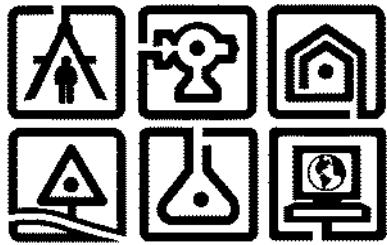


April 2025



SUPPORTING DOCUMENTATION
Application for NYSDEC Air State
Facility Permit – New Asphalt Plant
Jenkinsville Sand and Gravel LLC
Fort Ann Quarry #1 Site
7289 State Route 4, Town of Fort Ann
Washington County, New York

Prepared for:

JENKINSVILLE SAND AND GRAVEL LLC
76 Ellsworth Lane Extension
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Prepared by:

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C.T. Male Project No: 23.3669

Unauthorized alteration or addition to this
document is a violation of the New York State
Education Law.

**SUPPORTING DOCUMENTATION
APPLICATION FOR NYSDEC AIR STATE FACILITY PERMIT -
NEW ASPHALT PLANT - JENKINSVILLE SAND AND GRAVEL, LLC
FORT ANN QUARRY #1 - 7289 STATE ROUTE 4
TOWN OF FORT ANN, WASHINGTON COUNTY, NEW YORK**

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1.0 INTRODUCTION

C.T. Male Associates Engineering, Surveying, Architecture, Landscape Architecture & Geology, D.P.C. (C.T. Male) has prepared the attached New York State Department of Environmental Conservation (NYSDEC) Air State Facility Permit Application to construct and operate an asphalt plant at the Jenkinsville Sand and Gravel LLC (Jenkinsville S&G) Fort Ann Quarry #1 site facility located at 7289 State Route 4 in the Town of Fort Ann, Washington County, New York (see Figures 1 and 3). The site is currently a NYSDEC permitted Mine facility, which has been issued Mine ID 50985. Jenkinsville S&G plans to install a hot mix asphalt (HMA) plant with a production capacity of 300 tons per hour within the approved mine site and seeks to cap annual production at 300,000 tons per year. The proposed approximate plant layout is depicted in Figure 2, Proposed Facility Layout Map.

Hot mix asphalt is used primarily as paving material and consists of a mixture of aggregate and liquid asphalt cement, which are heated and mixed in measured quantities. Hot mix asphalt facilities are broadly classified as either drum mix plants or batch mix plants, according to the process by which the raw materials are mixed. In drum mix plants, a rotary dryer serves to dry the aggregate and mix it with the liquid asphalt cement. Conversely, in batch mix plants, the aggregate is dried first, then transferred to a mixer where it is mixed with the liquid asphalt. In both cases of drum mix plants and batch mix plants, after the mixing is complete, the HMA material is transferred to a storage silo, where it is stored temporarily. From the silo, the HMA is emptied into haul trucks, which transport the material to job sites.

The primary emission sources associated with HMA production are the dryer/bin/mixing operations, which emit particulate matter (PM) and a variety of gaseous pollutants. Other emission sources found at HMA plants include storage silos, which temporarily hold the HMA; truck load-out operations, in which the HMA is loaded into trucks for hauling to the job site; liquid asphalt storage tanks; and hot oil heaters, which are used to heat the asphalt storage tanks. The emissions associated with HMA production include the criteria pollutants PM-10 (PM less than 10 micrometers in aerodynamic diameter) and PM-2.5 (PM less than 2.5 micrometers in aerodynamic diameter), sulfur dioxide (SO₂), nitrogen oxides (NO_x), and carbon monoxide (CO); volatile organic compounds (VOC), Carbon Dioxide hazardous air pollutant (HAP) metals, and HAP organic compounds.

Emissions of air contaminants from asphalt production will occur as a result of operating various equipment. These emission calculations and supporting documentation are presented in Attachment A.

The attached Air State Facility Permit Application limits the facility's potential to emit (PTE) Carbon Monoxide, and caps the facility out of the following regulatory requirements:

- Title V Facility Permit (6 NYCRR Part 201-6); and
- Current and future MACT standards applicable to major sources of air emissions.

The Air State Facility Permit Application has been prepared in accordance with the requirements of the Official Compilation of New York Codes, Rules, and Regulations (NYCRR) Part 201-5, State Facility Permits.

A Confidentiality Justification for the information contained within this application is attached in Attachment B, and a copy of the Air State Facility Permit Application is included within Attachment C.

2.0 SUMMARY OF EMISSION CALCULATIONS METHODOLOGY

2.1 Asphalt Production Activities

The facility will consist of one (1) Asphalt Mixture Processing Unit consisting of a stationary continuous drum hot mix asphalt plant which will be operated seasonally during the construction season. The emissions reported within the Air State Facility Permit Application are based on the potential to emit of the facility, which are based on a nominal 300 ton per hour capacity. As the asphalt production business is seasonal, an annual cap of 300,000 tons of asphalt production will be sought in order to reflect production only during the typical construction season of ±April – November and which will cap the facility below major source thresholds applicable to Carbon Monoxide emissions. Emissions from asphalt production and associated activities were calculated based on the maximum design capacity of the plant, emission factors published within the USEPA's AP-42 (Chapter 11.1) and/or emission factors from the plant manufacturer, Astec Industries, Inc. These calculations account for operation of the plant on an hourly basis and for 8,760 hours per year to calculate the potential to emit (PTE), as well as on a 300,000 tons per year basis to reflect the construction season and to remain consistent with the current mine use permit (which lists Monday through Friday 6 AM – 7 PM, Saturdays 8 AM – 2 PM, and no operation on Sundays, New Year's Day, Memorial Day, July 4, Labor Day, Thanksgiving and Christmas). These emission calculations and supporting documentation are presented as Attachment A.

2.2 Exempt and Trivial Activities

Emissions from various sources at the facility are considered exempt or trivial based on 6 NYCRR Part 201-3.2 and/or 201-3.3. Where necessary, Jenkinsville S&G will maintain records to document that a source qualifies as exempt or trivial.

3.0 PROPOSED RECORD KEEPING AND REPORTING PROCEDURES

3.1 Asphalt Production Activities

To avoid being classified as a major source, Jenkinsville S&G will cap emissions of Carbon Monoxide (CO) at 90 tons per year. These emissions will be calculated on a monthly basis and a 12-month rolling total based on HMA production.

As required under NYSDEC regulations (specifically 6 NYCRR Part 220-3.3), records to be maintained by Jenkinsville S&G include:

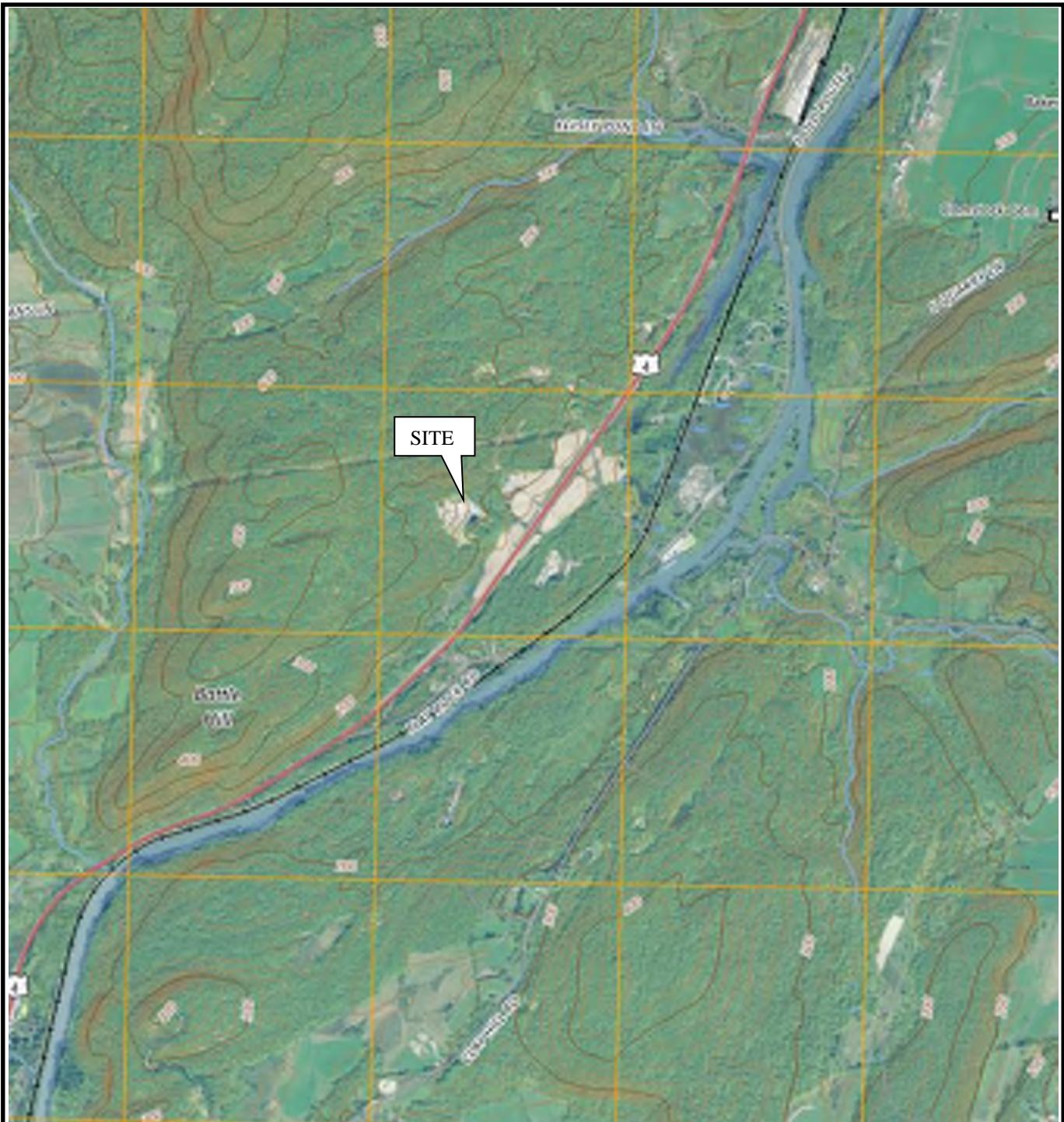
- a) Record of the following information daily, as applicable, for each Asphalt Mixture Processing Unit during operation in a calendar year, including identifying days when no asphalt paving material is being manufactured:
 - 1) Tons produced of asphalt mixture;
 - 2) Reclaimed or Recycled Asphalt Pavement (RAP) used in tons of material;
 - 3) Recorded hours of burner operation;
 - 4) Baghouse differential pressure;
 - 5) Warm mix tons produced;
 - 6) Amount of fuel consumed;
 - 7) Type of fuel consumed;
 - 8) Instantaneous visual stack opacity reading by a trained Method 9 certified employee that fulfills the requirements of 40 CFR 60, Appendix A-4, Method 9;
 - 9) Typical stack temperature during operations;
 - 10) RAP moisture content; and
 - 11) Maintain annual records of Visible Emissions (Opacity) Training.

Owners or operators of an Asphalt Mixture Manufacturing Plant are required to adhere to the following work practices:

- (1) An annual service must be performed by a qualified employee or vendor on the dryer burner of any Asphalt Mixture Processing Unit that is in operation during that calendar year.
- (2) An annual tune-up must be performed by a qualified employee or vendor on the hot oil heater located at any Asphalt Manufacturing Plant that is in operation during that calendar year.
- (3) A plan must be submitted to the department that details the introduction or continuation of methods utilized to reduce the moisture content of the aggregate stockpile(s). Such methods must be implemented the first subsequent year the plant is in operation.
- (4) Annual Baghouse Inspection and Maintenance prior to operating for the season.
- (5) Inspect all ductwork for leaks and perform needed maintenance prior to operating during the asphalt production season.
- (6) Maintain annual records of baghouse and ductwork inspections. These records shall be maintained on site for at least two (2) years after issuance of the permit and may be stored offsite (including electronic storage) afterwards for the life of the permit. Access to such offsite records must be made available in a timely manner if requested by the Department.

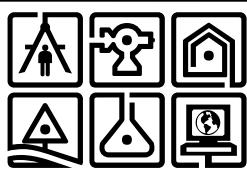
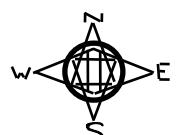
The actual amount of asphalt production will be tracked on a 12-month rolling basis to avoid exceeding the annual cap threshold for CO.

Figure 1
Site Location Map



MAP REFERENCE

United States Geological Survey
 7.5 Minute Series Topographic Map
 Quadrangle: Fort Ann NY
 Date: 2023



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FIGURE 1 – SITE LOCATION MAP

JENKINSVILLE SAND & GRAVEL LLC PROPOSED NEW ASPHALT PLANT SITE

TOWN OF FORT ANN

WASHINGTON COUNTY, NY

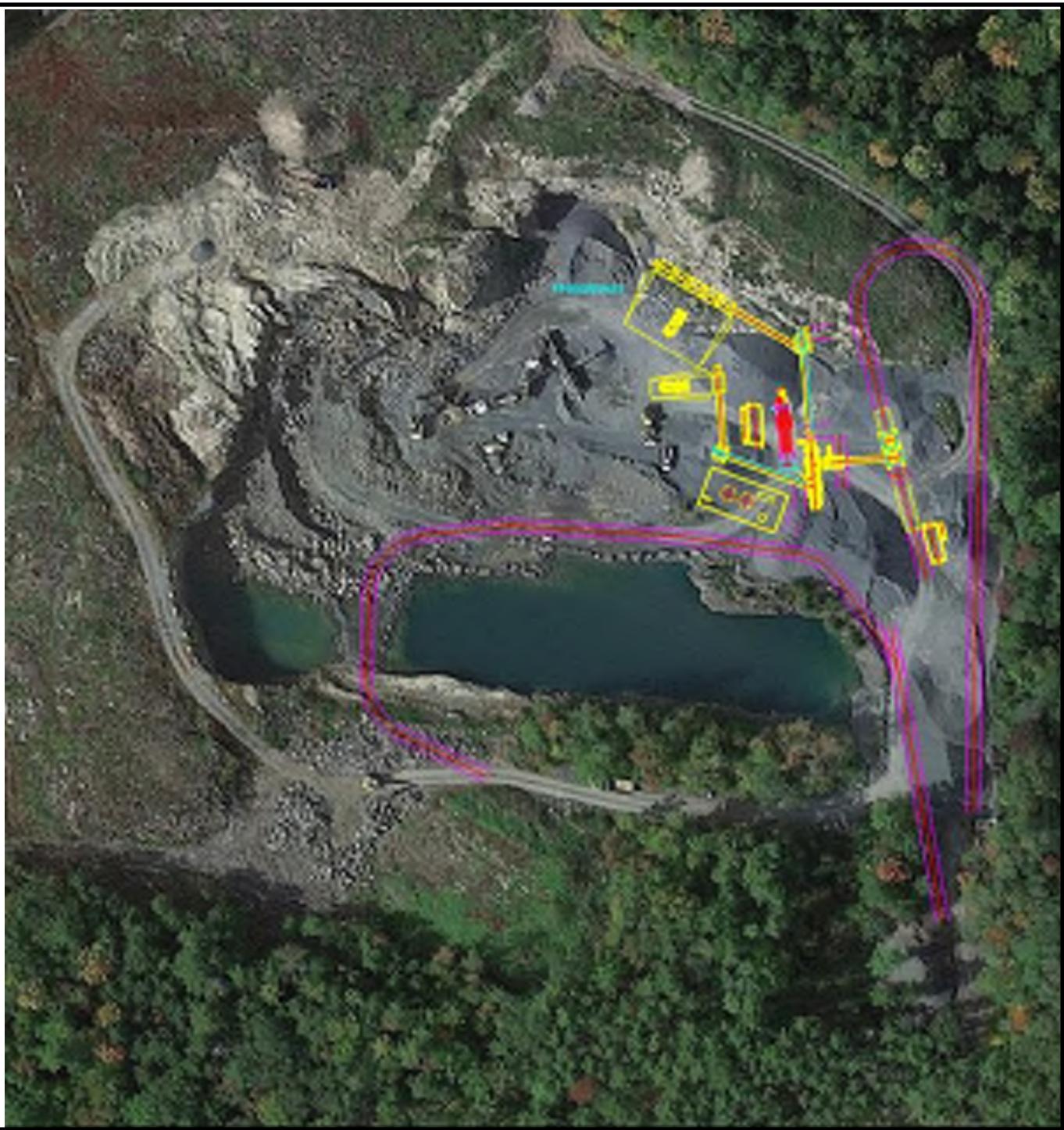
SCALE: $\pm 1'' = 2,000'$

DRAFTER: J. FARRON

PROJECT No. 23.3669

The locations and features depicted on this map are approximate and do not represent an actual survey.

Figure 2
Proposed Facility Layout Map

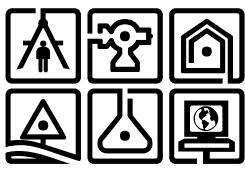


MAP REFERENCE

Asphalt Plant Proposed Layout Map

Prepared by Astec Industries

Date: February 2025



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FIGURE 2 – PROPOSED LAYOUT MAP

JENKINSVILLE SAND & GRAVEL LLC PROPOSED NEW ASPHALT PLANT SITE

TOWN OF FORT ANN

WASHINGTON COUNTY, NY

SCALE: NOT LISTED

DRAFTER: J. FARRON

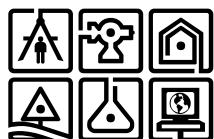
PROJECT No. 23.3669

The locations and features depicted on this map are approximate and do not represent an actual survey.

Figure 3
Site Boundary Map



FIGURE 3 - SITE BOUNDARY MAP
JENKINSVILLE SAND & GRAVEL FORT ANN QUARRY #1



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MAP REFERENCE:
Washington County
Parcel Viewer
Access Date: 03/2025

TOWN OF FORT ANN

WASHINGTON COUNTY, NY

SCALE: AS SHOWN

PROJECT NO.: 24.5134

DRAFTER: FARRON

Attachment A

Emission Calculations from Asphalt Production Activities

SUMMARY OF EMISSIONS FROM PROPOSED OPERATIONS

Contaminant	Drum Mix Hot Mix		Hot Oil System		Load Out		Silo Filling		Total Emissions	
	PTE tons/yr	Expected tons/yr	PTE tons/yr	Expected tons/yr	PTE tons/yr	Expected tons/yr	PTE tons/yr	Expected tons/yr	PTE tons/yr	Expected tons/yr
Carbon Monoxide (CO)	170.8	19.50	0.52	0.059	1.77	0.20	1.55	0.18	174.7	19.94
Oxides of Nitrogen (NO _x)	28.91	3.30	1.63	0.19					30.53	3.49
Sulfur Dioxide (SO ₂)	2.63	0.30	0.049	0.0056					2.68	0.31
Total Particulate Matter (PM)	21.68	2.48					0.038	0.00088	21.72	2.48
Particulate less than 10 µm (PM-10) ¹	5.12	0.58	0.13	0.015	0.69	0.078			5.94	0.68
Particulate less than 2.5 µm (PM-2.5)	3.81	0.43							3.81	0.43
Volatile Organic Compounds (VOC)	42.05	4.80	0.44	0.050	5.46	0.62	1.83	0.09	49.78	5.57
Methane (CH ₄)	15.77	1.80	0.040	0.0046	3.55E-01	4.05E-02	4.75E-03	2.38E-04	16.17	1.85
Carbon Dioxide (CO ₂)	43,362	4,950	2,735	312.2					46,097	5,262
Benzene	5.12E-01	5.85E-02			2.84E-03	3.24E-04	5.85E-04	2.92E-05	0.52	0.059
Bromomethane					5.25E-04	5.99E-05	8.96E-05	4.48E-06	0.00061	0.000064
2-Butanone					2.68E-03	3.06E-04	7.13E-04	3.56E-05	0.0034	0.00034
Carbon Disulfide					7.10E-04	8.11E-05	2.92E-04	1.46E-05	0.0010	0.00010
Chloroethane					1.15E-05	1.31E-06	7.31E-05	3.66E-06	0.000085	0.0000050
Chloromethane					8.20E-04	9.36E-05	4.20E-04	2.10E-05	0.0012	0.00011
Cumene					6.01E-03	6.86E-04	0.00E+00	0.00E+00	0.0060	0.00069
Ethylbenzene	3.15E-01	3.60E-02			1.53E-02	1.75E-03	6.95E-04	6.95E-05	0.33	0.038
Formaldehyde	4.07E+00	4.65E-01	3.49E-04	3.98E-05	4.81E-03	5.49E-04	1.26E-02	6.31E-04	4.09	0.47
Hexane	1.21E+00	1.38E-01			8.20E-03	9.36E-04	1.83E-03	1.83E-04	1.22	0.14
Isooctane	5.26E-02	6.00E-03			9.84E-05	1.12E-05	5.67E-06	5.67E-07	0.053	0.0060
Methyl Chloroform	6.31E-02	7.20E-03							0.063	0.0072
Methylene Chloride							4.94E-06	2.47E-07	0.0000049	0.00000025
Phenol					5.29E-03	6.03E-04	0.00E+00	0.00E+00	0.0053	0.00060
Styrene					3.99E-04	4.55E-05	9.87E-05	9.87E-06	0.00050	0.000055
Tetrachloroethane					4.21E-04	4.80E-05	0.00E+00	0.00E+00	0.00042	0.000048
Toluene	1.97E-01	2.25E-02			1.15E-02	1.31E-03	1.13E-03	1.13E-04	0.21	0.024
Trichlorofluoromethane					7.10E-05	8.11E-06	0.00E+00	0.00E+00	0.000071	0.0000081
Xylene	2.63E-01	3.00E-02			2.68E-02	3.06E-03	4.70E-03	4.70E-04	0.29	0.034
Total Non-PAH HAPs	6.69E+00	7.63E-01							6.69	0.76
2-Methylnaphthalene	9.72E-02	1.11E-02			1.07E-02	1.22E-03	2.01E-03	1.00E-04	0.11	0.012
Acenaphthene	1.84E-03	2.10E-04	2.62E-05	2.99E-06	1.16E-03	1.33E-04	1.79E-04	8.95E-06	0.0032	0.00035

