

217/785-1705

CONSTRUCTION PERMIT/PSD APPROVAL
REVISED

PERMITTEE

U.S. Steel Granite City
Attn: Bryan Kresak, Environmental Director
Route 203 and 20th Street
Granite City, Illinois 62040

<u>Application/Permit No.:</u> 95010001	<u>I.D. No.:</u> 119813AAI
<u>Applicant's Designation:</u>	<u>Date Orig. Issued:</u> January 25, 1996
<u>Subject:</u> Production Increase	
<u>Date Revision Request:</u> May 30, 2012	
<u>Date Revision Issued:</u> December 17, 2012 (See Finding 1(c))	
<u>Location:</u> Southeastern Granite City	

Permit is hereby granted to the above-designated Permittee for an increase in the allowable production rate of iron (from 2,372,500 to 3,165,000 net tons per year) and steel (from 2,774,000 to 3,580,000 net tons per year) as described in the above-referenced application. This permit is subject to standard conditions attached hereto and the following special conditions:

FINDINGS

- 1a. Various changes have been made to the provisions of this permit for the Basic Oxygen Furnaces (BOF's), at the request of the Permittee, so that the permit will accommodate an emission reduction project that is planned for particulate emissions from the BOFs. In particular, the revised permit does not include requirements for the operation of these BOF's and the existing electrostatic precipitator (ESP) control system that would be inconsistent with the use of a separate control system with a baghouse for secondary emissions of the BOFs, as is now planned (see Construction Permit Application 11050006).
- b. Prior to issuance of this revised permit, a draft of the revised permit underwent a public comment period, including a public hearing.
- c. This revised permit will become effective 33 days after the date of issuance unless a petition for review is filed, in accordance with 40 CFR Part 124, with the USEPA's Environmental Appeals Board (Board), in which case, this revised permit will only take effect when and if the Board declines the petition for review or the Board issues a decision on the merits of the appeal that does not include a remand of the proceeding.

BLAST FURNACE OPERATIONS

- 2a. Total combined production of hot metal (a.k.a., iron) from blast furnaces A and B shall not exceed 9,849 net tons per day, averaged over any calendar month, and;

- b. Total combined production of hot metal from blast furnaces A and B shall not exceed 3,165,000 net tons per year.
- 3a. Particulate emissions from the blast furnace casthouse baghouse and iron spout baghouse shall not exceed 0.010 gr/dscf, pursuant to 35 Ill. Adm. Code 212.445(b)(1).
- b. The opacity of emissions from the blast furnace casthouse baghouse and the iron spout baghouse shall not exceed 10% on a 6 minute rolling average basis, pursuant to 35 Ill. Adm. Code 212.445(b)(1).
- 4a. Emissions of particulate matter from any opening in the blast furnace casthouse shall not exceed 20% opacity on a 6-minute rolling average basis beginning from initiation of the opening of the tap hole up to the point where iron and slag stops flowing in the troughs, pursuant to 35 Ill. Adm. Code 212.445(a)(2).
- 5. Emissions from Blast Furnace operations shall not exceed the limits in attached Tables 1 and 5.

BASIC OXYGEN FURNACE SHOP

- 6a. Total combined production of liquid steel from the Basic Oxygen Furnaces (BOF's) shall not exceed 11,000 net tons per day, averaged over any calendar month; and
- b. Total combined production of liquid steel from the BOF's shall not exceed 3,580,000 net tons per year.
- 7. The emissions of PM-10 from the BOF stack for the total of all BOF processes (i.e., operations from the beginning of the charging process through the end of the tapping process) shall not exceed 60.0 lbs/hour and 0.225 lbs per ton of steel in process, pursuant to 35 Ill. Adm. Code 212.458(b)(23).
- 8. Opacity of emissions from any opening in the BOF shop (e.g., roof monitor) shall not exceed 20% on a 3 minute rolling average basis, pursuant to 35 IAC 212.446(c).
- 9. The Permittee shall operate and maintain the BOF's and associated capture and control systems in accordance with applicable requirements of the National Emission Standards for Hazardous Air Pollutants for Integrated Iron and Steel Manufacturing Facilities, 40 CFR 63 Subpart FFFFF, including requirements for operational monitoring, performance testing for opacity and emissions of particulate matter,* operation of capture and control systems within established limits for operating parameters, implementation of specified operation and maintenance practices, recordkeeping and reporting.

* As related to testing of emissions, if the Permittee is not willing to consider all particulate matter measured by testing to be PM₁₀, as provided for by 35 IAC 212.108(a)(3), performance tests for emissions

of particulate matter shall also include measurements for emissions of PM_{10} in accordance with 35 IAC 212.108(a)(1) or (2).

Note: This condition requires the Permittee to comply with the operating and maintenance requirements of 40 CFR 63 Subpart FFFFF as the means to verify ongoing compliance with the requirements of Conditions 7 and 8 and to address implementation of good air pollution control practice for the BOF's.

(Former Condition 10 has been removed in this revised permit.)

- 11a. Flame suppression shall be used and maintained during the entire tapping process.
 - b. The above requirement for flame suppression and the various requirements for the BOF's in Condition 12 and 13 shall end after the Permittee begins operation of a capture and control system for secondary emissions from the BOF's that makes these requirements infeasible or unnecessary, as explicitly recognized by Construction Permit 11050006 or other construction permit issued by the Illinois EPA for a capture and control system for secondary emissions.
- 12a. Except for purposes of emissions testing as related to the set points for the capture system for the BOF's, this capture system shall be operated at the following minimum set points for gas flow rate in the ESP stack until and unless the Illinois EPA approves lower minimum set point(s) based on a demonstration that a better level of particulate matter capture efficiency would now be achieved by the charging hoods and primary hoods.
 - b. Set points requirements while only a single BOF vessel is in operation:
 - i. Minimum set point during charging process: 550,000 cfm.
 - ii. Minimum set point during refining process: 650,000 cfm.
 - iii. Minimum set point during tapping process: 200,000 cfm (until one minute after completing alloy addition).
 - c.
 - i. During dual operation of BOF vessels (a.k.a., overlapping BOF operation), the minimum set point shall be 700,000 cfm.
 - ii. In addition, overlapping operation of the BOF vessels is subject to the following requirements. These requirements shall be part of the Standard Operating Procedure for the BOFs.
 - A. The hot metal charge of the second vessel shall be initiated and completed during the time between completion of the blow and start of tap on the first vessel while sufficient draft at the ESP capture system is established and maintained for both vessels.

