State of the Art (SOTA)
Manual
for Asphalt Pavement Production Plants

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State of New Jersey
Department of Environmental Protection
Air Quality Permitting Program

State of the Art (SOTA)
Manual for Asphalt Pavement Production Plants
Section 3.4

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3.4.i Abbreviations

BACT	Best Available Control Technology
BMP	Best Management Practices
BTU	British Thermal Unit
CO	Carbon Monoxide
gr/scf	Grains Per Standard Cubic Foot
NAPA	National Asphalt Pavement Association
N.J.A.C.	New Jersey Administrative Code
NJAPA	New Jersey Asphalt Pavement Association
NJDEP	New Jersey Department of Environmental Protection
NO_x	Nitrogen Oxides
O_2	Oxygen
ppmvd	Parts Per Million By Volume, Dry Basis
SOTA	State of the Art
S	Sulfur
SO_2	Sulfur Dioxide
TSP	Total Suspended Particulate Matter
VOC	Volatile Organic Compound

3.4 STATE OF THE ART MANUAL FOR ASPHALT PAVEMENT PRODUCTION PLANTS

3.4.1 Scope

These SOTA performance levels apply to all newly constructed, reconstructed, or modified aggregate dryers located at asphalt pavement production plants.

3.4.2 SOTA Performance Levels

3.4.2.1 NO_x, CO, VOC

Notes:

1. Compliance with the NO_x, CO, and VOC concentration limits is based on the average of three Department validated stack test runs.
2. Modify or modification is defined at N.J.A.C. 7:27-8.1 and N.J.A.C. 7:27-22.1.
3. On-Specification Used Oil is defined at N.J.A.C. 7:27-20.1.
4. Reconstruct or reconstruction is defined at N.J.A.C. 7:27-8.1 and N.J.A.C. 7:27-22.1.

Existing Modified Equipment (Single or Dual Fuel Burner)				
Pollutants	**Natural Gas**	**No. 2 Fuel Oil**	**No. 4 Fuel Oil, No. 6 Fuel Oil, and On-specification Used Oil**	**Units of Standards**
NO_x	75	100	125	ppmvd @ 7% O_2
CO	250	250	250	ppmvd @ 7% O_2
VOC	125	125	125	ppmvd @ 7% O_2

New and/or Reconstructed Equipment (Single Fuel Burner)				
Pollutants	**Natural Gas**	**No. 2 Fuel Oil**	**No. 4 Fuel Oil, No. 6 Fuel Oil, and On-specification Used Oil****	**Units of Standards**
NO_x	40	100	125	ppmvd @ 7% O_2
CO	250	250	250	ppmvd @ 7% O_2
VOC	125	125	125	ppmvd @ 7% O_2

New and/or Reconstructed Equipment (Dual Fuel Burner)				
Pollutants	**Natural Gas**	**No. 2 Fuel Oil**	**No. 4 Fuel Oil, No. 6 Fuel Oil, and On-specification Used Oil****	**Units of Standards**
NO_x	75	100	125	ppmvd @ 7% O_2
CO	250	250	250	ppmvd @ 7% O_2
VOC	125	125	125	ppmvd @ 7% O_2

3.4.2.2 TSP, Opacity – All Fuels

Note:
The TSP emission limit is based on any one Department validated stack test run, consistent with N.J.A.C. 7:27-6.2

Pollutants	Emission Limits	Units of Standards
TSP	0.020	gr/scf
Opacity	No Visible Emissions	N/A

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3.4.2.3 SO_2 – All Fuels

Notes:
5. Compliance with N.J.A.C. 7:27-9 is considered SOTA for SO_2 emissions.
6. The percent fuel sulfur is determined by vendor analysis and documentation.
7. The SO_2 emission limit is based on the average of three Department validated stack

Pollutants	Emission Limits	Units of Standards
SO_2	N.J.A.C. 7:27-9	Parts per Million by Weight (ppm) S or Lbs./ 10^6 BTU SO_2

3.4.3 Technical Basis and References

3.4.3.1 Basis for the Recommended SOTA Levels

Information from the following sources were evaluated in determining the SOTA Performance Levels:

A. Results from NJDEP compliance testing and emission monitoring programs.

B. South Coast Air Quality Management District (SCAQMD) – BACT Determination.

C. Santa Barbara County Air Pollution Control District (SBCAPCD) – BACT Determination.

D. Bay Area Air Quality Management District (BAAQMD) – BACT Determination.

E. Astec Industries, Inc. (Asphalt Burner/Dryer Manufacturer).

F. Hauck Manufacturing Company (Asphalt Burner/Dryer Manufacturer).

G. Virginia Department of Environmental Quality (DEQ), Northern Regional Office – Air Emission Test Program.

H. Pennsylvania Department of Environmental Protection (DEP) - General Plan Approval and/or General Operating Permit (BAQ-GPA/GP-13 or General Permit) for Hot Mix Asphalt Plant: Best Available Technology (BAT).

I. Rhode Island Department of Environmental Management, Office of Air Resources.

J. Massachusetts Department of Environmental Protection, Southeast Regional Office.

K. N.J.A.C. 7:27-19, Control and Prohibition of Air Pollution From Oxides of Nitrogen.

L. National Asphalt Pavement Association (NAPA) and New Jersey Asphalt Pavement Association (NJAPA) Committee.

3.4.3.2 Available Technologies for Achieving Compliance

A. Total Suspended Particulate Matter (TSP): Use of a dry baghouse dust collector based on the following styles, including but not limited to: Pulse type and Reverse air type. All of these styles of dust collectors operate more efficiently when used in conjunction with primary collectors ahead of them removing the heavier media from the dust laden air stream. Styles of these primary collectors are: Knockout box, Cyclone, Multi-tube collector, and Multiple cyclone arrangements.

B. Carbon Monoxide (CO): Good combustion practice, refractory stabilized burner, counter flow drying, and use of natural gas for fuel.

C. Nitrogen Oxides (NO_x): Natural gas fuel, periodic burner adjustment, low-NO_x burner, ultra low-NO_x burner, flue gas recirculation, water injection, best management practices (BMP) and other NO_x reduction measures.

D. Volatile Organic Compound (VOC): Good combustion practice, burner design and natural gas fuel.

E. Sulfur Dioxide (SO2): Natural gas and low-sulfur fuel oil.

3.4.4 Recommended Review Schedule

The anticipated review date is three years or less from the effective date of this manual.