Contaminant	Drum Mix Hot Mix		Hot Oil System		Load Out		Silo Filling		Total Emissions	
	PTE tons/yr	Expected tons/yr	PTE tons/yr	Expected tons/yr	PTE tons/yr	Expected tons/yr	PTE tons/yr	Expected tons/yr	PTE tons/yr	Expected tons/yr
Acenaphthylene	1.13E-02	1.29E-03	9.90E-06	1.13E-06	1.25E-04	1.43E-05	5.33E-06	2.67E-07	0.011	0.0013
Anthracene	2.89E-04	3.30E-05	8.91E-06	1.02E-06	3.14E-04	3.58E-05	4.95E-05	2.48E-06	0.00066	0.000072
Benzo(a)anthracene	2.76E-04	3.15E-05			8.51E-05	9.72E-06	2.13E-05	1.07E-06	0.00038	0.000042
Benzo(a)pyrene	1.29E-05	1.47E-06			1.03E-05	1.18E-06			0.000023	0.0000026
Benzo(b)fluoranthene	1.31E-04	1.50E-05	4.95E-06	5.65E-07	3.40E-05	3.89E-06			0.00017	0.000019
Benzo(e)pyrene	1.45E-04	1.65E-05			3.49E-05	3.99E-06	3.62E-06	1.81E-07	0.00018	0.000021
Benzo(g,h,i)perylene	5.26E-05	6.00E-06			8.51E-06	9.72E-07			0.000061	0.0000070
Benzo(k)fluoranthene	5.39E-05	6.15E-06			9.86E-06	1.13E-06			0.000064	0.0000073
Chrysene	2.37E-04	2.70E-05			4.61E-04	5.27E-05	8.00E-05	4.00E-06	0.00078	0.000084
Dibenz(a,h)anthracene					1.66E-06	1.89E-07			0.0000017	0.00000019
Fluoranthene	8.02E-04	9.15E-05	2.18E-06	2.49E-07	2.24E-04	2.56E-05	5.71E-05	2.86E-06	0.0011	0.00012
Fluorene	4.99E-03	5.70E-04	1.58E-06	1.81E-07	3.45E-03	3.94E-04	3.85E-04	1.92E-05	0.0088	0.0010
Indeno(1,2,3-cd)pyrene	9.20E-06	1.05E-06			2.11E-06	2.40E-07			0.000011	0.0000013
Naphthalene	1.18E-01	1.35E-02	8.41E-04	9.61E-05	5.60E-03	6.39E-04	6.93E-04	3.47E-05	0.13	0.014
Perylene	1.16E-05	1.32E-06			9.86E-05	1.13E-05	1.14E-05	5.71E-07	0.00012	0.000013
Phenanthrene	9.99E-03	1.14E-03	2.43E-04	2.77E-05	3.63E-03	4.14E-04	6.86E-04	3.43E-05	0.015	0.0016
Pyrene	7.10E-04	8.10E-05	1.58E-06	1.81E-07	6.72E-04	7.67E-05	1.68E-04	8.38E-06	0.0016	0.00017
Total PAH HAPs	2.46E-01	2.81E-02			2.66E-02	3.03E-03	4.35E-03	2.17E-04	0.28	0.031
Total HAPs	6.93E+00	7.91E-01			8.11E-02	9.26E-03	2.33E-02	2.33E-03	7.04	0.80
Butane	8.80E-01	1.01E-01							0.88	0.10
Ethylene	9.20E+00	1.05E+00			3.88E-02	4.43E-03	2.01E-02	1.01E-03	9.26	1.06
Heptane	1.24E+01	1.41E+00							12.35	1.41
2-Methyl-1-pentene	5.26E+00	6.00E-01							5.26	0.60
2-Methyl-2-butene	7.62E-01	8.70E-02							0.76	0.087
3-Methylpentane	2.50E-01	2.85E-02							0.25	0.029
1-Pentene	2.89E+00	3.30E-01							2.89	0.33
n-Pentane	2.76E-01	3.15E-02							0.28	0.032
Total non-HAP Organics	3.19E+01	3.64E+00							31.86	3.64
Total PCDD (Dioxins)			9.90E-09	1.13E-09					9.90E-09	1.13E-09
Total PCDF (Furans)			1.53E-09	1.75E-10					1.53E-09	1.75E-10
Total PCDD/PCDF			1.14E-08	1.30E-09					1.14E-08	1.30E-09
Antimony	2.37E-04	2.70E-05							2.37E-04	2.70E-05

Contaminant	Drum Mix Hot Mix		Hot Oil System		Load Out		Silo Filling		Total Emissions	
	PTE tons/yr	Expected tons/yr	PTE tons/yr	Expected tons/yr	PTE tons/yr	Expected tons/yr	PTE tons/yr	Expected tons/yr	PTE tons/yr	Expected tons/yr
Arsenic	7.36E-04	8.40E-05							7.36E-04	8.40E-05
Barium	7.62E-03	8.70E-04							7.62E-03	8.70E-04
Beryllium	0.00E+00	0.00E+00							0.00E+00	0.00E+00
Cadmium	5.39E-04	6.15E-05							5.39E-04	6.15E-05
Chromium	7.23E-03	8.25E-04							7.23E-03	8.25E-04
Cobalt	3.42E-05	3.90E-06							3.42E-05	3.90E-06
Copper	4.07E-03	4.65E-04							4.07E-03	4.65E-04
Hexavalent Chromium	5.91E-04	6.75E-05							5.91E-04	6.75E-05
Lead	8.15E-04	9.30E-05							8.15E-04	9.30E-05
Manganese	1.01E-02	1.16E-03							1.01E-02	1.16E-03
Mercury	3.15E-04	3.60E-05							3.15E-04	3.60E-05
Nickel	8.28E-02	9.45E-03							8.28E-02	9.45E-03
Phosphorus	3.68E-02	4.20E-03							3.68E-02	4.20E-03
Silver	6.31E-04	7.20E-05							6.31E-04	7.20E-05
Selenium	4.60E-04	5.25E-05							4.60E-04	5.25E-05
Thallium	5.39E-06	6.15E-07							5.39E-06	6.15E-07
Zinc	8.02E-02	9.15E-03							8.02E-02	9.15E-03
Total Metals	2.33E-01	2.66E-02							2.33E-01	2.66E-02

¹ - Assume all PM is PM-10 for Hot Oil, Load Out and Silo Filling Operations where Emission Factors specify only PM.

Attachment A.1

Emission Calculations from Drum Hot Mix Asphalt Production

SUMMARY OF EMISSIONS FROM PROPOSED HOT MIX ASPHALT PLANT**Known:**

1. Maximum Hourly Production Rate:	300	tons/hour
2. Annual Capped Production Rate:	300,000	tons/year
3. LP-Gas Usage Rate	820	gal/hr
4. Particulate Control Efficiency		
	99.9943	% for Filterable PM
	99.9391	% for Filterable PM-10
	99.8067	% for Filterable PM-2.5
	94.1379	% for Organic PM
	0	% for Inorganic PM

Emission Factors for Drum Mix Hot Mix Asphalt Plant

As per AP-42, Chapter 11.1 for Hot Mix Asphalt Plants (3/04 Version)

Contaminant Name	Emission Factor	Emission Factor Source
Carbon Monoxide (CO)	0.13	lb/ton of product
Oxides of Nitrogen (NO _x)	0.022	lb/ton of product
Sulfur Dioxide (SO ₂) ¹	0.732	lb/1,000 gal LPG
Total Particulate Matter (PM)	30,000	lb/hr uncontrolled
Particulate less than 10 µm (PM-10)	1,920	lb/hr uncontrolled
Particulate less than 2.5 µm (PM-2.5)	450	lb/hr uncontrolled
Inorganic PM	2.22	lb/hr uncontrolled
Organic PM	17.4	lb/hr uncontrolled
Volatile Organic Compounds (VOC)	0.032	lb/ton of product
Methane (CH ₄)	0.012	lb/ton of product
Carbon Dioxide (CO ₂)	33	lb/ton of product

¹ SO₂ based on fuel usage and sulfur content with documented scrubbing effect by fabric filter applied. NO_x based on AP-42 Ch 11.1 Background Ref #209

Potential and Expected Annual Emission Calculations

Potential to Emit (lb/hr) = Max. Production (300 tons/hr) * Emission Factor (lb/ton of product) OR

for SO₂, Max. LP-Gas Usage gal/hr * SO₂ Emission Factor (lb/1,000 gal) OR

for PM, Uncontrolled lb/hr * Control Efficiency * Max. Production (300 tons/hr)

Potential to Emit (lb/yr) = Potential to Emit (lb/hr) * 8,760 (hr/yr)

Annual Capped Emissions = 300,000 tons/yr * Emission Factor (lb/ton of product) / 2000 (lb/ton)

Contaminant	Potential Emissions (lb/hr)	Potential Emissions (tons/yr) Based on 300 tons/hour and 8,760 hr/yr production	Annual Emissions (tons/yr) Based on 300,000 tons per year production
Carbon Monoxide (CO)	39.00	170.8	19.50
Oxides of Nitrogen (NO _x)	6.60	28.91	3.30
Sulfur Dioxide (SO ₂)	0.60	2.63	0.30
Total Particulate Matter (PM)	1.71	7.49	0.86
Particulate less than 10 µm (PM-10)	1.17	5.12	0.58
Particulate less than 2.5 µm (PM-2.5)	0.87	3.81	0.43
Inorganic PM	2.22	9.72	1.11
Organic PM	1.02	4.47	0.51
Controlled Total PM	4.95	21.68	2.48
Volatile Organic Compounds (VOC)	9.60	42.05	4.80
Methane (CH ₄)	3.60	15.77	1.80
Carbon Dioxide (CO ₂)	9,900	43,362	4,950

Controlled Total PM = Total PM + Inorganic PM + Organic PM

SUMMARY OF EMISSIONS FROM PROPOSED HOT MIX ASPHALT PLANT**Known:**

1. Maximum Hourly Production Rate: 300 tons/hour
 2. Annual Capped Production Rate: 300,000 tons/year

Emission Factors for Drum Mix Hot Mix Asphalt Plant

As per AP-42, Chapter 11.1 for Hot Mix Asphalt Plants (3/04 Version)

	CAS	Name	Emission Factor (lb/ton)	Potential lb/hr	Potential ton/yr	Expected ton/yr	Expected lb/yr
Non-PAH Hazardous Air Pollutants (Natural Gas-fired Dyer with Fabric Filter)	71-43-2	Benzene	0.00039	0.12	0.51	0.059	117.0
	100-41-4	Ethylbenzene	0.00024	0.072	0.32	0.036	72.0
	50-00-0	Formaldehyde	0.0031	0.93	4.07	0.47	930
	110-54-3	Hexane	0.00092	0.28	1.21	0.14	276.0
	540-84-1	Isooctane	4.00E-05	0.012	0.05	0.006	12
	71-55-6	Methyl Chloroform	4.80E-05	0.014	0.06	0.007	14.40
	108-88-3	Toluene	0.00015	0.045	0.20	0.02	45
	1330-20-7	Xylene	0.0002	0.06	0.26	0.030	60
			<i>Total Non-PAH HAPs</i>	0.0051	1.53	0.76	1526
PAH Hazardous Air Pollutants (Natural Gas-fired Dyer with Fabric Filter)	91-57-6	2-Methylnaphthalene	7.40E-05	0.022	0.10	0.011	22.2
	83-32-9	Acenaphthene	1.40E-06	0.00042	0.00	0.00021	0.42
	208-96-8	Acenaphthylene	8.60E-06	0.0026	0.01	0.0013	2.58
	120-12-7	Anthracene	2.20E-07	0.0001	0.00	0.00003	0.07
	56-55-3	Benzo(a)anthracene	2.10E-07	0.000063	0.00	0.000032	0.06
	50-32-8	Benzo(a)pyrene	9.80E-09	0.0000029	0.00	0.0000015	0.0029
	205-99-2	Benzo(b)fluoranthene	1.00E-07	0.000030	0.00	0.000015	0.030
	192-97-2	Benzo(e)pyrene	1.10E-07	0.000033	0.00	0.000017	0.033
	191-24-2	Benzo(g,h,i)perylene	4.00E-08	0.000012	0.00	0.000006	0.012
	207-08-9	Benzo(k)fluoranthene	4.10E-08	0.000012	0.00	0.000006	0.012
	218-01-9	Chrysene	1.80E-07	0.000054	0.00	0.000027	0.05
	206-44-0	Fluoranthene	6.10E-07	0.00018	0.00	0.00009	0.18
	86-73-7	Fluorene	3.80E-06	0.0011	0.00	0.0006	1.14
	193-39-5	Indeno(1,2,3-cd)pyrene	7.00E-09	0.0000021	0.00	0.0000011	0.0021
	91-20-3	Naphthalene	9.00E-05	0.03	0.12	0.01	27.0
	198-55-0	Perylene	8.80E-09	0.0000026	0.00	0.0000013	0.0026
	85-01-8	Phenanthrene	7.60E-06	0.0023	0.01	0.0011	2.28
	129-00-0	Pyrene	5.40E-07	0.0002	0.00	0.00008	0.16
			<i>Total PAH HAPs</i>	0.00019	0.06	0.25	0.03
			<i>Total HAPs</i>	0.0053	1.58	6.93	1583

Non-HAP Organic Compounds (Natural Gas-fired Dryer with Fabric Filter)	106-97-8	Butane	0.00067	0.20	0.88	0.10	201.0
	74-85-1	Ethylene	0.0070	2.10	9.20	1.05	2100
	142-82-5	Heptane	0.0094	2.82	12.35	1.41	2820
	763-29-1	2-Methyl-1-pentene	0.0040	1.20	5.26	0.60	1200
	513-35-9	2-Methyl-2-butene	0.00058	0.17	0.76	0.09	174.0
	96-14-0	3-Methylpentane	0.00019	0.057	0.25	0.029	57.0
	109-67-1	1-Pentene	0.0022	0.66	2.89	0.33	660
	109-66-0	n-Pentane	0.00021	0.063	0.28	0.032	63.0
	<i>Total non-HAP Organics</i>		0.024	7.28	31.86	3.64	7275

Speciated Metal Compounds (Natural Gas-fired Dryer with Fabric Filter)		Antimony	1.80E-07	0.000054	2.37E-04	0.000027	0.05
		Arsenic	5.60E-07	0.00017	7.36E-04	0.00008	0.17
		Barium	5.80E-06	0.0017	7.62E-03	0.0009	1.74
		Beryllium	0.00E+00	0	0.00E+00	0	0
		Cadmium	4.10E-07	0.00012	5.39E-04	0.00006	0.12
		Chromium	5.50E-06	0.0017	7.23E-03	0.0008	1.65
		Cobalt	2.60E-08	0.000008	3.42E-05	0.000	0.008
		Copper	3.10E-06	0.0009	4.07E-03	0.00047	0.93
		Hexavalent Chromium	4.50E-07	0.00014	5.91E-04	0.00007	0.14
		Lead	6.20E-07	0.0002	8.15E-04	0.0001	0.19
		Manganese	7.70E-06	0.0023	1.01E-02	0.0012	2.31
		Mercury	2.40E-07	0.0001	3.15E-04	0.00004	0.07
		Nickel	6.30E-05	0.019	8.28E-02	0.009	18.90
		Phosphorus	2.80E-05	0.008	3.68E-02	0.0042	8.40
		Silver	4.80E-07	0.00014	6.31E-04	0.00007	0.14
		Selenium	3.50E-07	0.00011	4.60E-04	0.00005	0.11
		Thallium	4.10E-09	0.0000012	5.39E-06	0.0000006	0.0012
		Zinc	6.10E-05	0.018	8.02E-02	0.009	18.30
	<i>Total Metals</i>		1.77E-04	0.05	2.33E-01	0.03	53.2

Attachment A.2

Emission Calculations for Hot Oil System

SUMMARY OF EMISSIONS FROM PROPOSED HOT OIL HEATER SYSTEM**Known:**

1. Maximum Hourly Production Rate: 300 tons/hour
 2. Annual Capped Production Rate: 300,000 tons/year
 3. Hot Oil Burner heat input rating:
 HC-120 Unit: 1.2 MMBTU/hr Hot Oil Heater 11.3 gal./hr
 C2-GO-15 Burner: 1.6 MMBTU/hr Nominal Gas/Oil Burner 1.54E+03 ft³/hr
 4. Expected operations as a percentage of potential operations = 11.42% (300,000 ton/yr / (300 ton/hr * 8,760 hr/yr))

Usage Rates**Natural Gas Emission Factors (from Supplier or AP-42)**As per AP-42, Chapter 11.1 for Hot Mix Asphalt Plants (3/04 Version)¹

Contaminant Name	CAS No.	Emission Factor		Source
Particulates		4.80E-03	lb/MMBTU	Mfg. Data
Sulfur Dioxide ²	7446-09-5	1.79E-03	lb/MMBTU	Mfg. Data
Carbon Monoxide	630-08-0	3.70E-02	lb/MMBTU	Mfg. Data
Oxides of Nitrogen	10102-44-0	9.20E-02	lb/MMBTU	Mfg. Data
VOC	74-98-6	2.50E-02	lb/MMBTU	Mfg. Data
Carbon Dioxide	124-38-9	2.00E-01	lb/ft ³	Table 11.1-13
Methane	74-82-8	5.56E-06	lb/ft ³	Table 1.5-1
Formaldehyde	50-00-0	2.60E-08	lb/ft ³	Table 11.1-13

¹ - Table 11.1-13, hot oil system fired wth Natural Gas² - Emission Factor Based on 1.05 * Sulfur Content (assumed to be 0.0017%)**No. 2 Fuel Oil Emission Factors (from Supplier or AP-42)**As per AP-42, Chapter 11.1 for Hot Mix Asphalt Plants (3/04 Version)¹ or Chapter 1.3 for No. 2 fuel oil combustion

Contaminant Name	CAS No.	Emission Factor		Source
Particulates		1.43E-02	lb/MMBTU	Mfg. Data
Sulfur Dioxide ²	7446-09-5	5.25E-03	lb/MMBTU	Mfg. Data
Carbon Monoxide	630-08-0	3.70E-02	lb/MMBTU	Mfg. Data
Oxides of Nitrogen	10102-44-0	1.40E-01	lb/MMBTU	Mfg. Data
VOC	74-98-6	3.80E-02	lb/MMBTU	Mfg. Data
Carbon Dioxide	124-38-9	2.80E+01	lb/gal	Table 11.1-13
Methane	74-82-8	5.20E-05	lb/gal	Table 1-3-3
Formaldehyde	50-00-0	3.50E-06	lb/gal	Table 11.1-13
Acenaphthene	83-32-9	5.30E-07	lb/gal	Table 11.1-13
Acenaphthylene	208-96-8	2.00E-07	lb/gal	Table 11.1-13
Anthracene	120-12-7	1.80E-07	lb/gal	Table 11.1-13
Benzo(b)fluoranthene	205-99-2	1.00E-07	lb/gal	Table 11.1-13
Fluoranthrene	206-44-0	4.40E-08	lb/gal	Table 11.1-13
Fluorene	86-73-7	3.20E-08	lb/gal	Table 11.1-13
Naphthalene	91-20-3	1.70E-05	lb/gal	Table 11.1-13
Phenanthrene	85-01-8	4.90E-06	lb/gal	Table 11.1-13
Pyrene	129-00-0	3.20E-08	lb/gal	Table 11.1-13
Total PCDD		2.00E-10	lb/gal	Table 11.1-13
Total PCDF		3.10E-11	lb/gal	Table 11.1-13
Total Dioxins/Furans		2.30E-10	lb/gal	Table 11.1-13

¹ - Table 11.1-13, hot oil system fired wth No. 2 Fuel Oil² - Emission Factor Based on 1.05 * Sulfur Content (assumed to be 0.05%)

Potential and Expected Annual Emission Calculations

Gas Potential to Emit (lb/hr) = Gas Firing Rate (ft³/hr) * Emission Factor (lb/ft³) or MMBTU/hr * (lb/MMBTU)

Oil Potential to Emit (lb/hr) = Oil Firing Rate (gal/hr) * Emission Factor (lb/gal) or MMBTU/hr * (lb/MMBTU)

Potential to Emit (lb/yr) = Potential to Emit (lb/hr) * 8,760 (hr/yr)

Annual Capped Operations = PTE * 11.42% Capacity Factor as a result of Cap (see Item 4 above for details)

Contaminant		Potential Emissions (lb/hr)		Potential Emissions (tons/yr)		Annual Expected Emissions (tons/yr) ²		
		Gas	Oil	Gas	Oil	Gas	Oil	Total
Carbon Monoxide (CO)	630-08-0	0.059	5.92E-02	0.26	0.26	0.030	0.030	0.059
Carbon Dioxide (CO ₂)	124-38-9	308.0	316.4	1,349.04	1,385.83	154.0	158.2	312.2
Particulates		0.008	0.023	0.034	0.100	0.0038	0.011	0.015
Sulfur Dioxide (SO ₂)		0.0029	0.0084	0.013	0.037	0.0014	0.0042	0.006
Oxides of Nitrogen	10102-44-0	0.15	0.22	0.64	0.98	0.074	0.11	0.19
VOC	74-98-6	0.040	0.061	0.18	0.27	0.020	0.030	0.05
Methane	74-82-8	0.0086	0.00059	0.038	0.0026	0.0043	0.00029	0.0046
Formaldehyde	50-00-0	4.00E-05	3.96E-05	1.75E-04	1.73E-04	2.00E-05	1.98E-05	3.98E-05
Acenaphthene	83-32-9		5.99E-06		2.62E-05		2.99E-06	2.99E-06
Acenaphthylene	208-96-8		2.26E-06		9.90E-06		1.13E-06	1.13E-06
Anthracene	120-12-7		2.03E-06		8.91E-06		1.02E-06	1.02E-06
Benzo(b)fluoranthene	205-99-2		1.13E-06		4.95E-06		5.65E-07	5.65E-07
Fluoranthrene	206-44-0		4.97E-07		2.18E-06		2.49E-07	2.49E-07
Fluorene	86-73-7		3.62E-07		1.58E-06		1.81E-07	1.81E-07
Naphthalene	91-20-3		1.92E-04		8.41E-04		9.61E-05	9.61E-05
Phenanthrene	85-01-8		5.54E-05		2.43E-04		2.77E-05	2.77E-05
Pyrene	129-00-0		3.62E-07		1.58E-06		1.81E-07	1.81E-07
Total PCDD			2.26E-09		9.90E-09		1.13E-09	1.13E-09
Total PCDF			3.50E-10		1.53E-09		1.75E-10	1.75E-10
Total Dioxins/Furans			2.60E-09		1.14E-08		1.30E-09	1.30E-09

² - Based on 300,000 tons per year cap

Attachment A.3

Emission Calculations for Load Out Operations

SUMMARY OF EMISSIONS FROM PROPOSED HOT MIX ASPHALT LOAD OUT**Known:**

1. Maximum Hourly Production Rate: 300 tons/hour
2. Annual Capped Production Rate: 300,000 tons/year
3. Expected operations as a percentage of potential operations = 11.42% (300,000 ton/yr / (300 ton/hr * 8,760 hr/yr))
4. Blue Smoke Control uses a scavenge system to direct silo tops to the drum mixer burner for incineration.