- B. The charge and/or blow on one vessel shall not begin until sufficient draft has been established at the associated ESP capture system (a.k.a., doghouse) and the alloy addition at the vessel tapping has been completed for a least 1 minute.
 - C. Sufficient draft at the ESP capture system of the vessel being tapped shall be maintained for at least 1 minute after alloy addition has been completed. After such period, the capture system draft may be transferred over to the other.
 - D. Only overlapping of the hot metal charge of the second vessel after the end of blow and prior to onset of tap of the first vessel and overlapping of tapping of the first vessel, after alloy addition, and the hot metal charge and/or blow on the second vessel are allowed.
- 13a. i. The Permittee shall operate, maintain and calibrate a continuous operational monitor to ESP stack gas flow rate.
- ii. The Permittee shall record for each steel production cycle the various stack gas flow rates for each process (i.e., for each charge, each refine, each tap) of each steel production cycle. That is, the Permittee shall be able to distinguish the measured flow rate of stack gas during each production cycle.
- b. i. The Permittee shall operate and maintain a continuous operational monitor for waste gas suction, i.e., the static pressure in the main downcomer duct of the ESP.
- ii. The Permittee shall record the waste gas suction for each process (i.e., for each charge, each refine, each tap) of each steel production cycle.
- c. These monitoring systems shall be calibrated on at least a quarterly basis.
- d. These monitoring systems shall be operated at all times that a BOF is in operation and shall be used as mechanisms to ensure sufficient draft is maintained in the emissions capture hoods and transport ducts.

(Former Conditions 14 through 17 have been removed in this revised permit.)

18. Emissions from the BOF Shop shall not exceed the limits in attached Tables 2 and 5.

(The note that previously accompanied Condition 18 has been removed in this revised permit.)

CONTINUOUS CASTING OPERATIONS

19. The continuous casting operations shall comply with 35 Ill. Adm. Code 212.450 and 212.458(b)(8).

20. Emissions from the continuous casting operations shall not exceed the limits in Tables 3 and 5.

FUEL COMBUSTION

21. Total fuel usage for blast furnace stoves (A and B), boiler house boilers (1-10), blast furnace boilers (11 and 12), ladle drying preheaters and blast furnace gas flares shall not exceed the following limits:
 - a. Natural Gas usage: 225 million ft³ per month and 1,346 million ft³ per year;
 - b. Blast Furnace Gas (BFG) usage: 30,800 million ft³ per month and 185,030 million ft³ per year;
 - c. Fuel Oil usage: 60 thousand gallons per month and 365 thousand gallons per year.
22. Emissions from the fuel combustion units listed above shall not exceed the limits in Tables 4 and 5.

ON-SITE FUGITIVE DUST CONTROL

(Refer to Attachment B for a table which summarizes the required on-site fugitive dust roadway control measures and maps indicating the referred to road segments)

23. The Permittee shall immediately initiate and maintain the on-site fugitive dust control measures specified in this permit so as eliminate dust spillage on in-plant and out-of-plant roadways.
- 24a. The Permittee shall sweep or flush at least every day the paved access area below the BOF ESP where ESP dust collection bags are used, stored and transported.
 - b. The Permittee shall implement a housekeeping program for the non-roadway areas below and around the BOF ESP. This program shall, at a minimum, contain the following:
 - i. The ground and other accessible areas where dust may gather shall be swept or cleaned at least every day;
 - ii. Cleaning shall be performed in such a manner as to minimize the escape of dust into the atmosphere;
 - iii. Dust collection bags shall be inspected at least daily for rips, tears, or insecure connection to the discharge chutes of the ESP hoppers;
 - iv. Dust collection bags shall be inspected after removal from, and connection to, the discharge chutes of the ESP hoppers;

- v. Ripped or torn bags shall be taken out of service and transported as soon as practicable in a covered truck.
25. Fugitive emissions of particulate matter from any roadway or parking area shall not exceed an opacity of 5%, pursuant to 35 Ill. Adm. code 212.316(e)(1).
- 26a. UNPAVED ROADS: On unpaved roads that are part of normal traffic patterns as identified in attachment B (including roads B, C, E, N, F-F, and CS(2)) the Permittee shall apply a chemical dust suppressant at least three times a month, with the following exceptions:
- i. Road segment G-G, which shall be sprayed at least quarterly;
 - ii. Road segments P, V, Z, D-D, E-E, and H, which shall be sprayed at least 4 times per month until paving is completed. Paving shall be completed on these roads no later than July 31, 1996;
 - iii. Road segment L, which shall be sprayed at least 4 times per month.
- b. All other unpaved roads shall be treated as necessary.
- c. Applications of suppressant may be less frequent than specified above if weather conditions, i.e., precipitation or temperature, interfere with the schedule for spraying, provided each such instance shall be recorded in accordance with the daily records for on-site fugitive dust control required by this permit.
- 27a. PAVED ROADWAYS AND AREAS: Paved roadways and areas shall be maintained in good condition.
- b. On paved roadways and other areas, the Permittee shall sweep or flush as follows:
- i. Road segments D, K, M, F, G, J, R, and O shall be swept or flushed at least daily;
 - ii. Road segments P, V, W, X, Z, D-D, E-E, and CS(1) shall be swept or flushed at least five days per week;
 - iii. Road segments S and T shall be swept or flushed at least every other day;
 - iv. Road segments A and H shall be swept or flushed at least once per month;
 - v. All gate areas leading from the Steelworks area shall be swept or flushed at least daily;
 - vi. All gate areas leading from the iron making area shall be swept or flushed at least five times per week.

