Rate is the emission rate scaled to the daily hours of operation at the MHDR allowed by the permit.