Assumptions:

1. Asphalt volatility (V), default value = -0.5
2. Hot Mix Temp (T measured in °F) = 325

Emission Factors for Load-Out Operations

As per AP-42, Chapter 11.1 - Table 11.1-14

Contaminant Name	Source	AP-42 Emission Factor Equation	Emission Factor	
Total PM	Load-Out	$EF = 0.000181 + 0.00141(-V)e^{((0.0251)(T + 460) - 20.43)}$	0.000522	lb/ton
Organic PM (see below)		$EF = 0.00141(-V)e^{((0.0251)(T + 460) - 20.43)}$	0.000341	lb/ton
TOC (see below)		$EF = 0.0172(-V)e^{((0.0251)(T + 460) - 20.43)}$	0.004159	lb/ton
CO		$EF = 0.00558(-V)e^{((0.0251)(T + 460) - 20.43)}$	0.001349	lb/ton

Potential and Expected Annual Emission Calculations

Potential to Emit (lb/hr) = 300 ton/hr * Emission Factor (lb/ton)

Potential to Emit (lb/yr) = Potential to Emit (lb/hr) * 8,760 (hr/yr)

Annual Capped Operations = 300,000 ton/yr * Emission Factor (lb/ton)

Contaminant Name	Source	Potential Emissions (lb/hr)	Potential Emissions (tons/hr)	Potential Emissions (lb/yr)	Potential Emissions (tons/yr)	Annual Expected Emissions (lb/yr)	Annual Expected Emissions (tons/yr)
Total PM	Load-Out	0.16	7.83E-05	1,372	0.69	156.6	0.078
Organic PM (see below)		0.10	5.11E-05	896	0.45	102	0.05
TOC (see below)		1.25	6.24E-04	10,930	5.46	1,248	0.62
CO		0.40	2.02E-04	3,546	1.77	404.8	0.20

Organic Load Out Emission Rates

Pollutant	Load Out	Uncontrolled Potential Emissions			Uncontrolled Expected Annual		
		EF (%)	lb/hr	lb/yr	ton/yr	lb/hr	lb/yr
Acenaphthene		0.26	2.66E-04	2.33E+00	1.16E-03	2.66E-04	2.66E-01
Acenaphthylene		0.028	2.86E-05	2.51E-01	1.25E-04	2.86E-05	2.86E-02
Anthracene		0.07	7.16E-05	6.27E-01	3.14E-04	7.16E-05	7.16E-02
Benzo(a)anthracene		0.019	1.94E-05	1.70E-01	8.51E-05	1.94E-05	1.94E-02
Benzo(b)fluoranthene		0.0076	7.77E-06	6.81E-02	3.40E-05	7.77E-06	7.77E-03
Benzo(k)fluoranthene		0.0022	2.25E-06	1.97E-02	9.86E-06	2.25E-06	2.25E-03
Benzo(g,h,i)perylene		0.0019	1.94E-06	1.70E-02	8.51E-06	1.94E-06	1.94E-03
Benzo(a)pyrene		0.0023	2.35E-06	2.06E-02	1.03E-05	2.35E-06	2.35E-03
Benzo(e)pyrene		0.0078	7.98E-06	6.99E-02	3.49E-05	7.98E-06	7.98E-03
Chrysene		0.103	1.05E-04	9.23E-01	4.61E-04	1.05E-04	1.05E-01
Dibenz(a,h)anthracene		0.00037	3.78E-07	3.32E-03	1.66E-06	3.78E-07	3.78E-04
Fluoranthene		0.05	5.11E-05	4.48E-01	2.24E-04	5.11E-05	5.11E-02
Fluorene		0.77	7.88E-04	6.90E+00	3.45E-03	7.88E-04	7.88E-01

Organic Load Out Emission Rates (continued)

Pollutant ¹	Load Out	Uncontrolled Potential Emissions			Uncontrolled Expected Annual		
	EF (%)	lb/hr	lb/yr	ton/yr	lb/hr	lb/yr	ton/yr
Indeno(1,2,3-cd)pyrene	0.00047	4.81E-07	4.21E-03	2.11E-06	4.81E-07	4.81E-04	2.40E-07
2-Methylnaphthalene	2.38	2.43E-03	2.13E+01	1.07E-02	2.43E-03	2.43E+00	1.22E-03
Naphthalene	1.25	1.28E-03	1.12E+01	5.60E-03	1.28E-03	1.28E+00	6.39E-04
Perlylene	0.022	2.25E-05	1.97E-01	9.86E-05	2.25E-05	2.25E-02	1.13E-05
Phenanthrene	0.81	8.28E-04	7.26E+00	3.63E-03	8.28E-04	8.28E-01	4.14E-04
Pyrene	0.15	1.53E-04	1.34E+00	6.72E-04	1.53E-04	1.53E-01	7.67E-05
TOTAL PAH HAPs	5.93	6.07E-03	5.32E+01	2.66E-02	6.05E-03	6.05	3.03E-03
Phenol	1.18	1.21E-03	1.06E+01	5.29E-03	1.21E-03	1.21E+00	6.03E-04

Total Organic Compound Load Out Emission Rates

Pollutant ¹	Load Out	Uncontrolled Potential Emissions			Uncontrolled Expected Annual		
	EF (%)	lb/hr	lb/yr	ton/yr	lb/hr	lb/yr	ton/yr
VOCs	94	1.17	10273.93	5.14	1.17	1172.82	0.59
Methane	6.5	8.11E-02	7.10E+02	3.55E-01	8.11E-02	81.10	4.05E-02
Acetone	0.046	5.74E-04	5.03E+00	2.51E-03	5.74E-04	0.57	2.87E-04
Ethylene	0.71	8.86E-03	7.76E+01	3.88E-02	8.86E-03	8.86	4.43E-03
Total non-VOC/non-HAPs	7.3	9.05E-02	793.06	3.97E-01	9.05E-02	90.53	4.53E-02
Benzene	0.052	6.49E-04	5.68E+00	2.84E-03	6.49E-04	0.65	3.24E-04
Bromomethane	0.0096	1.20E-04	1.05E+00	5.25E-04	1.20E-04	0.12	5.99E-05
2-Butanone	0.049	6.11E-04	5.36E+00	2.68E-03	6.11E-04	0.61	3.06E-04
Carbon Disulfide	0.013	1.62E-04	1.42E+00	7.10E-04	1.62E-04	0.16	8.11E-05
Chloroethane	0.00021	2.62E-06	2.30E-02	1.15E-05	2.62E-06	0.00	1.31E-06
Chloromethane	0.015	1.87E-04	1.64E+00	8.20E-04	1.87E-04	0.19	9.36E-05
Cumene	0.11	1.37E-03	1.20E+01	6.01E-03	1.37E-03	1.37	6.86E-04
Ethylbenzene	0.28	3.49E-03	3.06E+01	1.53E-02	3.49E-03	3.49	1.75E-03
Formaldehyde	0.088	1.10E-03	9.62E+00	4.81E-03	1.10E-03	1.10	5.49E-04
n-Hexane	0.15	1.87E-03	1.64E+01	8.20E-03	1.87E-03	1.87	9.36E-04
Isooctane	0.0018	2.25E-05	1.97E-01	9.84E-05	2.25E-05	0.02	1.12E-05
Methylene Chloride				Not Detected			
Styrene	0.0073	9.11E-05	7.98E-01	3.99E-04	9.11E-05	0.09	4.55E-05
Tetrachloroethane	0.0077	9.61E-05	8.42E-01	4.21E-04	9.61E-05	0.10	4.80E-05
Toluene	0.21	2.62E-03	2.30E+01	1.15E-02	2.62E-03	2.62	1.31E-03
Trichlorofluoromethane	0.0013	1.62E-05	1.42E-01	7.10E-05	1.62E-05	0.02	8.11E-06
m-/p-Xylene	0.41	5.12E-03	4.48E+01	2.24E-02	5.12E-03	5.12	2.56E-03
o-Xylene	0.08	9.98E-04	8.74E+00	4.37E-03	9.98E-04	1.00	4.99E-04
Total Volatile Organic HAPs	1.5	1.85E-02	1.62E+02	8.11E-02	1.85E-02	18.53	9.26E-03

Attachment A.4

Emission Calculations for Silo Filling Operations

SUMMARY OF EMISSIONS FROM PROPOSED HOT MIX ASPHALT SILO FILLING**Known:**

1. Maximum Hourly Production Rate: 300 tons/hour
2. Annual Capped Production Rate: 300,000 tons/year
3. Expected operations as a percentage of potential operations = 11.42% (300,000 ton/yr / (300 ton/hr * 8,760 hr/yr))
4. Blue Smoke Control uses a scavenge system to direct silo tops to the drum mixer burner for incineration.

Assumptions:

1. Asphalt volatility (V), default value = -0.5
2. Hot Mix Temp (T measured in °F) = 325

Emission Factors for Silo Filling Operations

As per AP-42, Chapter 11.1 - Table 11.1-14

Contaminant Name	Source	AP-42 Emission Factor Equation	Emission Factor	
Total PM	Silo Filling	$EF = 0.000332 + 0.00105(-V)e^{((0.0251)(T + 460) - 20.43)}$	0.000586	lb/ton
Organic PM		$EF = 0.00105(-V)e^{((0.0251)(T + 460) - 20.43)}$	0.000254	lb/ton
TOC		$EF = 0.0504(-V)e^{((0.0251)(T + 460) - 20.43)}$	0.012187	lb/ton
CO		$EF = 0.00488(-V)e^{((0.0251)(T + 460) - 20.43)}$	0.001180	lb/ton

Potential and Expected Annual Emission Calculations

Potential to Emit (lb/hr) = 300 ton/hr * Emission Factor (lb/ton)

Potential to Emit (lb/yr) = Potential to Emit (lb/hr) * 8,760 (hr/yr)

Annual Capped Operations = 300,000 ton/yr * Emission Factor (lb/ton)

Contaminant Name	Source	Potential Emissions (lb/hr)	Potential Emissions (tons/hr)	Potential Emissions (lb/yr)	Potential Emissions (tons/yr)	Annual Expected Emissions (lb/yr)	Annual Expected Emissions (tons/yr)
Total PM - Uncontrolled	Silo Filling	0.18	8.79E-05	1,540	0.77	175.8	0.088
Total PM - Controlled*		0.009	4.39E-06	76.99	0.038	1.76	0.00088
Organic PM (see below)		0.076	3.81E-05	667.2	0.33	76.17	0.038
TOC (see below)		3.66	1.83E-03	32,027	16.01	3,656	1.83
CO		0.35	1.77E-04	3,101	1.55	354.0	0.18

* - PM Control Efficiency for Total PM = 99%

Organic PM Silo Filling Emission Rates

Pollutant ¹	Silo Fill	Uncontrolled			Controlled ²		
	EF (%)	lb/hr	lb/yr	ton/yr	lb/hr	lb/yr	ton/yr
Acenaphthene	0.47	3.58E-04	3.58E-01	1.79E-04	1.79E-05	1.79E-02	8.95E-06
Acenaphthylene	0.014	1.07E-05	1.07E-02	5.33E-06	5.33E-07	5.33E-04	2.67E-07
Anthracene	0.13	9.90E-05	9.90E-02	4.95E-05	4.95E-06	4.95E-03	2.48E-06
Benzo(a)anthracene	0.056	4.27E-05	4.27E-02	2.13E-05	2.13E-06	2.13E-03	1.07E-06
Benzo(b)fluoranthene				Not Detected			
Benzo(k)fluoranthene				Not Detected			
Benzo(g,h,i)perylene				Not Detected			
Benzo(a)pyrene				Not Detected			
Benzo(e)pyrene	0.0095	7.24E-06	7.24E-03	3.62E-06	3.62E-07	3.62E-04	1.81E-07
Chrysene	0.21	1.60E-04	1.60E-01	8.00E-05	8.00E-06	8.00E-03	4.00E-06
Dibenz(a,h)anthracene				Not Detected			

Organic PM Silo Filling Emission Rates (continued)

Pollutant ¹	Silo Fill	Uncontrolled			Controlled ²		
	EF (%)	lb/hr	lb/yr	ton/yr	lb/hr	lb/yr	ton/yr
Fluoranthene	0.15	1.14E-04	1.14E-01	5.71E-05	5.71E-06	5.71E-03	2.86E-06
Fluorene	1.01	7.69E-04	7.69E-01	3.85E-04	3.85E-05	3.85E-02	1.92E-05
Indeno(1,2,3-cd)pyrene				Not Detected			
2-Methylnaphthalene	5.27	4.01E-03	4.01E+00	2.01E-03	2.01E-04	2.01E-01	1.00E-04
Naphthalene	1.82	1.39E-03	1.39E+00	6.93E-04	6.93E-05	6.93E-02	3.47E-05
Perylene	0.03	2.29E-05	2.29E-02	1.14E-05	1.14E-06	1.14E-03	5.71E-07
Phenanthrene	1.8	1.37E-03	1.37E+00	6.86E-04	6.86E-05	6.86E-02	3.43E-05
Pyrene	0.44	3.35E-04	3.35E-01	1.68E-04	1.68E-05	1.68E-02	8.38E-06
TOTAL PAH HAPs	11.4	8.69E-03	8.69E+00	4.35E-03	4.35E-04	4.35E-01	2.17E-04
Phenol				Not Detected			

¹ Specific compounds are a percentage of the total extractable organic particulate (Organic PM) or total organic compounds (TOC). The emission factor (EF) is calculated by multiplying the percentage of the compound by the EF for the total Organic PM or TOC.

² Controlled compounds project a 95% control efficiency. Incineration at the burner is comparable to a thermal oxidizer.

Total Organic Compound Silo Filling Emission Rates

Pollutant ¹	Silo Fill	Uncontrolled			Controlled ²		
	EF (%)	lb/hr	lb/yr	ton/yr	lb/hr	lb/yr	ton/yr
VOCs	100	3.66	3656.01	1.83	0.18	182.80	0.091
Methane	0.26	9.51E-03	9.51	4.75E-03	4.75E-04	0.48	2.38E-04
Acetone	0.055	2.01E-03	2.01	1.01E-03	1.01E-04	0.10	5.03E-05
Ethylene	1.1	4.02E-02	40.22	2.01E-02	2.01E-03	2.01	1.01E-03
Total non-VOC/non-HAPs	1.4	5.12E-02	51.18	2.56E-02	2.56E-03	2.56	1.28E-03
Benzene	0.032	1.17E-03	1.17	5.85E-04	5.85E-05	5.85E-02	2.92E-05
Bromomethane	0.0049	1.79E-04	0.18	8.96E-05	8.96E-06	8.96E-03	4.48E-06
2-Butanone	0.039	1.43E-03	1.43	7.13E-04	7.13E-05	7.13E-02	3.56E-05
Carbon Disulfide	0.016	5.85E-04	0.58	2.92E-04	2.92E-05	2.92E-02	1.46E-05
Chloroethane	0.004	1.46E-04	0.15	7.31E-05	7.31E-06	7.31E-03	3.66E-06
Chloromethane	0.023	8.41E-04	0.84	4.20E-04	4.20E-05	4.20E-02	2.10E-05
Cumene				Not Detected			
Ethylbenzene	0.038	1.39E-03	1.39	6.95E-04	1.39E-04	0.14	6.95E-05
Formaldehyde	0.69	2.52E-02	25.23	1.26E-02	1.26E-03	1.26E+00	6.31E-04
n-Hexane	0.1	3.66E-03	3.66	1.83E-03	3.66E-04	0.37	1.83E-04
Isooctane	0.00031	1.13E-05	0.01	5.67E-06	1.13E-06	1.13E-03	5.67E-07
Methylene Chloride	0.00027	9.87E-06	0.01	4.94E-06	4.94E-07	4.94E-04	2.47E-07
Styrene	0.0054	1.97E-04	0.20	9.87E-05	1.97E-05	1.97E-02	9.87E-06
Tetrachloroethane				Not Detected			
Toluene	0.062	2.27E-03	2.27	1.13E-03	2.27E-04	0.23	1.13E-04
Trichlorofluoromethane				Not Detected			
m-/p-Xylene	0.2	7.31E-03	7.31	3.66E-03	7.31E-04	0.73	3.66E-04
o-Xylene	0.057	2.08E-03	2.08	1.04E-03	2.08E-04	0.21	1.04E-04
Total Volatile Organic HAPs	1.3	4.65E-02	46.50	2.33E-02	4.65E-03	4.65	2.33E-03

¹ Specific compounds are a percentage of the total extractable organic particulate (Organic PM) or TOC. The emission factor is calculated by multiplying the percentage of the compound by the emission factor for the total Organic PM or TOC.

² Controlled compounds project a 90% control efficiency.

Attachment B
Confidentiality Justification

Confidentiality Justification

In accordance with 6 NYCRR Part 616.7, Jenkinsville Sand and Gravel LLC is submitting this confidentiality justification with regards to specific proprietary process data which is included within this supporting documentation. This confidentiality justification identifies what information is to be considered proprietary and confidential.

This supporting documentation contains proprietary process data and information, the release of which may jeopardize the profitability and competitive operations of Jenkinsville Sand and Gravel LLC.

The following data, process information, or calculations are proprietary, or are based on proprietary information:

1. Attachment A: all emission calculations and technical data.

Factors Pertaining to Whether or Not a Trade Secret Exists

With respect to 6 NYCRR 616.7 (c)(vi)(a-f), Jenkinsville Sand and Gravel LLC offers the following information to demonstrate that a trade secret exists. The responses are presented in the same order as in 6 NYCRR 616.7(c)(vi)(a-f).

(a) The request for confidentiality contains information which is not known outside of the business of Jenkinsville Sand and Gravel LLC, its affiliated companies, its customers or companies with which Jenkinsville Sand and Gravel LLC has executed a confidentiality agreement.

(b) The information being considered a trade secret is known only by Jenkinsville Sand and Gravel LLC employees, the employees of affiliated companies, and the employees of companies with which Jenkinsville Sand and Gravel LLC has executed a confidentiality agreement, and only to the extent that they have the technical training and knowledge to understand how the operations work.

(c) Jenkinsville Sand and Gravel LLC restricts access and guards the secrecy of the information considered as trade secrets to its' management level staff and personnel requiring access. Files and other documents containing information pertaining to trade

secrets are maintained in secure locations at the company's management office. Jenkinsville Sand and Gravel LLC protects the confidentiality of this information by requiring confidentiality agreements with consultants retained to provide services associated with the work.

(d) Jenkinsville Sand and Gravel LLC has invested significant time and money in the research and development of its processes. These designs represent the product they sell to their customers. If this information were in the public domain Jenkinsville Sand and Gravel LLC would lose its competitive advantage.

(e) Jenkinsville Sand and Gravel LLC has expended significant resources in market research, contract negotiation and site development which are contingent on being able to produce the product.

(f) Jenkinsville Sand and Gravel LLC does not allow the use of documents or designs without written permission. If Jenkinsville Sand and Gravel LLC did not authorize the release of this information it could not be properly acquired and therefore would be difficult or illegal to obtain.

Attachment C

Air State Facility Permit Application

New York State Department of Environmental Conservation
Air Permit Application



Department of
Environmental
Conservation

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Application ID
5 - 5 3 2 8 - 0 0 1 6 8 /

Application Type
x State Facility Title V

Section I - Certification

Certification

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons directly responsible for gathering the information required to complete this application, I believe the information is true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fines and imprisonment for knowing violations.

Responsible Official	Danna J. Ellsworth	Title	Member
Signature		Date	4/4/25

Professional Engineer Certification

I certify under penalty of law that I have personally examined, and am familiar with, the statements and information submitted in this document and all its attachments as they pertain to the practice of engineering. I am aware that there are significant penalties for submitting false information, including the possibility of fines and imprisonment for knowing violations.

Professional Engineer	Jeffrey A. Marx	NYS License No.	082100
Signature		Date	4/4/2025

Section II - Identification Information

Type of Permit Action Requested

<input checked="" type="checkbox"/> New	<input type="checkbox"/> Renewal	<input type="checkbox"/> Significant Modification	<input type="checkbox"/> Administrative Amendment	<input type="checkbox"/> Minor Modification
<input checked="" type="checkbox"/> Application for the construction of a new facility			Application involves the construction of new emission unit(s)	

Facility Information

Name Jenkinsville Sand and Gravel Asphalt Plant

Location Address 7289 State Route 4

City / <input checked="" type="checkbox"/> Town / <input type="checkbox"/> Village	Fort Ann	Zip	12827
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Owner/Firm Information

Business/Taxpayer ID

Name Jenkinsville Sand and Gravel LLC

272063575

Street Address 201 Jenkinsville Road

City	Queensbury	State/Province	NY	Country	US	Zip	12804
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Owner Classification: Federal State Municipal Corporation/Partnership Individual

Owner/Firm Contact Information

Name	Danna J. Ellsworth	Phone	(518) 792-9246
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E-mail Address	danna@ellsworthexcavating.com	Fax	
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Affiliation	Jenkinsville Sand and Gravel LLC	Title	Member
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Street Address 201 Jenkinsville Road

City	Queensbury	State/Province	NY	Country	US	Zip	12804
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Facility Contact Information

Name	Danna J. Ellsworth	Phone	(518) 792-9246
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E-mail Address	danna@ellsworthexcavating.com	Fax	
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Affiliation	Jenkinsville Sand and Gravel LLC	Title	Member
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Street Address 201 Jenkinsville Road

City	Queensbury	State/Province	NY	Country	US	Zip	12804
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Project Description

Continuation Sheet(s)

Jenkinsville Sand & Gravel plans to install an asphalt plant with a production capacity of 300 tons per hour within the approved mine site and seeks to cap annual production at 300,000 tons per year.