28. The above on-site dust control measures shall be conducted to maximize their effectiveness by performing said measures when the roads or areas are not normally obstructed by parked vehicles and by preferentially using filter sweeping (e.g., Enviro-Whirl sweeper) for the gate areas, the roads and areas surrounding the BOF and BOF ESP, and other key areas.
29. The Permittee shall maintain daily records relative to the on-site fugitive dust control program which includes the following information as a minimum:
 - a. The date (and time for the gate areas) each road or area was treated;
 - b. The manner in which the road or area was treated (i.e., filter sweep, conventional sweep, suppressant spray or flush);
 - c. Detailed information for use of dust suppressant, including but not limited to the application rate, dilution ratio, type of suppressant used, and the number of gallons of suppressant applied;
 - d. Observations, if any, concerning the condition of the roadway, e.g., presence of parked vehicles, detection of potholes;
 - e. The amount of precipitation and temperature recorded for each day, and if determination was made to suspend application of suppressant, include name and title of person who made determination to suspend application and explanation;
 - f. Any and all suspensions or deviations from the designated control procedures, with date, description, and explanation for suspension of application.

OFF-SITE FUGITIVE DUST CONTROL

30. The Permittee or the Permittee's Agent shall sweep or flush the following Granite City street road areas:
 - a. At least weekly, the quarter mile segment of Madison Avenue in front of the 16th street gate (i.e., 1/8 of a mile in either direction);
 - b. At least weekly, segment of 20th street between Lee and Quincy roads;
 - c. At least monthly, segment of 20th street between Madison and Route 203 (a.k.a. Edwardsville Road).

PM₁₀ CONTINGENCY MEASURES

31. The Permittee shall comply with the additional control measures (e.g., PM₁₀ contingency plan) required by 35 Ill Adm. Code Part 212 Subpart U.

COMPLIANCE DETERMINATIONS

- 32a. Compliance with the daily limits of this permit shall be determined from a monthly total of the relevant daily data divided by the number of days in the month.
- b. Compliance with the monthly limits of this permit (e.g., fuel usage) shall be determined by direct comparison of monthly data to the applicable limit.
- c. i. Compliance with the annual limits of this permit shall be determined based on a calendar year.
- ii. A. Compliance with the production limits in conditions 2(b) and 6(b) shall also be determined on a month by month basis by showing that the actual production of iron and steel from the plant did not exceed the scheduled rate of production for a month given in the most recent production schedule provided to the Agency that shows compliance with the following requirements.
- B. If no production schedule is submitted to the Agency by the Permittee for a particular year, the scheduled monthly production of iron and steel shall be set at one twelfth of the annual production limits in conditions 2(b) and 6(b).
- C. 1. The Permittee may submit a schedule for iron and steel production for each month of the calendar year. Such schedule shall provide the scheduled monthly iron and steel production for each month and the total of such scheduled production shall not exceed the annual production limits in conditions 2(b) and 6(b). This schedule shall be submitted each year no later than December 15th of the preceding year.
2. During the course of the year, the Permittee may submit a revised production schedule which accounts for actual production levels which were below that scheduled for the previous months, provided that in no case shall the scheduled production for prior months in such a revised schedule be lowered to less than actual production levels or raised. Such revised schedule shall be submitted to the Agency no later than 15 days after the first day of the month for which scheduled production has been raised. Such schedule shall be accompanied by data on actual production in preceding months.

(Former Condition 33 has been removed from this revised permit.)

- 34a. Blast furnace hot metal production shall be measured at the BOF hot metal transfer station, and adjusted by documented slag and iron losses.
- b. BOF liquid steel production shall be initially measured by a scale equipped crane and adjusted based upon documented steel production analysis of the continuous casters.
- c. BFG usage shall be calculated based on the total BFG produced per net ton hot metal (NTHM) derived by the following formula and adjusted per analysis of documented BFG consumptions:

$$\text{mmft}^3 \text{ BFG per month} = \frac{(4.585277 \text{ NTHM/day} + 498.191)}{80} \times \left(\begin{array}{c} \text{Number of} \\ \text{days in} \\ \text{that month.} \end{array} \right)$$

- d. Natural gas usage shall be determined by metered volumes.
- e. Fuel oil usage shall be determined by tank height differentials.

RECORD KEEPING

- 35. The Permittee shall keep records of the following items and such other items which may be appropriate to allow the Agency to review compliance:
 - a. Blast Furnace hot metal production (total combined daily, monthly and annual in tons), including documentation on iron and slag losses;
 - b. BOF liquid steel production (total combined daily, monthly and annual in tons), including documentation on adjustments made due to production analysis and losses;
 - c. Fuel usage as follows; Usage of natural gas and BFG (total combined million ft³ per month and year, each) and fuel oil (total combined gallons/month and year) for the blast furnace stoves (A and B), boiler house boilers (1-10), blast furnace boilers (11 and 12), ladle drying preheaters and blast furnace gas flares.
- 36. All records and logs required by this permit shall be retained at a readily accessible location at the source for at least three years from the date of entry and shall be made available for inspection and copying by the Agency and USEPA upon request. Any records retained in a computer shall be capable of being retrieved and printed on paper during normal source office hours so as to be able to respond to an Agency request for records during the course of a source inspection.