Section III - Facility Information

Facility Classification

Hospital Residential Educational/Institutional Commercial * Industrial Utility

Affected States (Title V Applications Only)

Vermont Massachusetts Rhode Island Pennsylvania Tribal Land: _____
 New Hampshire Connecticut New Jersey Ohio Tribal Land: _____

SIC Code(s)

NAICS Code(s)

1423

2951

324121

Facility Description

Continuation Sheet(s)

The site is currently a NYSDEC permitted Mine facility, which has been issued Mine ID 50985. The facility seeks to construct and operate a stationary continuous drum hot mix asphalt plant which will be operated seasonally during the construction season.

Compliance Statements (Title V Applications Only)

I certify that as of the date of this application the facility is in compliance with all applicable requirements. Yes No
 If one or more emission units at the facility are not in compliance with all applicable requirements at the time of signing this application (the 'NO' box must be checked), the noncomplying units must be identified in the "Compliance Plan" block on page 8 of this form along with the compliance plan information required. For all emission units at the facility that are operating in compliance with all applicable requirements, complete the following:

This facility will continue to be operated and maintained in such a manner as to assure compliance for the duration of the permit, except those emission units referenced in the compliance plan portion of this application.

For all emission units subject to any applicable requirements that will become effective during the term of the permit, this facility will meet such requirements on a timely basis.

Compliance certification reports will be submitted at least once per year. Each report will certify compliance status with respect to each applicable requirement, and the method used to determine the status.

Facility Applicable Federal Requirements

Continuation Sheet(s)

Title	Type	Part	Subpart	Section	Subdivision	Paragraph	Subparagraph	Clause	Subclause
6	NYCRR	201	7						
6	NYCRR	211							
6	NYCRR	212							
6	NYCRR	220	3						

Facility State Only Requirements

Continuation Sheet(s)

Title	Type	Part	Subpart	Section	Subdivision	Paragraph	Subparagraph	Clause	Subclause
	ECL	19	0301						
6	NYCRR	201	1	4					
6	NYCRR	201	5						

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Facility Compliance Certification										<input checked="" type="checkbox"/> Continuation Sheet(s)		
Rule Citation												
Title	Type	Part	Subpart	Section	Subdivision	Paragraph	Subparagraph	Clause	Subclause			
6	NYCRR	201	7	2								
* Applicable Federal Requirement State Only Requirement			Capping	CAS Number		Contaminant Name						
				000630-08-0		Carbon Monoxide						
Monitoring Information												
<input checked="" type="checkbox"/> Work Practice Involving Specific Operations			Ambient Air Monitoring			Record Keeping/Maintenance Procedures						
Compliance Activity Description												
Records must be maintained on a daily basis tracking total tonnage of asphalt produced. This daily tonnage amount should be rolled monthly and not exceed 300,000 tons per any 12 months to restrict emissions to less than Title V Major Source Thresholds.												
Work Practice Type Code	Process Material					Reference Test Method						
	Code	Description										
	155	Asphalt										
Monitored Parameter						Manufacturer's Name/Model Number						
Code	Description											
Limit			Limit Units									
Upper	Lower	Code	Description									
300,000		38	300,000 tons per year Asphalt Production									
Averaging Method			Monitoring Frequency					Reporting Requirements				
Code	Description		Code	Description				Code	Description			
17	Annual Maximum Rolled Monthly		05	Monthly				15	Annually (Calendar)			
Facility Emissions Summary										<input checked="" type="checkbox"/> Continuation Sheet(s)		
CAS Number	Contaminant Name						Potential to Emit (tons/yr)	Actual Emissions (pounds/yr)				
ONY075 - 00 - 5	PM-10						5.9	1,356				
ONY750 - 02 - 5	PM-2.5						3.8	870				
007446 - 09 - 5	Sulfur Dioxide						2.7	612				
ONY210 - 00 - 0	Oxides of Nitrogen						30.5	6,971				
000630 - 08 - 0	Carbon Monoxide						90	39,877				
007439 - 92 - 1	Lead (elemental)											
ONY998 - 00 - 0	Total Volatile Organic Compounds						49.8	11,131				
ONY100 - 00 - 0	Total Hazardous Air Pollutants						7.04	1,606				
ONY750 - 00 - 0	Carbon Dioxide Equivalents						47,455	10,834,421				
74-82-8	Methane						16.2	3,691				
	See HAPs on Continuation Sheet											



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Section IV - Emission Unit Information

Emission Unit Description

 Continuation Sheet(s)

Emission Unit 1 - 0 0 H M A

300 ton per hour Astec double barrel drum hot mix asphalt plant. The plant includes a five compartment cold feed system, 7' by 38' double barrel drum mixer, LP-Gas Burner system, pulse jet baghouse, two 200 ton hot mix storage silos, blue smoke control equipment as well as ancillary support operations including conveyors and hot oil system.

Building Information

 Continuation Sheet(s)

Building ID	Building Name	Length (ft)	Width (ft)	Orientation

Emission Unit

Emission Unit Emissions Summary

 Continuation Sheet(s)

CAS Number	Contaminant Name			
	Potential to Emit		Actual Emissions	
ERP (lbs/yr)	(lbs/hr)	(lbs/yr)	(lbs/hr)	(lbs/yr)
Contaminant Name				
ERP (lbs/yr)	Potential to Emit		Actual Emissions	
	(lbs/hr)	(lbs/yr)	(lbs/hr)	(lbs/yr)
CAS Number	Contaminant Name			
ERP (lbs/yr)	Potential to Emit		Actual Emissions	
	(lbs/hr)	(lbs/yr)	(lbs/hr)	(lbs/yr)
CAS Number	Contaminant Name			
ERP (lbs/yr)	Potential to Emit		Actual Emissions	
	(lbs/hr)	(lbs/yr)	(lbs/hr)	(lbs/yr)

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Emission Point Information

Continuation Sheet(s)

Emission Point	0 0 0 0 1					
Ground Elevation (ft)	Height (ft)	Height Above Structure (ft)	Inside Diameter (in)	Exit Temp. (°F)	Cross Section	
					Length (in)	Width (in)
210	30	N/A	50.25	240		
Exit Velocity (FPS)	Exit Flow (ACFM)	NYTM (E) (KM)	NYTM (N) (KM)	Building	Distance to Property Line (ft)	Date of Removal
94.4	78,000	624.332	4810.513	N/A	±760	
Emission Point	T B D					
Ground Elevation (ft)	Height (ft)	Height Above Structure (ft)	Inside Diameter (in)	Exit Temp. (°F)	Cross Section	
					Length (in)	Width (in)
Exit Velocity (FPS)	Exit Flow (ACFM)	NYTM (E) (KM)	NYTM (N) (KM)	Building	Distance to Property Line (ft)	Date of Removal
Emission Point						
Ground Elevation (ft)	Height (ft)	Height Above Structure (ft)	Inside Diameter (in)	Exit Temp. (°F)	Cross Section	
					Length (in)	Width (in)
Exit Velocity (FPS)	Exit Flow (ACFM)	NYTM (E) (KM)	NYTM (N) (KM)	Building	Distance to Property Line (ft)	Date of Removal

Emission Source/Control Information

Continuation Sheet(s)

Emission Source		Date of Construction	Date of Operation	Date of Removal	Control Type		Manufacturer's Name/Model Number
ID	Type				Code	Description	
B A G 0 1	K				016	Fabric Filter	Pulse Jet Baghouse
Design Capacity	Design Capacity Units			Waste Feed		Waste Type	
	Code	Description			Code	Description	Code Description
62,000		62,000 CFM					
Emission Source		Date of Construction	Date of Operation	Date of Removal	Control Type		Manufacturer's Name/Model Number
ID	Type				Code	Description	
M I X 0 1	I						Astec DB-8438 Dryer Drum Mixer
Design Capacity	Design Capacity Units			Waste Feed		Waste Type	
	Code	Description			Code	Description	Code Description
		300 Tons Per Hour					
Emission Source		Date of Construction	Date of Operation	Date of Removal	Control Type		Manufacturer's Name/Model Number
ID	Type				Code	Description	
B E D 0 1	K				014	Mist Collector	Fiberbed Mist Collector
Design Capacity	Design Capacity Units			Waste Feed		Waste Type	
	Code	Description			Code	Description	Code Description
		36,000 ACFM					

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Process Information

Continuation Sheet(s)

Emission Unit 1 - 0 0 H M A

Process 1 0 1

Process Description

Astec 7' Unified Drum hot mix asphalt plant exhausting to a fabric filter baghouse. The 7' by 38' Double Barrel Dryer Drum plant includes a 75 MMBTU/hr LP-gas fired as the fuel source, a 62,000 ACFM Pulse Jet Baghouse, a 1.2 MMBTU/hr Hot Oil Heater, a 1.6 MMBTU/hr Heater Burner, and a 36,000 ACFM Fiberbed Mist Collector as well as ancillary support equipment.

Source Classification Code (SCC)	Total Throughput		Throughput Quantity Units	
	Quantity/Hr	Quantity/Yr	Code	Description
30500205	300 Tons		0366	300,000 Tons Per Year Asphalt
Confidential Operating at Maximum Capacity	Operating Schedule		Building	Floor/Location
	Hours/Day	Days/Year		
Emission Point Identifier(s)				
00001	TBD			
Emission Source/Control Identifier(s)				
BAG01	MIX01	BED01	SILO1	SILO2
Emission Unit	-			Process
Process Description				

Source Classification Code (SCC)	Total Throughput		Throughput Quantity Units	
	Quantity/Hr	Quantity/Yr	Code	Description
Confidential Operating at Maximum Capacity	Operating Schedule		Building	Floor/Location
	Hours/Day	Days/Year		
Emission Point Identifier(s)				
Emission Source/Control Identifier(s)				

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5	-	5	3	2	8	-	0	0	1	6	8

Process Emissions Summary

Continuation Sheet(s)

Emission Unit	-											Process		
CAS Number	Contaminant Name				% Thruput	% Capture	% Control	ERP (lbs/hr)	ERP How Determined					
Potential to Emit				Standard Units	Potential to Emit			Actual Emissions						
(lbs/hr)	(lbs/yr)	(standard units)	How Determined		(lbs/hr)	(lbs/yr)								
Emission Unit	-											Process		
CAS Number	Contaminant Name				% Thruput	% Capture	% Control	ERP (lbs/hr)	ERP How Determined					
Potential to Emit				Standard Units	Potential to Emit			Actual Emissions						
(lbs/hr)	(lbs/yr)	(standard units)	How Determined		(lbs/hr)	(lbs/yr)								
Emission Unit	-											Process		
CAS Number	Contaminant Name				% Thruput	% Capture	% Control	ERP (lbs/hr)	ERP How Determined					
Potential to Emit				Standard Units	Potential to Emit			Actual Emissions						
(lbs/hr)	(lbs/yr)	(standard units)	How Determined		(lbs/hr)	(lbs/yr)								

Emission Source Emissions Summary

Continuation Sheet(s)

Emission Source	-											Process		
CAS Number	Contaminant Name				% Thruput	% Capture	% Control	ERP (lbs/hr)	ERP How Determined					
Potential to Emit				Standard Units	Potential to Emit			Actual Emissions						
(lbs/hr)	(lbs/yr)	(standard units)	How Determined		(lbs/hr)	(lbs/yr)								
Emission Source	-											Process		
CAS Number	Contaminant Name				% Thruput	% Capture	% Control	ERP (lbs/hr)	ERP How Determined					
Potential to Emit				Standard Units	Potential to Emit			Actual Emissions						
(lbs/hr)	(lbs/yr)	(standard units)	How Determined		(lbs/hr)	(lbs/yr)								
Emission Source	-											Process		
CAS Number	Contaminant Name				% Thruput	% Capture	% Control	ERP (lbs/hr)	ERP How Determined					
Potential to Emit				Standard Units	Potential to Emit			Actual Emissions						
(lbs/hr)	(lbs/yr)	(standard units)	How Determined		(lbs/hr)	(lbs/yr)								

New York State Department of Environmental Conservation

Air Permit Application



Department of
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Emission Unit	Emission Point	Process	Emission Source	Emission Unit Applicable Federal Requirements							<input type="checkbox"/> Continuation Sheet(s)		
				Title	Type	Part	Subpart	Section	Subdiv.	Parag.	Subparag.	Cl.	Subcl.
Emission Unit	Emission Point	Process	Emission Source	Emission Unit State Only Requirements							<input type="checkbox"/> Continuation Sheet(s)		
				Title	Type	Part	Subpart	Section	Subdiv.	Parag.	Subparag.	Cl.	Subcl.
Emission Unit Compliance Certification											<input type="checkbox"/> Continuation Sheet(s)		
Rule Citation											<input type="checkbox"/> Continuation Sheet(s)		
Title	Type	Part	Subpart	Section	Subdivision	Paragraph	Subparagraph	Clause	Subclause				
Applicable Federal Requirement				State Only Requirement				Capping					
Emission Unit	Emission Point	Process	Emission Source	CAS Number			Contaminant Name						
Monitoring Information													
Continuous Emission Monitoring				Monitoring of a Process or Control Device Parameters as a Surrogate									
Intermittent Emission Testing				Work Practice Involving Specific Operations									
Ambient Air Monitoring				Record Keeping/Maintenance Procedures									
Compliance Activity Description													
Work Practice Type Code	Process Material							Reference Test Method					
	Code	Description											
Monitored Parameter										Manufacturer's Name/Model Number			
Code	Description												
Limit				Limit Units									
Upper	Lower	Code	Description										
Averaging Method				Monitoring Frequency						Reporting Requirements			
Code	Description			Code	Description					Code	Description		

New York State Department of Environmental Conservation

Air Permit Application



Department of Environmental Conservation

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5	-	5	3	2	8	-	0	0	1	6	8

Determination of Non-Applicability (Title V Applications Only)

Continuation Sheet(s)

Rule Citation

Table Creation									
Title	Type	Part	Subpart	Section	Subdivision	Paragraph	Subparagraph	Clause	Subclause
Emission Unit	Emission Point	Process	Emission Source	Applicable Federal Requirement					State Only Requirement

Non-Applicability Description

1. *What is the primary purpose of the study?*

Rule Citation

Rule Creation									
Title	Type	Part	Subpart	Section	Subdivision	Paragraph	Subparagraph	Clause	Subclause
Emission Unit	Emission Point	Process	Emission Source		Applicable Federal Requirement				
					State Only Requirement				

Non-Applicability Description

1. *What is the primary purpose of the study?*

Compliance Plan

Continuation Sheet(s)

For any emission units which are not in compliance at the time of permit application, the applicant shall complete the following:

Consent Order				Certified progress reports are to be submitted every 6 months beginning / /								
Emission Unit	Process	Emission Source	Applicable Federal Requirement									
			Title	Type	Part	Subpart	Section	Subdiv.	Parag.	Subparag.	Clause	Subcl.

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Request for Emission Reduction Credits

Continuation Sheet(s)

Emission Source

Emission Reduction Description

Contaminant Emission Reduction Data

Baseline Period ____ / ____ / ____ to ____ / ____ / ____

Reduction

Date	Method
------	--------

CAS Number

Contaminant Name

ERC (lbs/yr)

Netting	Offset
---------	--------

Name

Application ID

Location Address

City/ Town / Village

State

Zip

Use of Emission Reduction Credits

Continuation Sheet(s)

Emission Source

Proposed Project Description

Contaminant Emissions Increase Data

CAS Number

Contaminant Name

Project Emission Potential (lbs/yr)

Statement of Compliance

All facilities under the ownership of this "owner/firm" are operating in compliance with all applicable requirements and state regulations including any compliance certification requirements under Section 114(a)(3) of the Clean Air Act Amendments of 1990, or are meeting the schedule of a consent order.

Source of Emission Reduction Credit - Facility

Name

Permit ID

Location Address

City/ Town / Village

State

Zip

Emission Source

CAS Number

Contaminant Name

ERC (lbs/yr)

Netting	Offset
---------	--------

New York State Department of Environmental Conservation

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Supporting Documentation and Attachments

New York State Department of Environmental Conservation

Air Permit Application Form



Department of Environmental Conservation

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Section III - Facility Information

Continuation Sheet 1 of 14



DEC ID											
5	-	5	3	2	8	-	0	0	1	6	8

Section III - Facility Information

Facility Compliance Certification (continuation)									
Rule Citation									
Title	Type	Part	Subpart	Section	Subdivision	Paragraph	Subparagraph	Clause	Subclause
6	NYCRR	220	3	3	a				
<input checked="" type="checkbox"/> Applicable Federal Requirement <input type="checkbox"/> State Only Requirement			<input type="checkbox"/> Capping		CAS No.	Contaminant Name			
Monitoring Information									
<input type="checkbox"/> Continuous Emission Monitoring <input type="checkbox"/> Intermittent Emission Testing <input type="checkbox"/> Ambient Air Monitoring					<input type="checkbox"/> Monitoring of Process or Control Device Parameters as a Surrogate <input type="checkbox"/> Work Practice Involving Specific Operations <input checked="" type="checkbox"/> Record Keeping/Maintenance Procedures				
Description									
Owners or operators of an Asphalt Mixture Manufacturing Plant shall record the following information once daily, as applicable, for each Asphalt Mixture Processing Unit during operation in a calendar year: <ul style="list-style-type: none"> (1) Tons produced of asphalt mixture; (2) RAP used in tons of material; (3) Recorded hours of burner operation; (4) Baghouse differential pressure; (5) Warm mix tons produced; (6) Amount of fuel consumed; (7) Type of fuel consumed; (8) Instantaneous visual stack opacity reading by a trained employee that fulfills the requirements of 40 CFR Part 60, Appendix A-4, Method 9; (9) Typical stack temperature during operations; (10) RAP moisture content; and (11) Maintain annual records of Visible Emissions (Opacity) Training. 									

Work Practice		Process Material			Reference Test Method			
Type	Code	Description						
Parameter					Manufacturer Name/Model No.			
Code	Description							
Limit				Limit Units				
Upper		Lower		Code	Description			
Averaging Method			Monitoring Frequency		Reporting Requirements			
Code	Description		Code	Description		Code	Description	
			03	Daily		10	Upon Request by Regulatory Agency	

Continuation Sheet 2 of 14



DEC ID											
5	-	5	3	2	8	-	0	0	1	6	8

Section III - Facility Information

Facility Compliance Certification (continuation)									
Rule Citation									
Title	Type	Part	Subpart	Section	Subdivision	Paragraph	Subparagraph	Clause	Subclause
6	NYCRR	220	3	3	b	1			
<input checked="" type="checkbox"/> Applicable Federal Requirement <input type="checkbox"/> State Only Requirement			<input type="checkbox"/> Capping		CAS No.	Contaminant Name			
Monitoring Information									
<input type="checkbox"/> Continuous Emission Monitoring <input type="checkbox"/> Intermittent Emission Testing <input type="checkbox"/> Ambient Air Monitoring					<input type="checkbox"/> Monitoring of Process or Control Device Parameters as a Surrogate <input checked="" type="checkbox"/> Work Practice Involving Specific Operations <input type="checkbox"/> Record Keeping/Maintenance Procedures				
Description									
An annual service must be performed by a qualified employee or vendor on the dryer burner of any Asphalt Mixture Processing Unit that is in operation during that calendar year.									

Work Practice		Process Material			Reference Test Method		
Type	Code	Description					
Parameter					Manufacturer Name/Model No.		
Code	Description						
Limit				Limit Units			
Upper		Lower		Code	Description		
Averaging Method			Monitoring Frequency			Reporting Requirements	
Code	Description		Code	Description		Code	Description
			09	Annually		10	Upon Request by Regulatory Agency

Continuation Sheet 3 of 14



DEC ID											
5	-	5	3	2	8	-	0	0	1	6	8

Section III - Facility Information

Facility Compliance Certification (continuation)									
Rule Citation									
Title	Type	Part	Subpart	Section	Subdivision	Paragraph	Subparagraph	Clause	Subclause
6	NYCRR	220	3	3	b	2			
<input checked="" type="checkbox"/> Applicable Federal Requirement <input type="checkbox"/> State Only Requirement			<input type="checkbox"/> Capping		CAS No.	Contaminant Name			
Monitoring Information									
<input type="checkbox"/> Continuous Emission Monitoring <input type="checkbox"/> Intermittent Emission Testing <input type="checkbox"/> Ambient Air Monitoring					<input type="checkbox"/> Monitoring of Process or Control Device Parameters as a Surrogate <input checked="" type="checkbox"/> Work Practice Involving Specific Operations <input type="checkbox"/> Record Keeping/Maintenance Procedures				
Description									
An annual tune-up must be performed by a qualified employee or vendor on the hot oil heater located at any Asphalt Manufacturing Plant that is in operation during that calendar year.									

Work Practice		Process Material			Reference Test Method		
Type	Code	Description					
Parameter					Manufacturer Name/Model No.		
Code	Description						
Limit					Limit Units		
Upper		Lower			Code	Description	
Averaging Method			Monitoring Frequency			Reporting Requirements	
Code	Description		Code	Description		Code	Description
			09	Annually		10	Upon Request by Regulatory Agency

Continuation Sheet 4 of 14



DEC ID											
5	-	5	3	2	8	-	0	0	1	6	8

Section III - Facility Information

Facility Compliance Certification (continuation)									
Rule Citation									
Title	Type	Part	Subpart	Section	Subdivision	Paragraph	Subparagraph	Clause	Subclause
6	NYCRR	220	3	3	b	3			
<input checked="" type="checkbox"/> Applicable Federal Requirement <input type="checkbox"/> State Only Requirement			<input type="checkbox"/> Capping	CAS No.		Contaminant Name			
Monitoring Information									
<input type="checkbox"/> Continuous Emission Monitoring <input type="checkbox"/> Intermittent Emission Testing <input type="checkbox"/> Ambient Air Monitoring					<input type="checkbox"/> Monitoring of Process or Control Device Parameters as a Surrogate <input checked="" type="checkbox"/> Work Practice Involving Specific Operations <input type="checkbox"/> Record Keeping/Maintenance Procedures				
Description									
A plan must be submitted to the department that details the introduction or continuation of methods utilized to reduce the moisture content of the aggregate stockpile(s). Such methods must be implemented the first subsequent year the plant is in operation.									
Work Practice		Process Material					Reference Test Method		
Type	Code	Description							
Parameter							Manufacturer Name/Model No.		
Code	Description								
Limit						Limit Units			
Upper			Lower			Code	Description		
Averaging Method				Monitoring Frequency			Reporting Requirements		
Code	Description			Code	Description			Code	Description
								16	As Required - See Monitoring Description

Continuation Sheet 5 of 14

DEC ID											
5	-	5	3	2	8	-	0	0	1	6	8

Section III - Facility Information

Facility Compliance Certification (continuation)									
Rule Citation									
Title	Type	Part	Subpart	Section	Subdivision	Paragraph	Subparagraph	Clause	Subclause
6	NYCRR	220	3	3	b	4			
<input checked="" type="checkbox"/> Applicable Federal Requirement <input type="checkbox"/> State Only Requirement			<input type="checkbox"/> Capping		CAS No.	Contaminant Name			
Monitoring Information									
<input type="checkbox"/> Continuous Emission Monitoring <input type="checkbox"/> Intermittent Emission Testing <input type="checkbox"/> Ambient Air Monitoring					<input type="checkbox"/> Monitoring of Process or Control Device Parameters as a Surrogate <input checked="" type="checkbox"/> Work Practice Involving Specific Operations <input type="checkbox"/> Record Keeping/Maintenance Procedures				
Description									
Annual baghouse inspection and maintenance must be performed annually prior to operating for the season. Perform an annual visual inspection of baghouse tubesheet and internal structure. Record findings and any corrective actions. These records shall be maintained on site for at least two years after issuance of the permit and may be stored offsite (including electronic storage) afterwards for the life of the permit. Access to such offsite records must be made available in a timely manner if requested by the Department. Replacement bags for the baghouse shall be kept on site with the minimum capability of at least a 20% bag change out. Record changed bag locations on baghouse tube map.									
Work Practice		Process Material					Reference Test Method		
Type	Code	Description							
Parameter							Manufacturer Name/Model No.		
Code	Description								
Limit					Limit Units				
Upper		Lower			Code	Description			
Averaging Method			Monitoring Frequency			Reporting Requirements			
Code	Description		Code	Description		Code	Description		
			09	Annually		10	Upon Request by Regulatory Agency		

Continuation Sheet 6 of 14



DEC ID											
5	-	5	3	2	8	-	0	0	1	6	8

Section III - Facility Information

Facility Compliance Certification (continuation)									
Rule Citation									
Title	Type	Part	Subpart	Section	Subdivision	Paragraph	Subparagraph	Clause	Subclause
6	NYCRR	220	3	3	b	5			
<input checked="" type="checkbox"/> Applicable Federal Requirement <input type="checkbox"/> State Only Requirement			<input type="checkbox"/> Capping	CAS No.		Contaminant Name			
Monitoring Information									
<input type="checkbox"/> Continuous Emission Monitoring <input type="checkbox"/> Intermittent Emission Testing <input type="checkbox"/> Ambient Air Monitoring					<input type="checkbox"/> Monitoring of Process or Control Device Parameters as a Surrogate <input checked="" type="checkbox"/> Work Practice Involving Specific Operations <input type="checkbox"/> Record Keeping/Maintenance Procedures				
Description									
Inspect all ductwork for leaks and perform needed maintenance prior to operating during the asphalt production season. These records shall be maintained on site for at least two years after issuance of the permit and may be stored offsite (including electronic storage) afterwards for the life of the permit. Access to such offsite records must be made available in a timely manner if requested by the Department.									
Work Practice		Process Material					Reference Test Method		
Type	Code	Description							
Parameter							Manufacturer Name/Model No.		
Code	Description								
Limit						Limit Units			
Upper			Lower			Code	Description		
Averaging Method				Monitoring Frequency			Reporting Requirements		
Code	Description			Code	Description			Code	Description
				09	Annually			10	Upon Request by Regulatory Agency

Continuation Sheet 7 of 14



DEC ID											
5	-	5	3	2	8	-	0	0	1	6	8

Section III - Facility Information

Facility Compliance Certification (continuation)									
Rule Citation									
Title	Type	Part	Subpart	Section	Subdivision	Paragraph	Subparagraph	Clause	Subclause
6	NYCRR	220	3	8					
<input checked="" type="checkbox"/> Applicable Federal Requirement <input type="checkbox"/> State Only Requirement			<input type="checkbox"/> Capping	CAS No.		Contaminant Name			
Monitoring Information									
<input type="checkbox"/> Continuous Emission Monitoring <input type="checkbox"/> Intermittent Emission Testing <input type="checkbox"/> Ambient Air Monitoring			<input checked="" type="checkbox"/> Monitoring of Process or Control Device Parameters as a Surrogate <input type="checkbox"/> Work Practice Involving Specific Operations <input type="checkbox"/> Record Keeping/Maintenance Procedures						
Description									
No facility owner or operator shall cause or allow emissions to exceed an average opacity of 20 percent or greater during any six consecutive minutes from any process emission source or emission point. This condition also satisfies the requirements of 40 CFR 60.92(a)(2), NSPS Subpart I.									

Work Practice		Process Material			Reference Test Method					
Type	Code	Description			EPA Method 9					
Parameter					Manufacturer Name/Model No.					
Code	Description									
01	Opacity									
Limit				Limit Units						
Upper		Lower		Code	Description					
20				136	20 Percent					
Averaging Method			Monitoring Frequency			Reporting Requirements				
Code	Description		Code	Description		Code	Description			
			03	Daily		10	Upon Request by Regulatory Agency			

Continuation Sheet 8 of 14



DEC ID											
5	-	5	3	2	8	-	0	0	1	6	8

Section III - Facility Information

Facility Compliance Certification (continuation)									
Rule Citation									
Title	Type	Part	Subpart	Section	Subdivision	Paragraph	Subparagraph	Clause	Subclause
6	NYCRR	220	3	9					
<input checked="" type="checkbox"/> Applicable Federal Requirement <input type="checkbox"/> State Only Requirement			<input type="checkbox"/> Capping	CAS No.		Contaminant Name			
Monitoring Information									
<input type="checkbox"/> Continuous Emission Monitoring <input checked="" type="checkbox"/> Intermittent Emission Testing <input type="checkbox"/> Ambient Air Monitoring					<input type="checkbox"/> Monitoring of Process or Control Device Parameters as a Surrogate <input type="checkbox"/> Work Practice Involving Specific Operations <input type="checkbox"/> Record Keeping/Maintenance Procedures				
Description									
<p>Emissions testing shall be conducted once per permit term, or at least once every ten years, for all Asphalt Mixture Processing Units subject to this Subpart. These tests should be completed for all fuels utilized by the Asphalt Mixture Manufacturing Plant to verify compliance with the filterable and condensable particulate matter (PM) and Nitrogen Oxide (NOx) limits found in section 220-3.5.</p> <p>Within one year of the commencement of operation of any modified, new or Reconstructed Asphalt Mixture Processing Unit at the respective site, the owner or operator shall perform an emission test to demonstrate compliance with the filterable and condensable PM and NOx emission limits specified in section 230-3.5 of this Subpart. At least thirty (30) calendar days prior to commencing an emission test, a test protocol shall be submitted to the department for review and approval. A complete test report shall be submitted to the department no later than sixty (60) calendar days after completion of the on-site testing portion of an emission test program. A complete test report shall include a summary of the emission results, clearly indicating if each pollutant measured is within permitted limits. The testing methods shall meet the acceptable procedures found in 6 NYCRR 202-1.3 to determine compliance.</p>									
Work Practice		Process Material				Reference Test Method			
Type	Code	Description							
						EPA Method 5, 202 and 7			
Parameter						Manufacturer Name/Model No.			
Code	Description								
Limit						Limit Units			
Upper		Lower		Code	Description				
Averaging Method				Monitoring Frequency			Reporting Requirements		
Code	Description			Code	Description		Code	Description	
20	averaging method as per reference test method indicated			14	as required - see monitoring description		01	once / batch or monitoring occurrence	

Continuation Sheet 9 of 14



DEC ID											
5	-	5	3	2	8	-	0	0	1	6	8

Section III - Facility Information

Facility Compliance Certification (continuation)									
Rule Citation									
Title	Type	Part	Subpart	Section	Subdivision	Paragraph	Subparagraph	Clause	Subclause
6	NYCRR	220	3	9	c				
<input checked="" type="checkbox"/> Applicable Federal Requirement <input type="checkbox"/> State Only Requirement			<input type="checkbox"/> Capping	CAS No.		Contaminant Name			
Monitoring Information									
<input type="checkbox"/> Continuous Emission Monitoring <input type="checkbox"/> Intermittent Emission Testing <input type="checkbox"/> Ambient Air Monitoring					<input type="checkbox"/> Monitoring of Process or Control Device Parameters as a Surrogate <input checked="" type="checkbox"/> Work Practice Involving Specific Operations <input type="checkbox"/> Record Keeping/Maintenance Procedures				
Description									
<p>The owner or operator shall conduct a burner tuning procedure in accordance with the manufacturer's specifications to minimize NOx and carbon monoxide (CO) emissions each calendar year. Monitoring records stating the following information shall be maintained on site for at least two years after issuance of the permit and may be stored offsite (including electronic storage) afterwards for the life of the permit. Access to such offsite records must be made available in a timely manner if requested by the Department.</p> <p>(i) The date of the tuning procedure; (ii) The name of the servicing company/qualified internal staff/technician; (iii) The production rate (tons/hr) or load before and after tuning; (iv) The NOx and CO concentrations (ppmvd @ 3% O₂) before and after tuning; and (v) The percent O₂ before and after tuning.</p>									

Work Practice		Process Material			Reference Test Method		
Type	Code	Description					
Parameter					Manufacturer Name/Model No.		
Code	Description						
Limit					Limit Units		
Upper		Lower		Code	Description		
Averaging Method			Monitoring Frequency			Reporting Requirements	
Code	Description		Code	Description		Code	Description
			09	Annually		10	Upon Request by Regulatory Agency

Continuation Sheet 10 of 14



DEC ID											
5	-	5	3	2	8	-	0	0	1	6	8

Section III - Facility Information

Facility Compliance Certification (continuation)									
Rule Citation									
Title	Type	Part	Subpart	Section	Subdivision	Paragraph	Subparagraph	Clause	Subclause
6	NYCRR	220	3	10					
<input checked="" type="checkbox"/> Applicable Federal Requirement <input type="checkbox"/> State Only Requirement			<input type="checkbox"/> Capping	CAS No.		Contaminant Name			
Monitoring Information									
<input type="checkbox"/> Continuous Emission Monitoring <input type="checkbox"/> Intermittent Emission Testing <input type="checkbox"/> Ambient Air Monitoring					<input type="checkbox"/> Monitoring of Process or Control Device Parameters as a Surrogate <input checked="" type="checkbox"/> Work Practice Involving Specific Operations <input type="checkbox"/> Record Keeping/Maintenance Procedures				
Description									
Asphalt Mixture Manufacturing Plants shall control fugitive dust at site roadways and plant property and from asphalt mixture processing units, storage piles, and vehicles as required by 6 NYCRR Parts 220-3.10(a) - (d). When corrective action needs to be taken, the permittee shall consider and use one or more of the following options: adjust the watering and/or sweeping frequencies, reduce drop distances, increase coverings, and/or take other appropriate actions to reduce fugitive dust emissions.									

Work Practice		Process Material			Reference Test Method		
Type	Code	Description					
Parameter					Manufacturer Name/Model No.		
Code	Description						
Limit				Limit Units			
Upper		Lower		Code	Description		
Averaging Method			Monitoring Frequency			Reporting Requirements	
Code	Description		Code	Description		Code	Description
			14	as required - see monitoring description			

Continuation Sheet 11 of 14

DEC ID											
5	-	5	3	2	8	-	0	0	1	6	8

Section III - Facility Information

Facility Compliance Certification (continuation)									
Rule Citation									
Title	Type	Part	Subpart	Section	Subdivision	Paragraph	Subparagraph	Clause	Subclause
40	CFR	60	92	a	1				
<input checked="" type="checkbox"/> Applicable Federal Requirement <input type="checkbox"/> State Only Requirement			<input type="checkbox"/> Capping	CAS No.		Contaminant Name			
				0NY075-00-0		Particulates			
Monitoring Information									
<input type="checkbox"/> Continuous Emission Monitoring <input checked="" type="checkbox"/> Intermittent Emission Testing <input type="checkbox"/> Ambient Air Monitoring			<input type="checkbox"/> Monitoring of Process or Control Device Parameters as a Surrogate <input type="checkbox"/> Work Practice Involving Specific Operations <input checked="" type="checkbox"/> Record Keeping/Maintenance Procedures						
Description									
Emissions of solid particulates are limited to less than 0.04 (90 mg/dscm) grains of particulates per cubic foot of exhaust gas, expressed at standard conditions on a dry gas basis.									
Work Practice		Process Material					Reference Test Method		
Type	Code	Description				EPA Method 5			
Parameter						Manufacturer Name/Model No.			
Code	Description								
	Particulates								
Limit						Limit Units			
Upper		Lower		Code	Description				
0.04				391	0.04 grains of particulates per cubic foot of exhaust gas				
Averaging Method			Monitoring Frequency			Reporting Requirements			
Code	Description		Code	Description		Code	Description		
13	Single Occurrence		14	Averaging Method as Per Reference Test		01	Once/Batch or Monitoring Occurrence		

Continuation Sheet 12 of 14



DEC ID											
5	-	5	3	2	8	-	0	0	1	6	8

Section III - Facility Information



DEC ID											
5	-	5	3	2	8	-	0	0	1	6	8

Section IV - Emission Unit Information

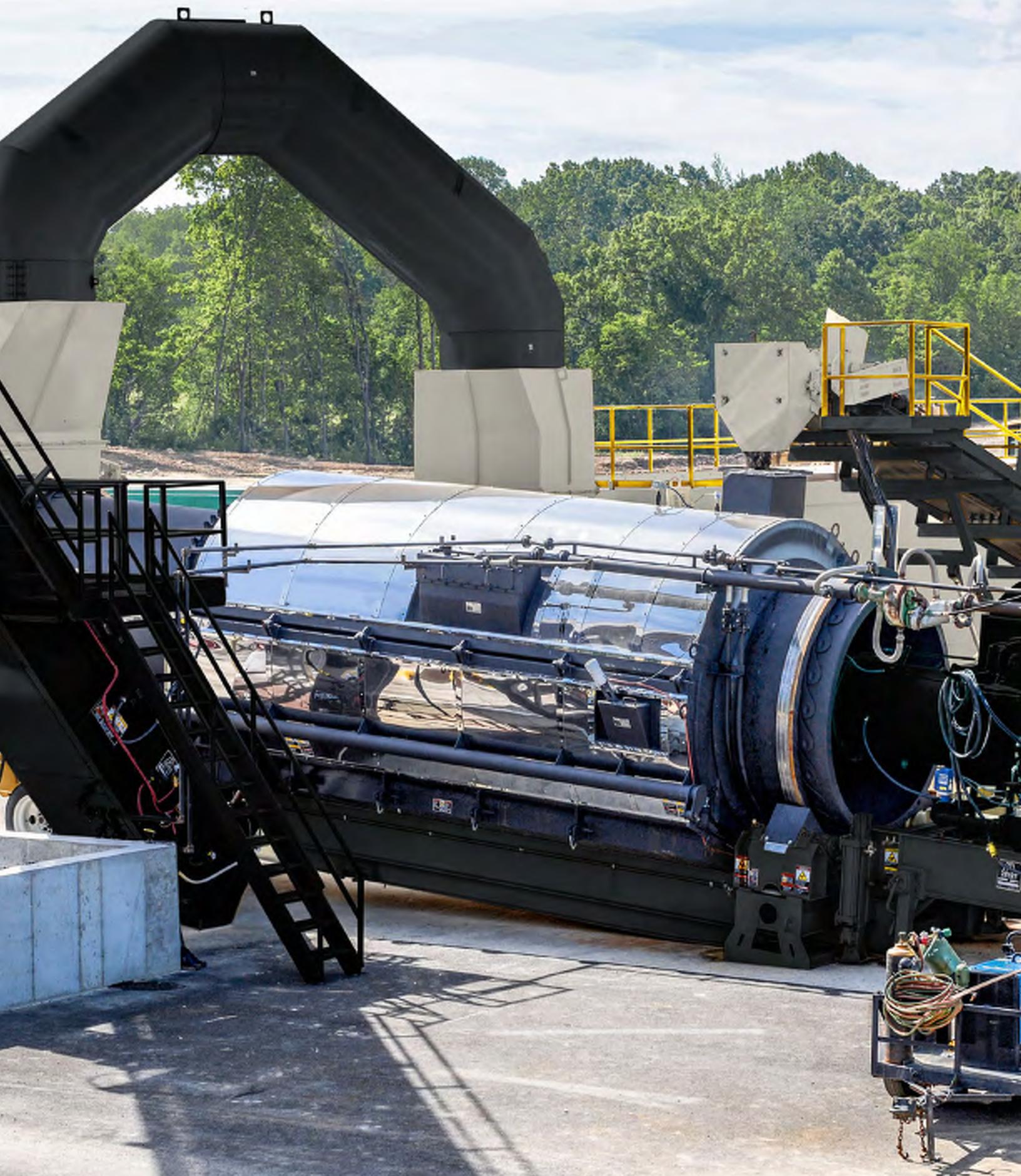
Emission Source/Control (continuation)													
Emission Unit		1	-	0	0	H	M	A					
Emission Source	Date of Construction			Date of Operation	Date of Removal	Control Type			Code	Description	Manufacturer's Name/Model No.		
	ID	Type				Code	Description						
SILO1	I										200 ton hot mix storage silo		
Design Capacity	Design Capacity Units					Waste Feed			Waste Type				
	Code	Description				Code	Description		Code	Description			
Emission Source	Date of Construction			Date of Operation	Date of Removal	Control Type			Code	Description	Manufacturer's Name/Model No.		
	ID	Type				Code	Description						
SILO2	I										200 ton hot mix storage silo		
Design Capacity	Design Capacity Units					Waste Feed			Waste Type				
	Code	Description				Code	Description		Code	Description			
Emission Source	Date of Construction			Date of Operation	Date of Removal	Control Type			Code	Description	Manufacturer's Name/Model No.		
	ID	Type				Code	Description						
Design Capacity	Design Capacity Units					Waste Feed			Waste Type				
	Code	Description				Code	Description		Code	Description			
Emission Source	Date of Construction			Date of Operation	Date of Removal	Control Type			Code	Description	Manufacturer's Name/Model No.		
	ID	Type				Code	Description						
Design Capacity	Design Capacity Units					Waste Feed			Waste Type				
	Code	Description				Code	Description		Code	Description			
Emission Source	Date of Construction			Date of Operation	Date of Removal	Control Type			Code	Description	Manufacturer's Name/Model No.		
	ID	Type				Code	Description						
Design Capacity	Design Capacity Units					Waste Feed			Waste Type				
	Code	Description				Code	Description		Code	Description			
Emission Source	Date of Construction			Date of Operation	Date of Removal	Control Type			Code	Description	Manufacturer's Name/Model No.		
	ID	Type				Code	Description						
Design Capacity	Design Capacity Units					Waste Feed			Waste Type				
	Code	Description				Code	Description		Code	Description			

Continuation Sheet 14 of 14

Attachment D
Astec Product Literature

DOUBLE BARREL® SERIES ASPHALT DRYER/MIXER





ASTEC

DOUBLE BARREL®

Dryer/Drum Mixer

Astec brings you the Double Barrel dryer/drum mixer, the mixer of choice over any other. The Double Barrel dryer/drum mixer combines the latest in hot and warm mix technology with other great Astec features. Get guaranteed productivity and top quality mixes, while keeping operating costs per ton of mix low and meeting the most stringent environmental codes. Relocatable and portable versions all perform to the same high standards.