TESTING

37. The special conditions of this permit supplement the special conditions of any existing operating permits for this source as of January 15, 1996 and supersede such conditions in cases where a conflict exists.
- 38a. The following tests shall be performed by no later than August 6, 1997 to demonstrate compliance with the conditions of this permit.
- i. Fuel Combustion Units testing: The emissions of particulate matter from boiler #12 while burning blast furnace gas shall be measured. This test shall be designed to verify compliance with the requirements of this permit and the emission factor used (i.e., 2.9 lbs particulate emitted per mmcf BFG burned);
 - b. The test shall be performed by an approved independent testing service during conditions which are representative of maximum emissions and at the maximum production rates allowed, or as close to such rates as reasonable if the Permittee demonstrates to the Agency prior to testing that testing at such production rates within the time constraints of an Agency request to test is not practicable.
 - c. i. The following methods and procedures shall be used for the testing, unless another method is approved by the Agency: Refer to 40 CFR 60, Appendix A for USEPA test methods;

Location of sample points	USEPA Method 1
Gas flow and velocity	USEPA Method 2
Particulate Matter	USEPA Method 5
 - ii. All particulate measured shall be considered PM-10 unless emissions are tested by an appropriate USEPA test method for measurement of PM-10, as specified in 35 Ill. Adm. Code 212.110(e).
 - d. At least 30 days prior to the actual date of testing, a written test plan shall be submitted to the Agency for review and approval. This plan shall describe the specific procedures for testing, including as a minimum:
 - i. The persons who will be performing sampling and analysis and their experience with similar tests;
 - ii. The specific conditions under which testing will be performed including a discussion of why these conditions will be representative of maximum emissions and the means by which operating parameters for the source and the emissions capture and control system will be determined;
 - iii. The specific determinations of emissions and operation which are intended to be made, including sampling and monitoring locations;
 - iv. The test methods which will be used, with the specific analysis methods;

- v. Any proposed use of an alternative test method, with detailed justification;
- vii. The format and content of the Source Test Report.
- e. The Agency shall be notified before these tests to enable the Agency to observe these tests. Notification for the expected date of testing shall be submitted a minimum of thirty (30) days prior to the expected date. Notification of the actual and expected time of testing shall be submitted a minimum of five (5) working days prior to the actual date of the test. The Agency may at its discretion accept notifications with shorter advance notice provided that the Agency will not accept such notifications if it interferes with the Agency's ability to observe testing.
- f. The Final Report of these tests shall include as a minimum:
 - i. A tabular summary of results which includes:
 - process weight rate and/or fuel usage rate
 - production rate
 - allowable emission limit
 - measured emission rate
 - determined emission factor
 - compliance demonstrated - Yes/No
 - any other pertinent information
 - ii. Description of test methods and procedures used, including description of sampling train, analysis equipment, and test schedule;
 - iii. Detailed description of test conditions, including,
 - pertinent process information (e.g. fuel or raw material consumption)
 - control equipment information, i.e. equipment condition and operating parameters during testing;
 - iv. Data and calculations, including copies of all raw data sheets and records of laboratory analyses, sample calculations, and data on equipment calibration;
- g. Copies of the Final Report for these tests shall be submitted to the Agency within 14 days after the test results are compiled and finalized.
- h. Submittals of information shall be made as follows:
 - i. Notice of Test - one copy to Source Emission Test Specialist, one copy to Regional Office, and one copy to Permit Section;
 - ii. Final Report - one copy to Source Emission Test Specialist, one copy to Regional Office, and one copy to Permit Section.

Pertinent Addresses are:

Illinois Environmental Protection Agency
Division of Air Pollution Control
9511 West Harrison
Des Plaines, Illinois 60016

Illinois Environmental Protection Agency
Division of Air Pollution Control
Regional Office
2009 Mall Street
Collinsville, Illinois 62234

Illinois Environmental Protection Agency
Division of Air Pollution Control
Attn: Permit Section
P.O. Box 19506
Springfield, Illinois 62794-9506

(Condition 38 required emission testing following the initial operation of the source with the expansion that has already been conducted by the Permittee. This revised permit does not require that this testing be repeated.)

REPORTING

39. Unless otherwise provided for by the provisions for reporting of deviations in the Clean Air Act Permit Program (CAAPP) permit for the source, if there is a deviation from the requirements of this permit, the Permittee shall submit a report to the Illinois EPA within 30 days after the deviation. The report shall include a description of the deviation, the probable cause of the deviation, the corrective actions that were taken and any preventative measures taken to prevent similar deviations in the future.
40. The Permittee shall submit the following additional information from the prior calendar year with the Annual Emissions Report, due May 1st of each year:
 - a. Iron and steel production (tons/month and tons/year, each);
 - b. Natural gas and BFG usage (mmft³/month and mmft³/year, each);
 - c. Fuel oil usage (thousand gallons/month and thousand gallons/year, for each type of oil).

APPLICABILITY OF MAJOR SOURCE RULES

- 41a. As a consequence of the above conditions, this permit is issued based upon the following changes in emissions, as further described in Table 6, accompanying increased production as allowed by this permit:

- i. The increases in emissions of lead and VOM are not significant under 35 Ill. Adm. Code Part 203 or 40 CFR 52.21 - Prevention of Significant Deterioration;
- ii. The increase in emissions of NO_x are being accompanied by contemporaneous emission decreases provided by the shutdown of equipment and operations such that the net emissions change is not significant under 35 Ill. Adm. Code Part 203 or 40 CFR 52.21 - Prevention of Significant Deterioration.
- iii. The increase in emissions of PM and PM-10 are being accompanied by contemporaneous emission decreases provided by additional road dust control and BOF capture and control such that the net emissions change is not significant under 35 Ill. Adm. Code Part 203 or 40 CFR 52.21 - Prevention of Significant Deterioration.

Also, the Permittee has agreed to provide further additional dust control consisting of the sweeping of Granite City public streets and housekeeping measures in the area below and surrounding the BOF ESP. Attachment C is a listing of the emission reductions provided by these control measures.