Double Barrel® RELOCATABLE

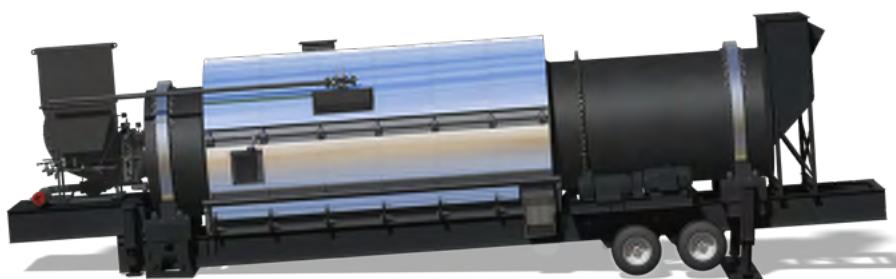
Up to 50% RAP



DRUM SIZE	MIXING CHAMBER	TPH (MTPH)
6' x 33' (1.8m x 10m)	19' (5.8m)	200 (181 MTPH)
7' x 38' (2.1m x 11.6m)	22' (6.7m)	300 (272 MTPH)
8' x 41' (2.4m x 12.2)	22.5' (6.9m)	400 (363 MTPH)
9' x 47' (2.7m x 14.3m)	22.5' (6.9m)	500 (454 MTPH)
10' x 50' (3m x 15.2m)	22.5' (6.9m)	600 (544 MTPH)

Double Barrel® PORTABLE

Up to 50% RAP



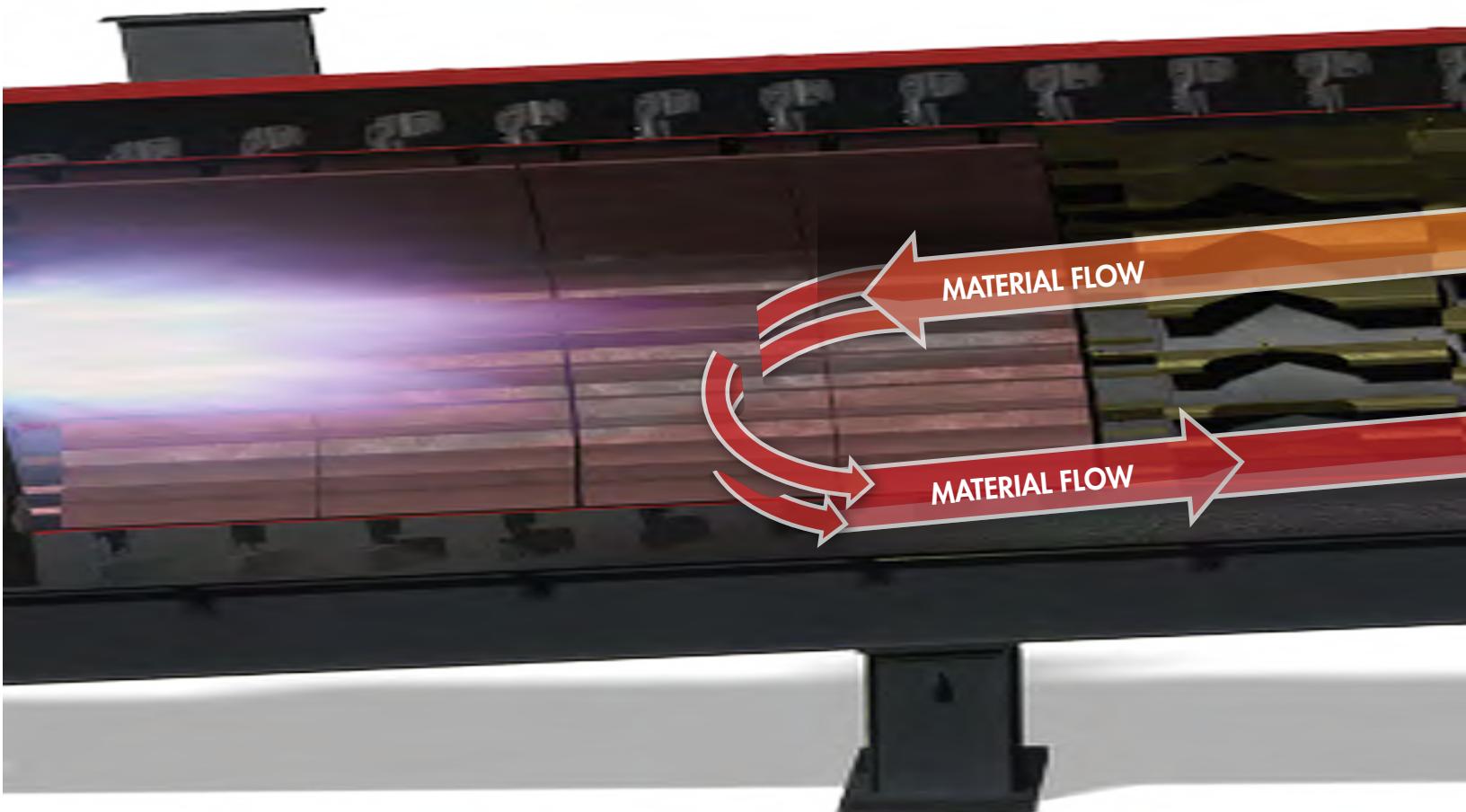
DRUM SIZE	MIXING CHAMBER	TPH (MTPH)
6' x 33' (1.8m x 10m)	19' (5.8m)	200 (181 MTPH)
7' x 37' (2.1m x 11m)	19' (5.8m)	300 (272 MTPH)
8' x 38' (2.4m x 11.6m)	21' (6.4m)	400 (363 MTPH)

Double Barrel

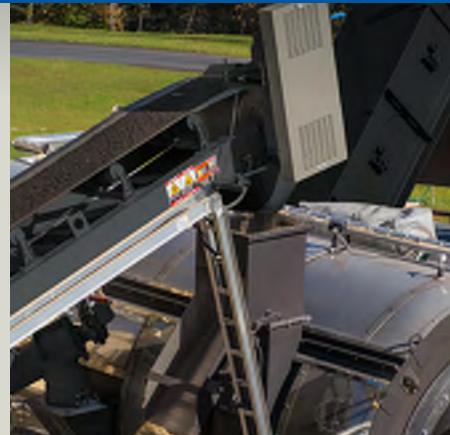
MATERIAL FLOW

As aggregate enters the drum from the conveyor, it passes through the flop gate, which minimizes air leakage into the drum. From there, it passes through a series of veiling flights that transfer the heat from the burner to the aggregate. The aggregate then exits the inner drum, dropping down into the outer drum shell, where paddles sequentially mix in RAP, liquid AC, and dust/filler in a flame free environment. In this zone, the constituents are mixed for the remainder of the drum length before exiting to the drag.

Aggregate Entry



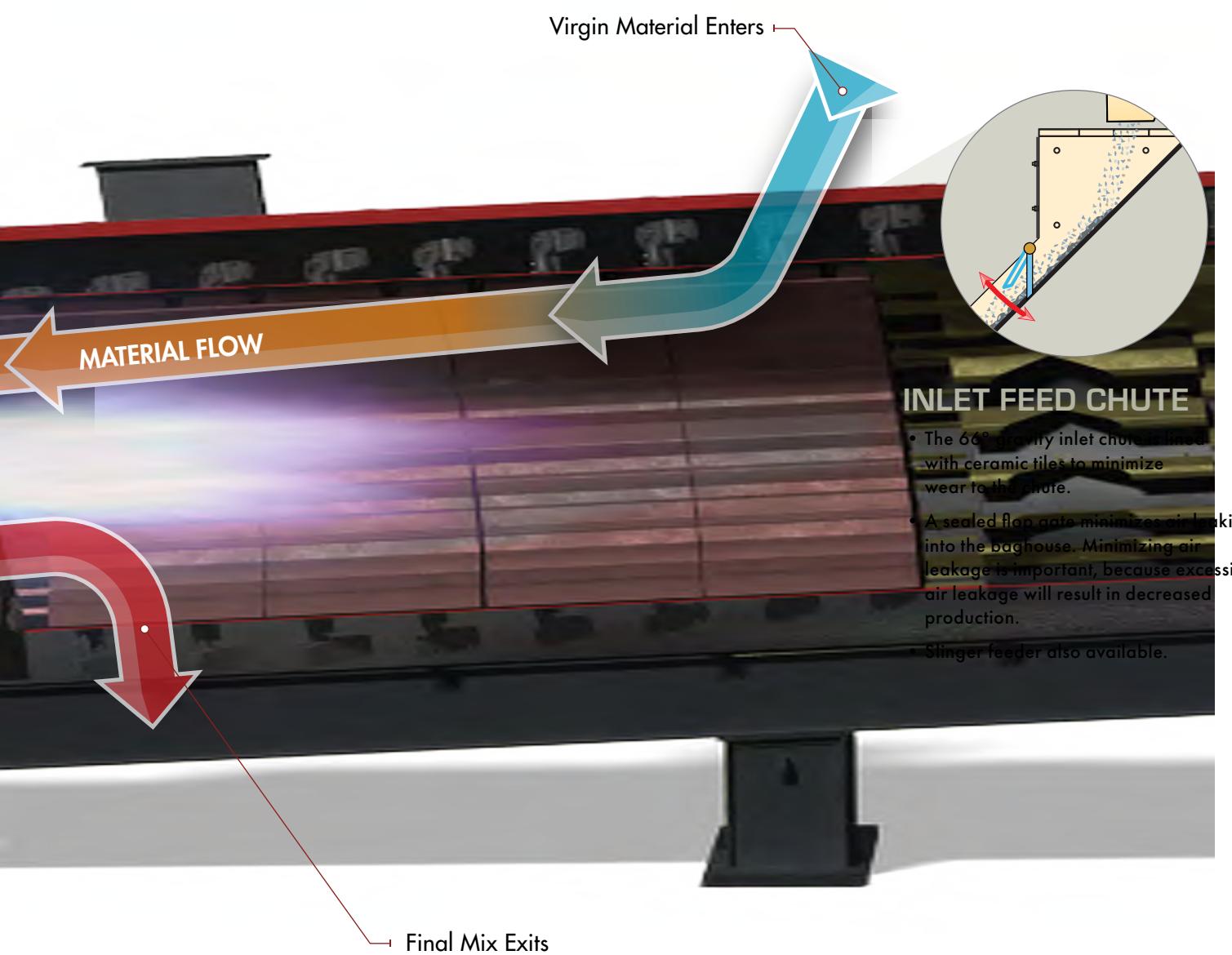
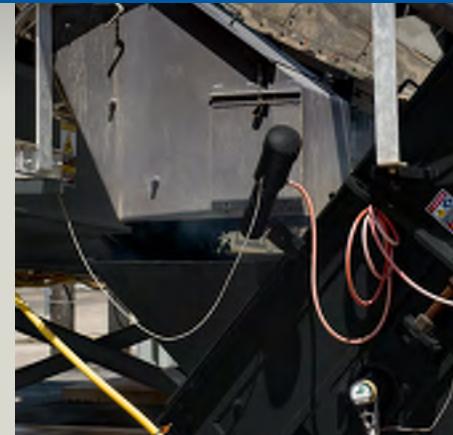
Recycle Entry



Baghouse Dust Entry



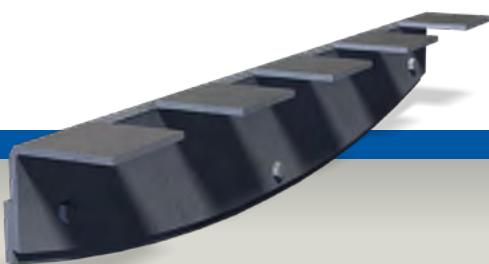
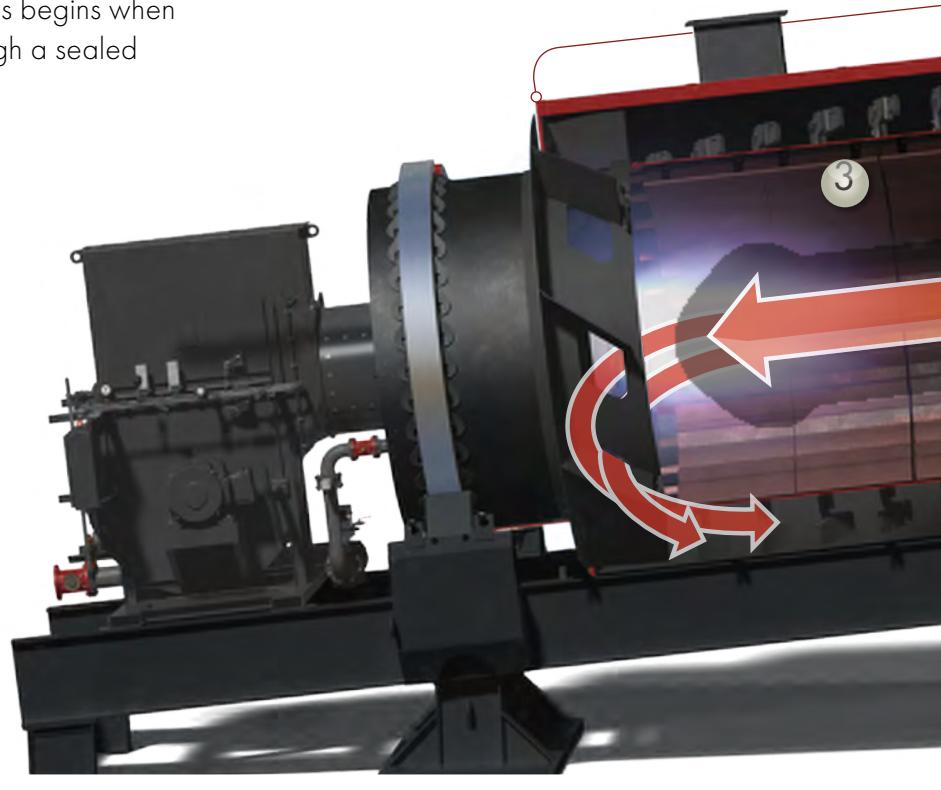
Final Mix Exit



Double Barrel

DRYING (INNER DRUM)

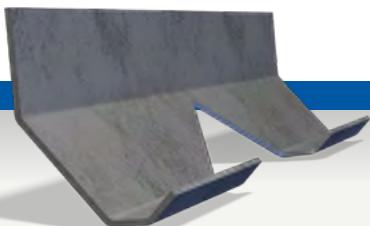
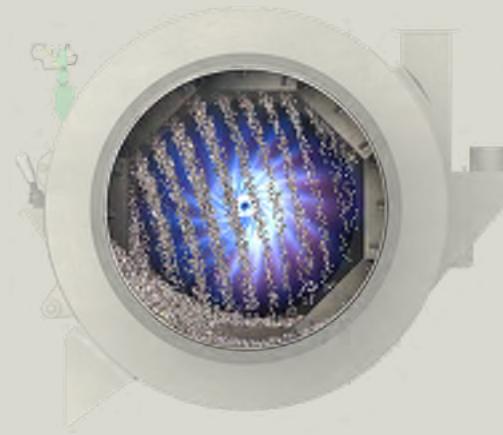
The Astec Double Barrel dryer/drum mixer is designed to move aggregate through the mix process with maximum efficiency. Drying of the virgin aggregate is the first step in the process and takes place in the inner drum. The drying process begins when the virgin aggregate enters the inner drum through a sealed gravity chute. The flop gate restricts air entry into the drum while allowing the aggregate to pass through. The angle of the ceramic-lined inlet chute keeps material flowing freely into the drum. State-of-the-art flights move the material through the drying zones. Once dried and heated, the aggregate leaves the drum through exit openings and enters the outer mixing chamber.



CONDITIONING FLIGHTS

Break up any clumps or sticky material when the aggregate first enters drum.

Fine material has a tendency to clump together in clusters when wet, particularly in the presence of clays. The conditioning flights break up these clumps to ensure all particles will shower evenly.



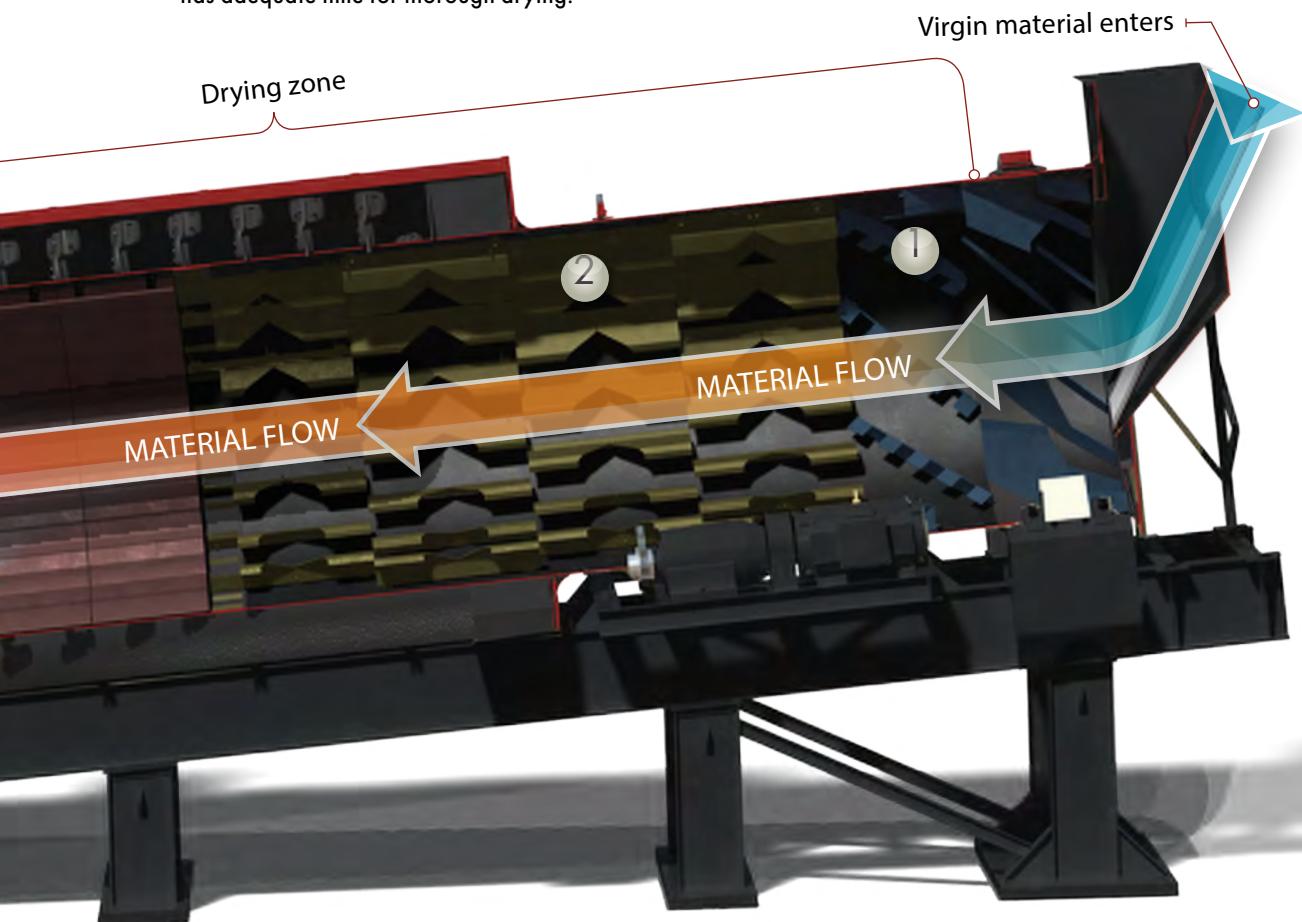
V-FLIGHTS

Provide greater uniformity of the aggregate veil through the gas stream during the drying process, across a wide variety of mix designs and tonnage rates.

The v-shaped notch in the flights allows material to start pouring out of the flight at the beginning of revolution. The material in the bucket continues to pour out until the rotation is complete. This is what provides the even veil of material. The v-flight is also larger than the standard flight, allowing it to carry the same amount of aggregate even with the notch.

LONGER DRYING CHAMBER

The Double Barrel dryer/drum mixer features the industry's longest drying chamber. The entire length of the drum is used for drying virgin aggregate. The long drying chamber assures that the virgin aggregate has adequate time for thorough drying.



③

COMBUSTION FLIGHTS

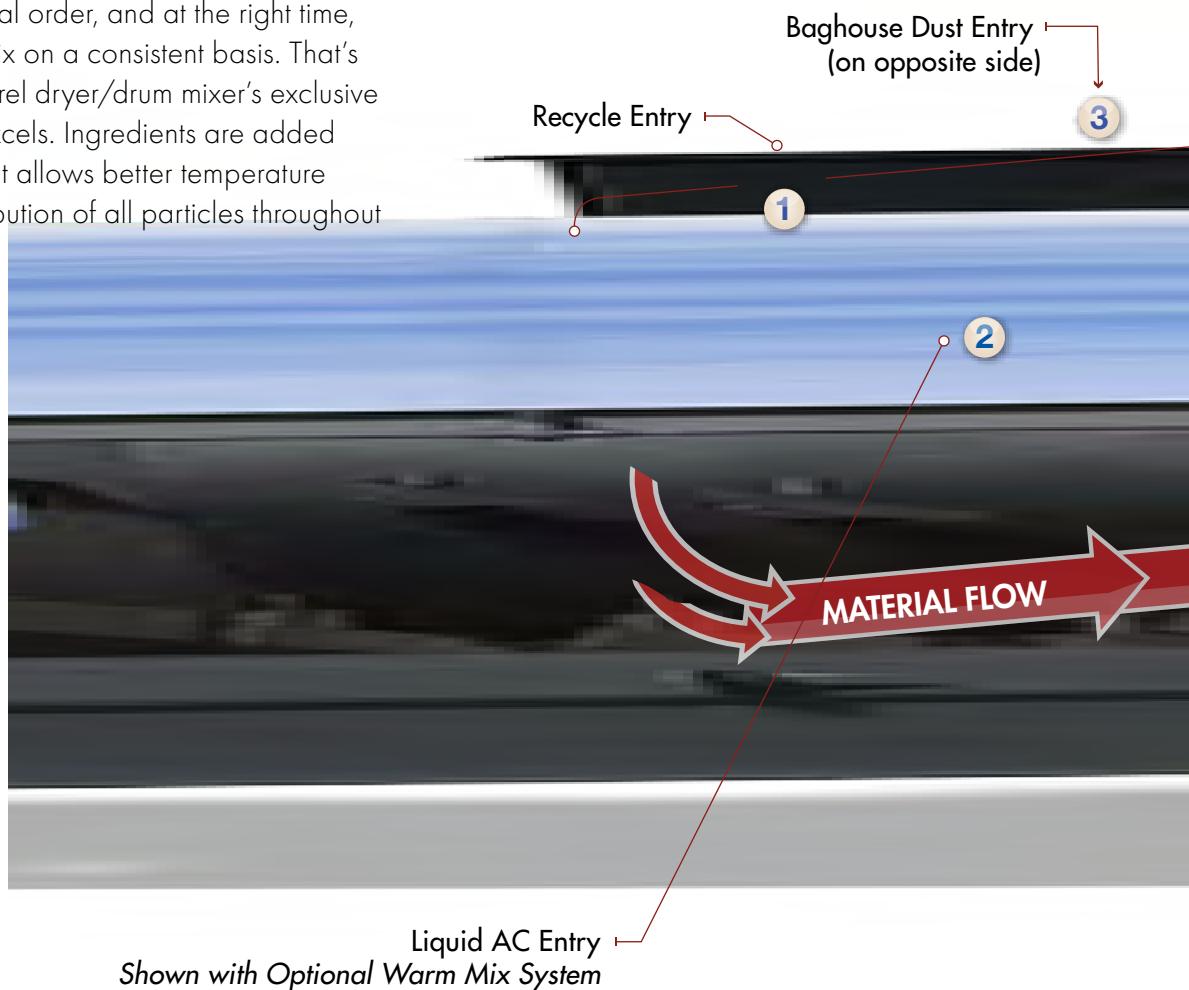
Prevent aggregate from impinging on the flame while spreading the material to maximize radiant heat transfer.

The combustion flights are made of stainless steel, which lasts much longer than traditional carbon steel. The flights overlap one another, creating a shield that minimizes the radiant heat that hits the drum shell to keep it from overheating.

Double Barrel

MIXING (OUTER DRUM)

Adding materials in sequential order, and at the right time, is the key to making good mix on a consistent basis. That's where the Astec Double Barrel dryer/drum mixer's exclusive sequential mixing process excels. Ingredients are added to the mixture in an order that allows better temperature equalization and even distribution of all particles throughout the mix.

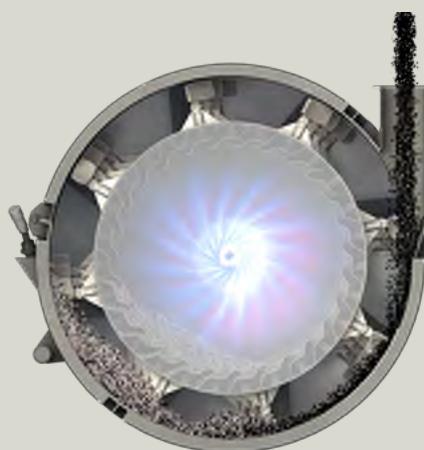


1 STEP ONE SEQUENTIAL MIXING

RECYCLE ENTRY

RAP (Recycled Asphalt Pavement) material is added to the aggregate in the mixing chamber.

First in the mixing sequence, recycle enters into the mixing chamber through the recycle inlet. Recycle, which may be RAP, roofing shingles, crumb rubber, or a mixture thereof, is heated by contact with the hot virgin aggregate.



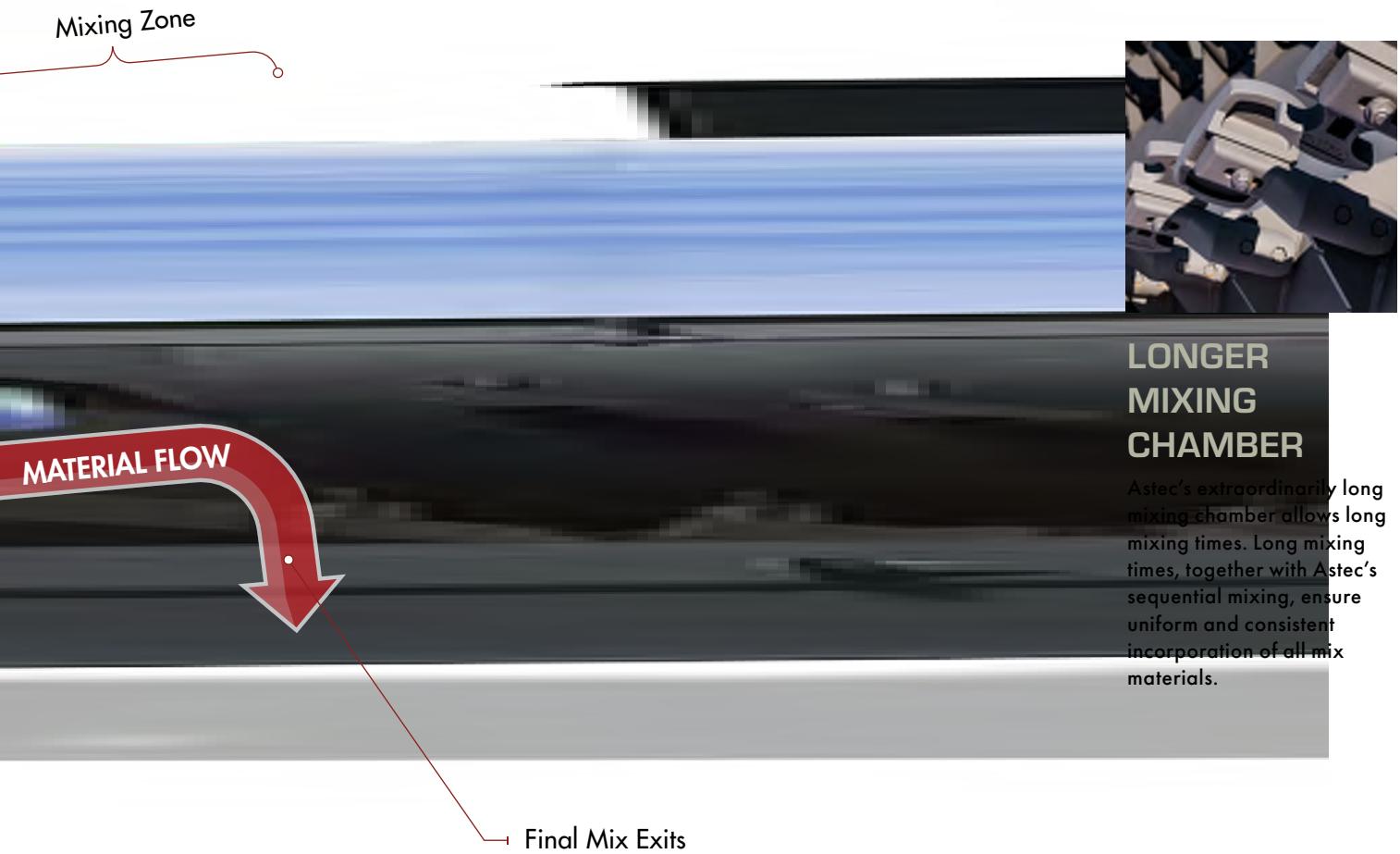
2 STEP TWO SEQUENTIAL MIXING

LIQUID ASPHALT ENTRY

Liquid asphalt is injected into the mixing chamber through the AC inlet or optional Warm Mix System.

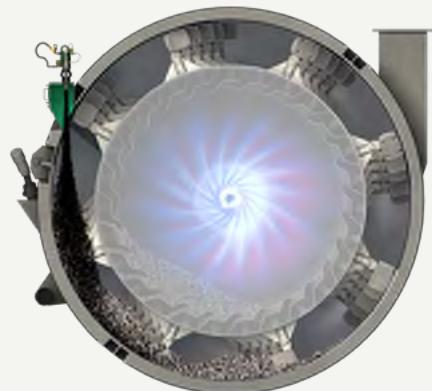
At the point where virgin and recycled materials are at the proper temperature and thoroughly mixed, liquid asphalt cement (AC) is injected into the mixing chamber. As the mix moves through the mixing chamber, it is continually stirred by mixing paddles.

Sequential mixing ensures ingredients are added to the hot mixture in an order that allows better temperature equalization and even distribution of all particles throughout the mix.



LONGER MIXING CHAMBER

Astec's extraordinarily long mixing chamber allows long mixing times. Long mixing times, together with Astec's sequential mixing, ensure uniform and consistent incorporation of all mix materials.

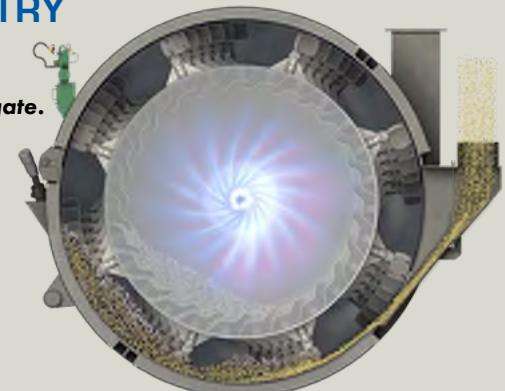


3 STEP THREE SEQUENTIAL MIXING

BAGHOUSE DUST ENTRY

Baghouse fines are added last, so they do not absorb the liquid AC before it is distributed on the aggregate.

Finally, baghouse fines and other additives enter the mixing chamber and become embedded in the thick layer of asphalt coating the rock. Astec's sequential mixing keeps fines from soaking up more than their share of AC, because the AC has been well distributed before fines are added.







Gas Flow

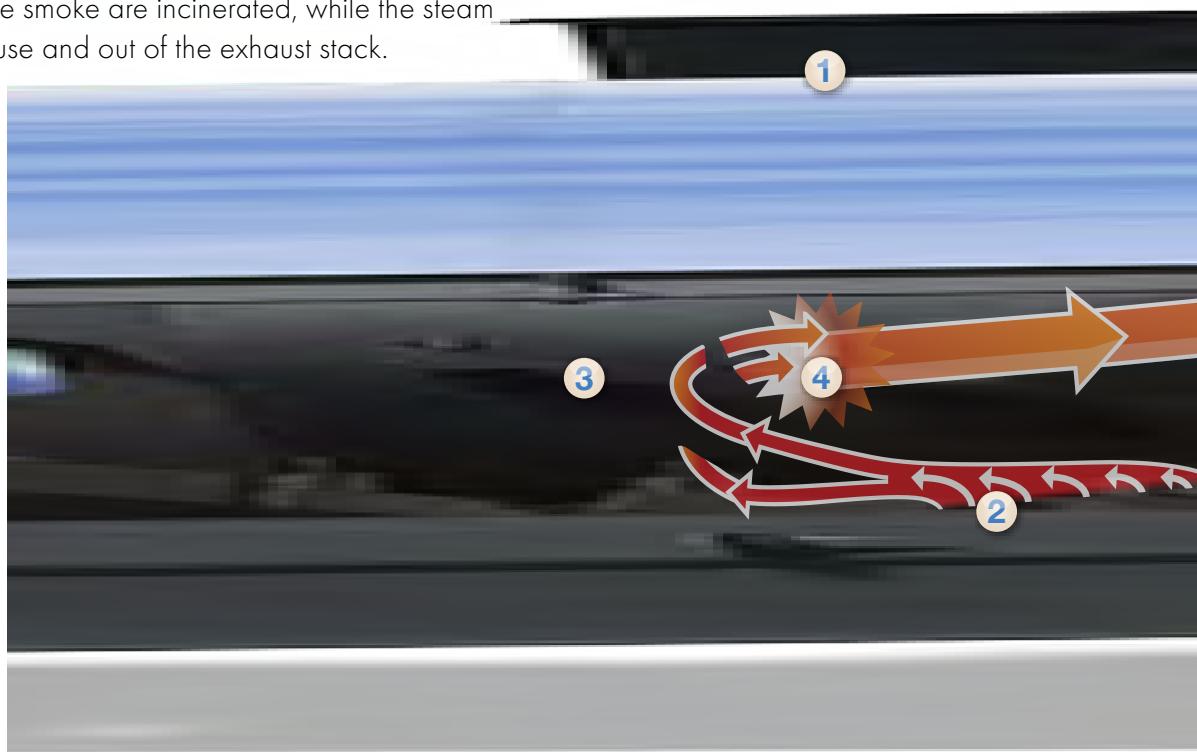
HYDROCARBONS AND STEAM

There is a continuous release of steam as the RAP is introduced and heated. This is one of the keys to the success of the Double Barrel dryer/drum mixer as a processor of RAP – steam blankets the superheated virgin aggregate and RAP, displacing oxygen. As a result there is less oxidation of the mix.

As the RAP dries, blue smoke emissions can also be produced along with steam.

Steam and blue smoke are pulled into the burner flame by the baghouse fan.

The hydrocarbons in the blue smoke are incinerated, while the steam simply passes to the baghouse and out of the exhaust stack.



1 RAP enters drum

2 Heated virgin aggregate and RAP generate steam and blue smoke

3 Steam and hydrocarbons are pulled into the flame



PULSE JET BAGHOUSE

Pulse jet baghouses remove particulates from the exhaust stream to efficiencies greater than 99.95%†, and typically lower emissions to less than one quarter of EPA standards. During the cleaning mode, blowpipes direct bursts of compressed air into two rows of bags at a time. The shock and momentary back-flow produced by the compressed air pulse causes the bags in the section to expand and expel the collected dust cake from the surface, allowing it to drop into the hopper.



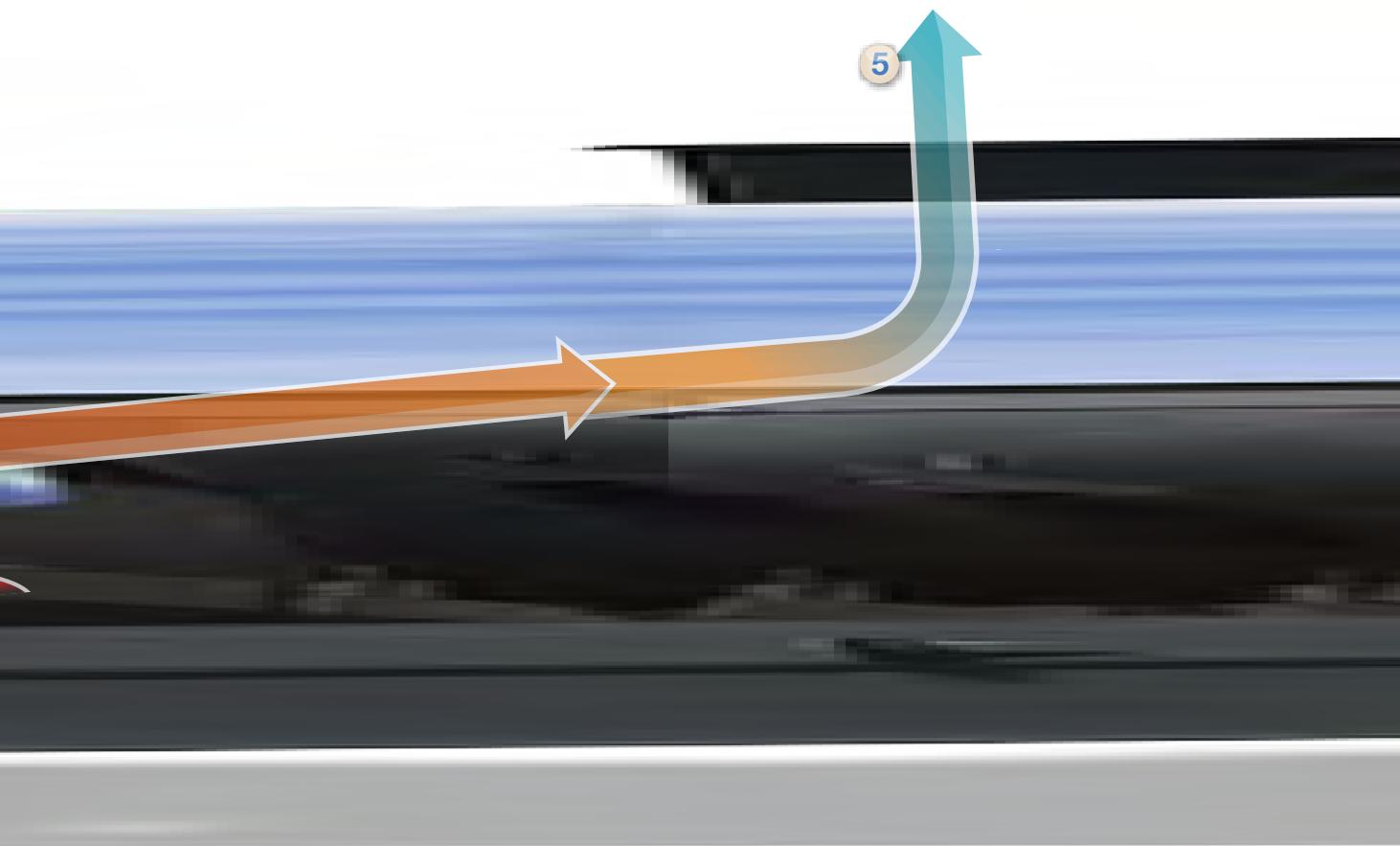
STEAM

As recycle heats in the mixing chamber by contact with the hot aggregate, moisture in the recycle is driven off as steam. Steam displaces oxygen in the mixing chamber, reducing the potential for mix oxidation.



BAGHOUSE

Steam from the Double Barrel dryer/drum mixer is passed to the baghouse and out the exhaust stack.



4

Burner flame incinerates the hydrocarbon smoke

5

Steam, dust and fines exit drum through exhaust stack to the baghouse

REVERSE PULSE BAGHOUSE

Reverse pulse baghouses utilize a damper and a rotating turret to force air directly into the bag filters opposite the normal flow direction. Cleaning is accomplished by isolating a single section of filter bags then reversing the flow of air through them causing gentle expansion. Accumulated dust dislodges from the bag filters and drops into the hopper beneath. Cleaning sequence and timing is adjustable from the control house.



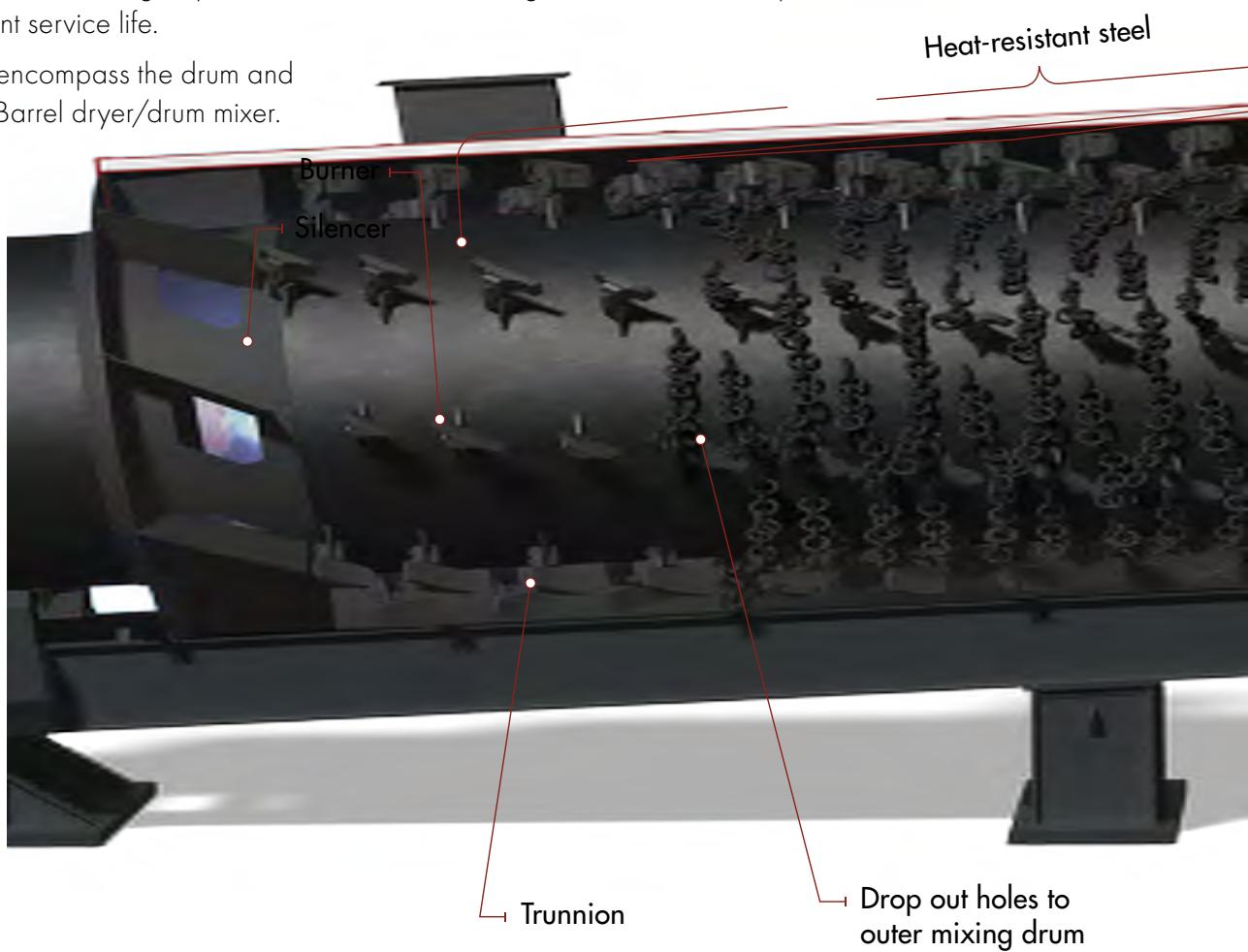
Double Barrel

FEATURES

After hundreds of millions of tons of mix production, the Astec Double Barrel dryer/drum mixer proves itself to be the most reliable and cost effective dryer/drum mixer available to producers.

Each trunnion base is angled to the frame, so that a dowel pin in the base is in line with the exact center of the drum. The trunnion base pivots around the pin, making it easy to maintain face contact between the tire and trunnion while making adjustments. Good trunnion alignment means better performance and longer equipment service life.

Two solid-steel tires encompass the drum and support the Double Barrel dryer/drum mixer.