- b. The increases in emissions of SO₂ and CO are significant under 40 CFR 52.21 - Prevention of Significant Deterioration (PSD). Accordingly, the project is considered a major modification and must comply with the requirements of PSD. These requirements include a demonstration of best available control requirements for affected SO₂ and CO emission units, an analysis of air quality impacts, an analysis of the impacts of the project on visibility, vegetation's and soils, and the application and proposed permit must undergo a public participation. The Agency has determined that these additional requirements have been met.
- c. The changes in emissions pertinent to this project are summarized as follows:

Units = tons/year

- Emission increases which could occur from the project:

<u>PM₁₀</u>	<u>PM</u>	<u>NO_x</u>	<u>SO₂</u>	<u>CO</u>	<u>VOM</u>	<u>Lead</u>
51.6	-52.0	238.8	476.0	5,685	59.3	0.54

- Creditable contemporaneous actual emission decreases:

<u>PM₁₀</u>	<u>PM</u>	<u>NO_x</u>	<u>SO₂</u>	<u>CO</u>	<u>VOM</u>	<u>Lead</u>
58.0	58.0	226.5	0.38	23.31	32.8	0.0

- Other contemporaneous emission increases:

<u>PM₁₀</u>	<u>PM</u>	<u>NO_x</u>	<u>SO₂</u>	<u>CO</u>	<u>VOM</u>	<u>Lead</u>
20.7	20.3	26.0	0.25	11.8	1.6	0.0

- Net emission changes:

<u>PM₁₀</u>	<u>PM</u>	<u>NO_x</u>	<u>SO₂</u>	<u>CO</u>	<u>VOM</u>	<u>Lead</u>
+14.3	-89.2	+38.3	+475.9	+5,673	+28.1	+0.54

- Significant Levels:

<u>PM₁₀</u>	<u>PM</u>	<u>NO_x</u>	<u>SO₂</u>	<u>CO</u>	<u>VOM</u>	<u>Lead</u>
15	25	40	40	100	40	0.6

Explanatory Note:

PM	=	particulate matter = particulate;
PM ₁₀	=	particulate matter less than or equal to 10 micrometers in size;
SO ₂	=	sulfur dioxide;
NO _x	=	nitrogen oxides;
VOM	=	volatile organic material;
CO	=	carbon monoxide;
mm	=	million;
gr/dscf	=	grains per dry standard cubic foot;
acfm	=	actual cubic feet per minute;
mmcf	=	million cubic feet;
Mgal	=	thousands of gallons.

If you have any questions on this permit, please call Kevin Smith at 217/782-7048.

Edwin C. Bakowski, P.E.
 Manager, Permit Section
 Division of Air Pollution Control

Date Signed: _____

DES:KLS:psj

cc: IEPA, FOS Region 3

TABLE 1

BLAST FURNACE OPERATIONS

Maximum Hot Metal Production = 3,165,000 net tons per year

1. Casthouse Baghouse (furnace tapping) - captured emissions ducted to baghouse, uncaptured emissions emitted through roof, other openings, etc.

<u>Pollutant</u>	<u>Emission Factor (Lbs/Ton)</u>	<u>Maximum Emissions (Tons/Year)</u>
PM	0.0703	111.19
PM ₁₀	0.0703	111.19
SO ₂	0.2006	422.00
NO _x	0.0144	22.79
VOM	0.0946	149.68

2. Blast Furnace - uncaptured fugitives

<u>Pollutant</u>	<u>Emission Factor (Lbs/Ton)</u>	<u>Maximum Emissions (Tons/Year)</u>
PM	0.031	49.06
PM ₁₀	0.0155	24.53
SO ₂	0.0104	21.94
NO _x	0.0007	1.14
VOM	0.0047	7.42

3. Blast Furnace Charging
Maximum pellets charged = 4,308,581 tons/yr

<u>Pollutant</u>	<u>Emission Factor (Lbs/Ton)</u>	<u>Maximum Emissions (Tons/Year)</u>
PM	0.0024	5.17
PM ₁₀	0.0024	5.17

4. Slag Pits

<u>Pollutant</u>	<u>Emission Factor (Lbs/Ton)</u>	<u>Maximum Emissions (Tons/Year)</u>
PM	0.00417	6.60
PM ₁₀	0.00417	6.60
SO ₂	0.0100	15.83

TABLE 1 (cont.)

5. Iron Spout Baghouse- captured emissions controlled by iron spout baghouse.

<u>Pollutant</u>	<u>Emission Factor (Lbs/Ton)</u>	<u>Maximum Emissions (Tons/Year)</u>
PM	0.02548	40.32
PM ₁₀	0.02548	40.32
SO ₂	0.0073	13.89

6. Iron Pellet Screen
Maximum pellets charged = 4,308,581 tons/yr

<u>Pollutant</u>	<u>Emission Factor (Lbs/Ton)</u>	<u>Maximum Emissions (Tons/Year)</u>
PM	0.00279	6.01
PM ₁₀	0.00279	6.01

TABLE 2

BOF SHOP

Maximum Liquid Steel Production = 3,580,000 net tons per year

1. BOF ESP Stack

<u>Pollutant</u>	<u>Emission Factor (Lbs/Ton)</u>	<u>Maximum Emissions (Tons/Year)</u>
PM	0.16	262.80
PM ₁₀	0.16	262.80
NO _x	0.0389	69.63
VOM	0.0060	10.74
CO	8.993	16,097.47
Lead	0.01934 lbs/hour	1.26 tons/year

2. BOF Roof Monitor

<u>Pollutant</u>	<u>Emission Factor (Lbs/Ton)</u>	<u>Maximum Emissions (Tons/Year)</u>
PM	0.0987	176.71
PM ₁₀	0.06614	118.40
Lead	0.0129 lbs/hour	0.08 tons/year

3. Desulfurization and Reladling - Hot Metal Transfer

<u>Pollutant</u>	<u>Emission Factor (Lbs/Ton)</u>	<u>Maximum Emissions (Tons/Year)</u>
PM	0.03721	58.88
PM ₁₀	0.03721	58.88
VOM	0.0010	1.58
Lead	0.0133 lbs/hour	0.09 tons/year

4. BOF Additive System (i.e., fluxes) with Baghouse, a.k.a., BOF hopper baghouse

<u>Pollutant</u>	<u>Emission Factor (Lbs/Ton)</u>	<u>Maximum Emissions (Tons/Year)</u>
PM	0.00032	0.57
PM ₁₀	0.00032	0.57

TABLE 2 (cont.)

5. Flux conveyor & transfer pits, bin floor

<u>Pollutant</u>	<u>Emission Factor (Lbs/Ton)</u>	<u>Maximum Emissions (Tons/Year)</u>
PM	0.0016	2.86
PM ₁₀	0.0016	2.86

6. Hot metal charging ladle slag skimmer

<u>Pollutant</u>	<u>Emission Factor (Lbs/Ton)</u>	<u>Maximum Emissions (Tons/Year)</u>
PM	0.0050	7.94
PM ₁₀	0.0050	7.94

TABLE 3

CONTINUOUS CASTING OPERATIONS

Maximum Liquid Steel Throughput = 3,580,000 net tons per year

1. Argon Stirring Station and Material Handling Tripper (Ladle Metallurgy)

<u>Pollutant</u>	<u>Emission Factor (Lbs/Ton)</u>	<u>Maximum Emissions (Tons/Year)</u>
PM	0.00715	12.80
PM ₁₀	0.00715	12.80

2. Deslagging Station and Material HS.

<u>Pollutant</u>	<u>Emission Factor (Lbs/Ton)</u>	<u>Maximum Emissions (Tons/Year)</u>
PM	0.00355	6.35
PM ₁₀	0.00355	6.35

3. Caster Molds - Casting

<u>Pollutant</u>	<u>Emission Factor (Lbs/Ton)</u>	<u>Maximum Emissions (Tons/Year)</u>
PM	0.006	10.74
PM ₁₀	0.006	10.74
NO _x	0.050	89.50

4. Casters Spray Chambers

<u>Pollutant</u>	<u>Emission Factor (Lbs/Ton)</u>	<u>Maximum Emissions (Tons/Year)</u>
PM	0.00852	15.25
PM ₁₀	0.00852	15.25

5. Slab Cut-off

<u>Pollutant</u>	<u>Emission Factor (Lbs/Ton)</u>	<u>Maximum Emissions (Tons/Year)</u>
PM	0.0071	12.71
PM ₁₀	0.0071	12.71

TABLE 3 (cont.)

6. Slab Ripping

<u>Pollutant</u>	<u>Emission Factor (Lbs/Ton)</u>	<u>Maximum Emissions (Tons/Year)</u>
PM	0.00722	12.92
PM ₁₀	0.00722	12.92

TABLE 4

CERTAIN FUEL COMBUSTION UNITS

1. 10 boilers (#'s 1 - 10)
2. 2 boilers (#'s 11 - 12)
3. Blast Furnace Stoves A & B.
4. BFG Flares
5. Ladle Drying Preheaters (5 heaters).

Total combined fuel usage from affected units (i.e., Boilers, BF stoves, BF Flares, ladle drying preheaters)

	<u>Maximum Usage</u> <u>(mmft³/Year)</u>
Natural Gas (Total)	1,346
BFG	185,030
Fuel Oil	365 thousand gallons/year

1. Natural Gas

<u>Pollutant</u>	<u>Emission Factor</u> <u>(Lbs/Ton)</u>	<u>Maximum Emissions</u> <u>(Tons/Year)</u>
PM	5.1	3.43
PM ₁₀	5.1	3.43
SO ₂	0.6	0.40
NO _x	306.0	205.94
VOM	2.8	1.88
CO	40.0	26.92

2. BFG

<u>Pollutant</u>	<u>Emission Factor</u> <u>(Lbs/Ton)</u>	<u>Maximum Emissions</u> <u>(Tons/Year)</u>
PM	2.9	268.29
PM ₁₀	2.9	268.29
SO ₂	6.65	615.22
NO _x	5.28	488.48
CO	13.7	1,267.46

TABLE 4 (cont.)

3. Fuel Oil

<u>Pollutant</u>	<u>Emission Factor (Lbs/Ton)</u>	<u>Maximum Emissions (Tons/Year)</u>
PM	9.72	1.77
PM ₁₀	9.72	1.77
SO ₂	141.3	25.79
NO _x	55.0	10.04
VOM	0.28	0.05
CO	5.0	0.91
Lead	0.336	0.06 (waste oil)

TABLE 5

LIMITS ON EMISSIONS FROM MAJOR PROCESSES AND ACTIVITIES

Units = tons/year

	<u>PM</u>	<u>PM₁₀</u>	<u>SO₂</u>	<u>NO_x</u>	<u>VOM</u>	<u>CO</u>	<u>Lead</u>
Blast Furnace Operations	218	194	474	24	157	---	---
BOF Shop	510	451	---	70	12	16,097	1.43
Continuous Casting Operations	71	71	---	90	---	---	---
Certain Fuel Combustion Units ^A	274	274	641	706	2	1,295	0.06
Roadways	27	27	---	---	---	---	---
Material Handling	<u>2</u>	<u>2</u>	<u>-----</u>	<u>---</u>	<u>---</u>	<u>-----</u>	<u>---</u>
Total	1,102	1,019	1,115	890	171	17.392	1.49

^A Blast furnace stoves (A and B), boiler house boilers (1-10), blast furnace boilers (11 and 12), ladle drying preheaters and blast furnace gas flares.

TABLE 6

EMISSIONS SUMMARY

Units = tons/year

- Emission increases which could occur from the project:

<u>PM₁₀</u>	<u>PM</u>	<u>NO_x</u>	<u>SO₂</u>	<u>CO</u>	<u>VOM</u>	<u>Lead</u>
51.6	-52.0	238.8	476.0	5,685	59.3	0.54

- Creditable contemporaneous actual emission decreases:

<u>PM₁₀</u>	<u>PM</u>	<u>NO_x</u>	<u>SO₂</u>	<u>CO</u>	<u>VOM</u>	<u>Lead</u>
58.0	58.0	226.5	0.38	23.31	32.8	0.0

- Other contemporaneous emission increases:

<u>PM₁₀</u>	<u>PM</u>	<u>NO_x</u>	<u>SO₂</u>	<u>CO</u>	<u>VOM</u>	<u>Lead</u>
20.7	20.3	26.0	0.25	11.8	1.6	0.0

- Net emission changes:

<u>PM₁₀</u>	<u>PM</u>	<u>NO_x</u>	<u>SO₂</u>	<u>CO</u>	<u>VOM</u>	<u>Lead</u>
+14.3	-89.2	+38.3	+475.9	+5,673	+28.1	+0.54

- Significant Levels:

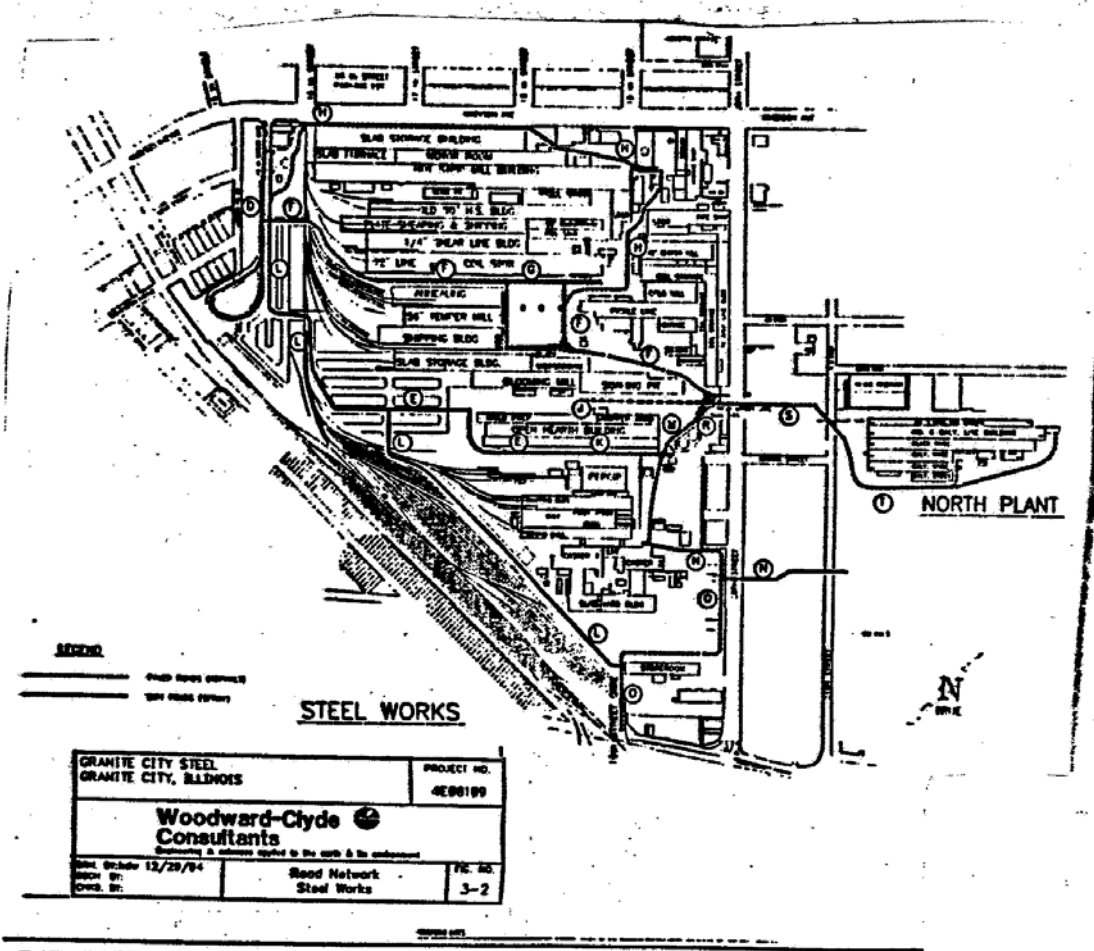
<u>PM₁₀</u>	<u>PM</u>	<u>NO_x</u>	<u>SO₂</u>	<u>CO</u>	<u>VOM</u>	<u>Lead</u>
15	25	40	40	100	40	0.6

ATTACHMENT A

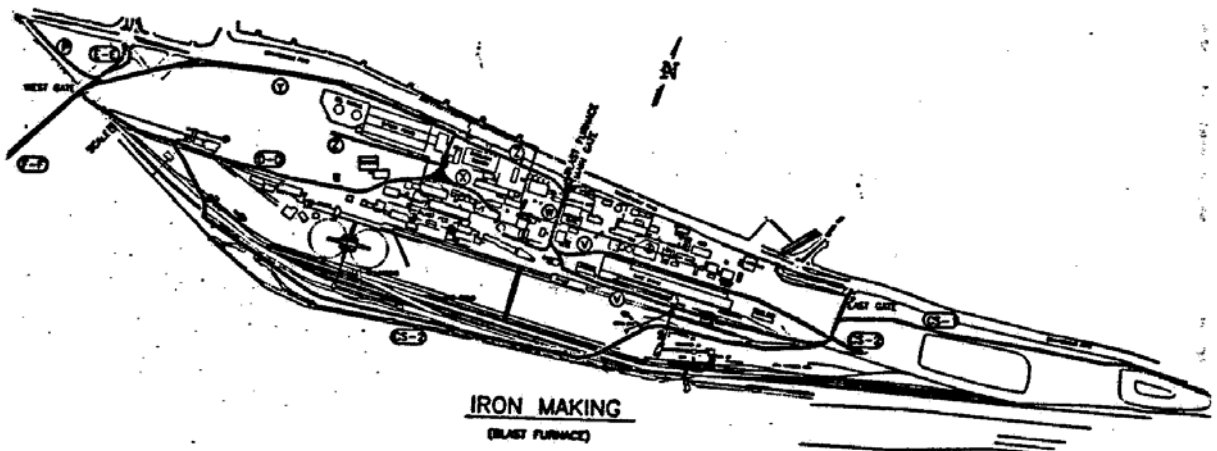
(Former Attachment A has been removed in this revised permit.)

ATTACHMENT B

**ON-SITE FUGITIVE DUST ROADWAY CONTROL MEASURES AND
MAPS SHOWING THE ROAD SEGMENTS**




ATTACHMENT B (cont.)

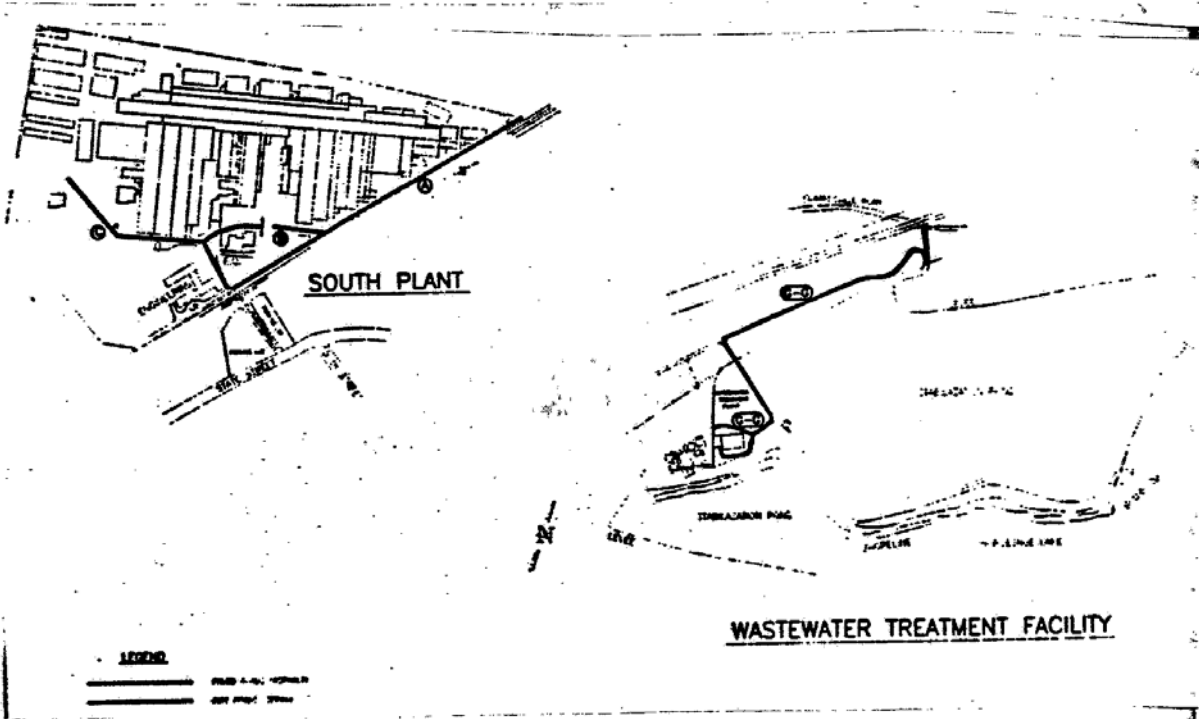



IRON MAKING
(BLAST FURNACE)

LEGEND
 ———— FINE ROAD NETWORK
 ———— NEW ROAD NETWORK

GRANITE CITY STEEL GRANITE CITY, ILLINOIS		PROJECT NO. 4E88189
Woodward-Clyde  Consultants		
DATE: 12/29/94	Road Network	FILE NO.
ISSN: 94	Iron Making Area	3-3
CHG: 94		

ATTACHMENT B (cont.)



GRANITE CITY STEEL GRANITE CITY, ILLINOIS		PROJECT NO. 4E88189
Woodward-Clyde  Consultants <small>Engineering & services related to the steel & its environment</small>		
DATE: 12/29/94	Road Network South Plant & WWTP	FIG. NO. 3-4

ATTACHMENT C

CONTEMPORANEOUS REDUCTIONS IN THE
EMISSIONS OF PM₁₀

- Historic roadway emissions of 428 tons/year, minus future potential roadway emissions of 27 tons/year, equals a resulting reduction in roadway emissions of 401 tons/year
- Historic material handling emissions of 17 tons/year minus future potential material handling emissions of 2 tons/year, equals a resulting reduction in material handling emissions of 15 tons/year.
- Emission reductions resulting from the sweeping of city streets = 52 tons/year*
- Emission reductions resulting from sweeping and housekeeping of areas below and around BOF ESP = 12 tons/year*

Total reductions in the emissions of PM₁₀ as a result of the additional dust control measures required by Illinois' SIP and the special conditions of this permit = 480 tons/year

- * These are considered reasonable estimates of reductions and are subject to change upon further investigation of the actual reductions which will occur as a result of the control measures required by this permit.

KLS:psj