TRUNNIONS

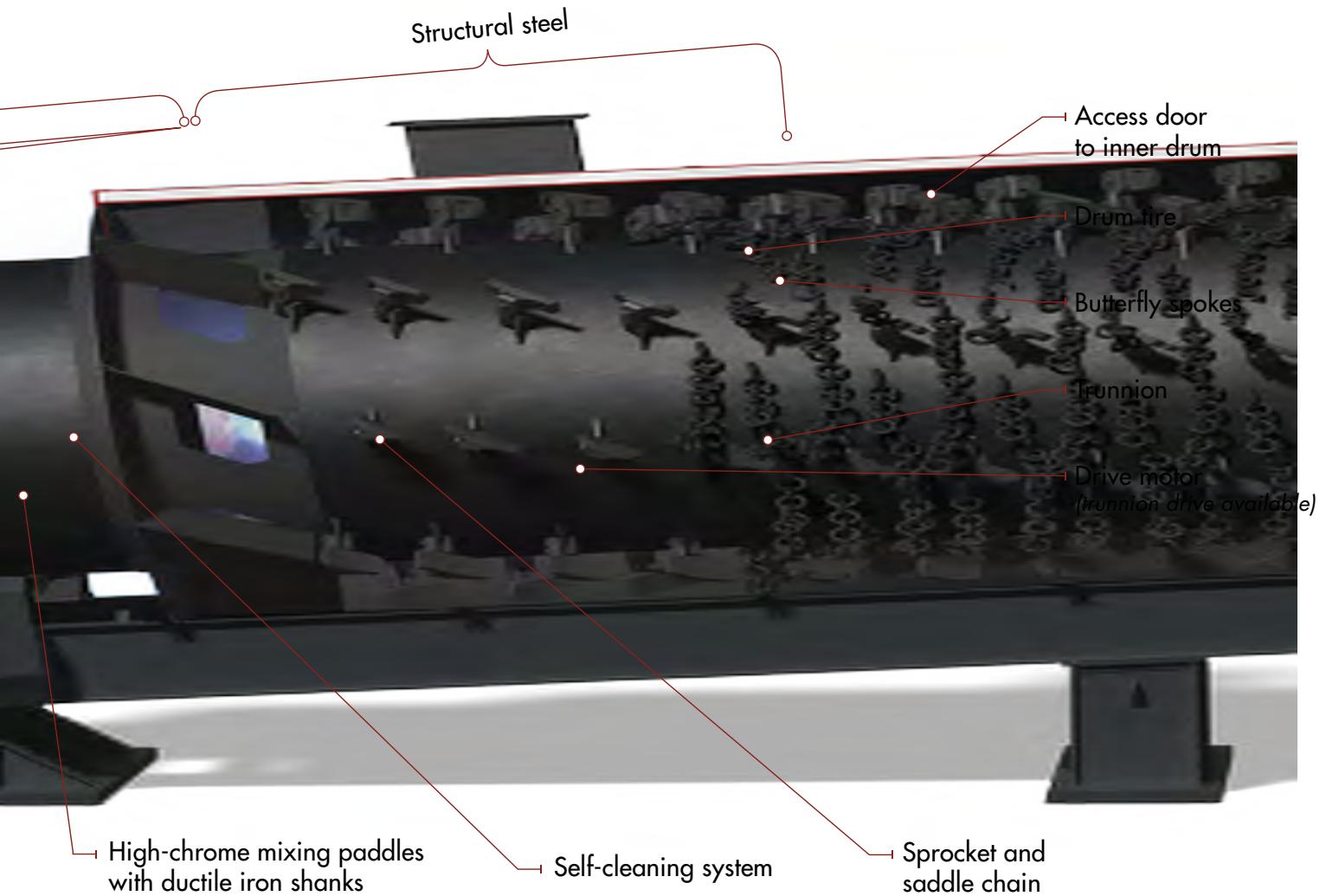
Adjustable steel trunnions with railroad duty bearings



DRUM TIRES

Hot-forged from solid billets of alloy steel and precision machining, provides ultra-smooth operation

A saddle chain drive is outfitted with a heavy-duty roller chain, including offset sidebars and case-hardened bushings. These heavy-duty drive components are made to last.



THRUST ROLLERS

Thrust rollers on either side of the tire restrain the drum



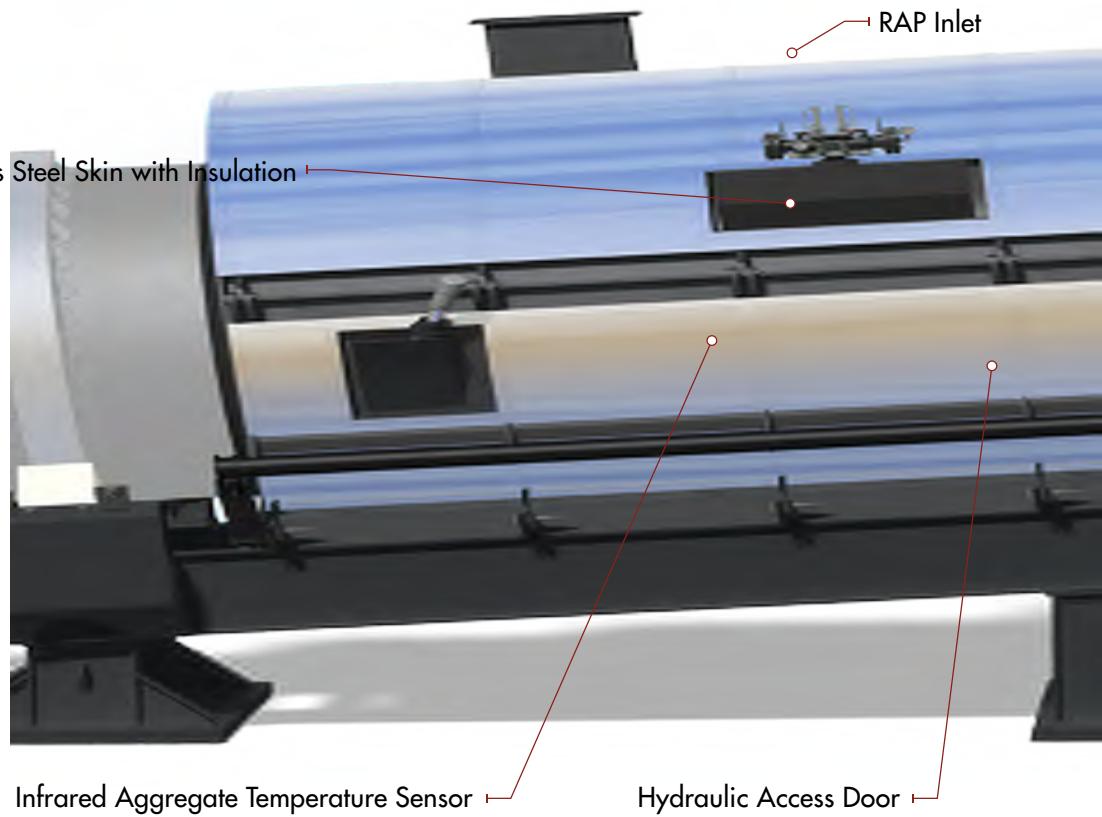
DRYER ACCESS

The interior of the dryer drum is accessed through a door on the inlet breeching

Double Barrel

FEATURES

The cost of maintaining the Double Barrel dryer/drum mixer is comparatively low, because Astec uses proven wear materials. High-chrome, heat-treated, mixer paddle tips and wear plates in the mixing zone stand up to ton after ton of abrasive material. The burner end of the drum, as well as the mixing chamber outer shell, are fabricated from a high-strength, low-alloy steel for superior heat-resistance and lined with wear plates at critical wear areas.



RAP INLET

RAP enters directly into the mixing chamber and does not contact the hot gas stream of the dryer. Because the RAP is heated by the hot aggregate, not the burner, the Double Barrel dryer/drum mixer runs clean, even at 50% RAP. A RAP by-pass chute is incorporated to easily divert RAP to a waiting loader or truck during clean out of bins or calibration.

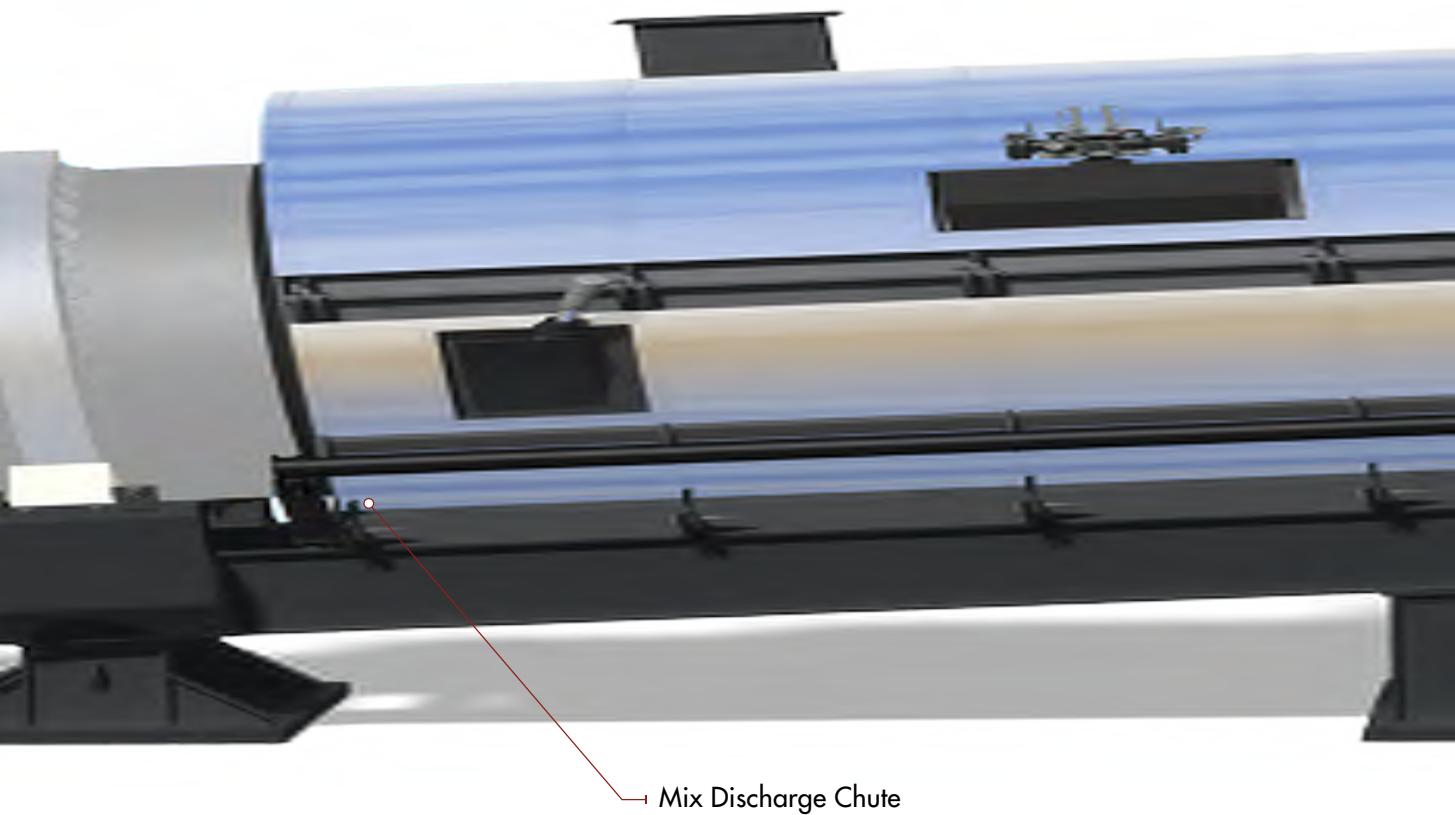


THICK INSULATION

4" thick insulation under the outer skin of the mixing chamber minimizes heat loss and increases efficiency. In addition, temperature resistant ceramic fiber insulation is used in critical high-heat areas.

MIXING PADDLES

High-chrome, bolt-on tips with ductile iron shanks for longevity in the field.



OPTIONAL TEMPERATURE SENSOR

Once heated and dried, the aggregate leaves the drying chamber and enters the mixing chamber. At this point, an infrared sensor measures the temperature of the hot aggregate and automatically adjusts burner output to keep aggregate at the required temperature. This unique Astec feature makes it easier to control mix temperatures and to turn out mixes that conform to specifications.



HYDRAULIC ACCESS DOOR

A large hydraulically operated access door allows easy service of mixing shanks and tips from the outside of the drying drum.

Double Barrel®

TWO PAGE PHOTO SPREAD

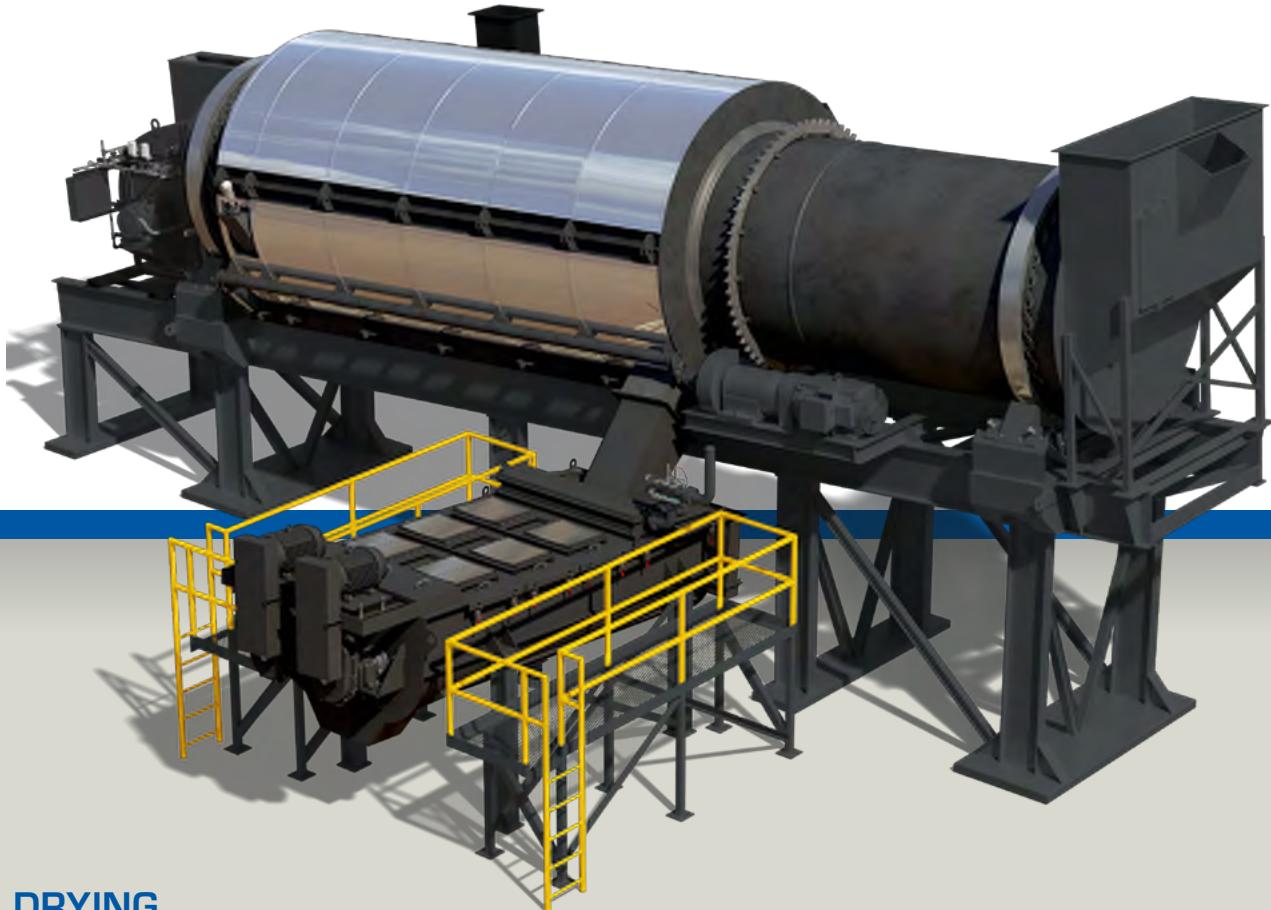




Double Barrel® X

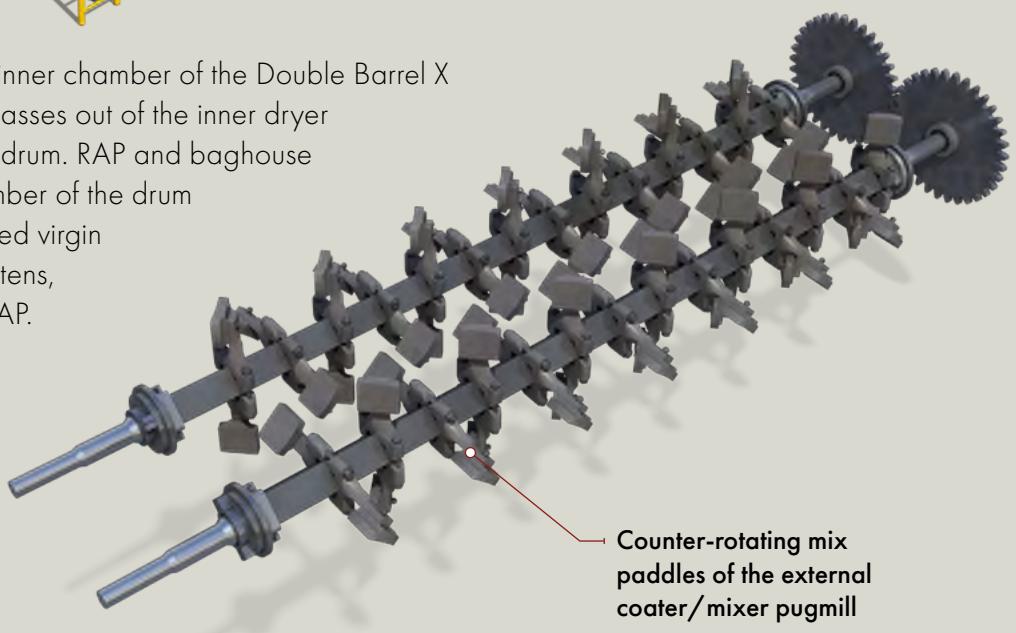
DRYER DRUM WITH EXTERNAL MIXER

The Double Barrel X system separates the drying process from the mixing process, thereby providing a very reliable tool to be used for the purpose of recycling reclaimed asphalt pavement (RAP). With a Double Barrel X system, a plant can process both warm and hot asphalt mixes with up to 50% RAP content while maintaining zero opacity at the stack.



DRYING

Virgin aggregate passes through the inner chamber of the Double Barrel X dryer drum. The virgin material then passes out of the inner dryer chamber to the outer chamber of the drum. RAP and baghouse fines are introduced in the outer chamber of the drum where they mix with the already-heated virgin aggregate. As the AC on the RAP softens, the baghouse fines evenly coat the RAP. Preconditioning the RAP through the outer chamber of the Double Barrel X dryer drum flashes off moisture in the drum, thus eliminating the problems associated with scavenger systems.





TWIN SHAFT PUGMILL

After the heated and dried virgin aggregate thoroughly mixes with the RAP and fines, it passes out of the drum dryer/mixer and moves into an external pugmill.* This is where liquid AC is added. Because the liquid AC only enters in the external mixer, virtually no build-up is produced in the dryer.

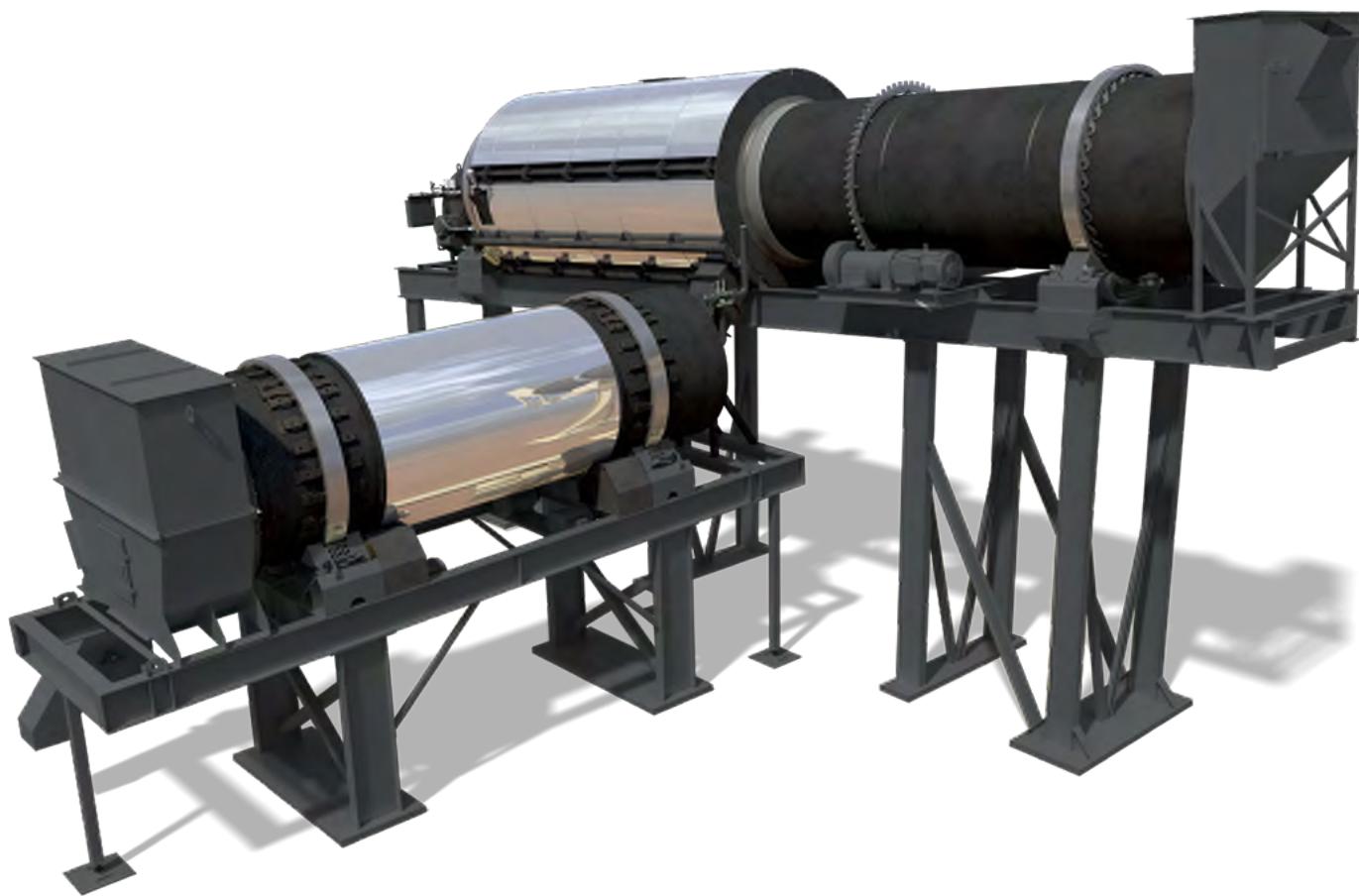
With the addition of an Astec warm mix system, the Double Barrel X system produces warm mix asphalt.



*a rotary drum is optional

Double Barrel® XHR

EXTERNAL HIGH RAP MIXER



MIXING TECHNOLOGY

The Double Barrel XHR employs two mixing technologies proven for over a quarter century in the HMA industry:

- The outer mixing chamber on the dryer gently mixes recycle with dry hot aggregate maximizing heat and binder transfer between RAP, aggregate, and selected admixtures in a rarefied oxygen atmosphere.
- The external mixer vigorously mixes virgin liquid asphalt cement, as well as other admixtures.



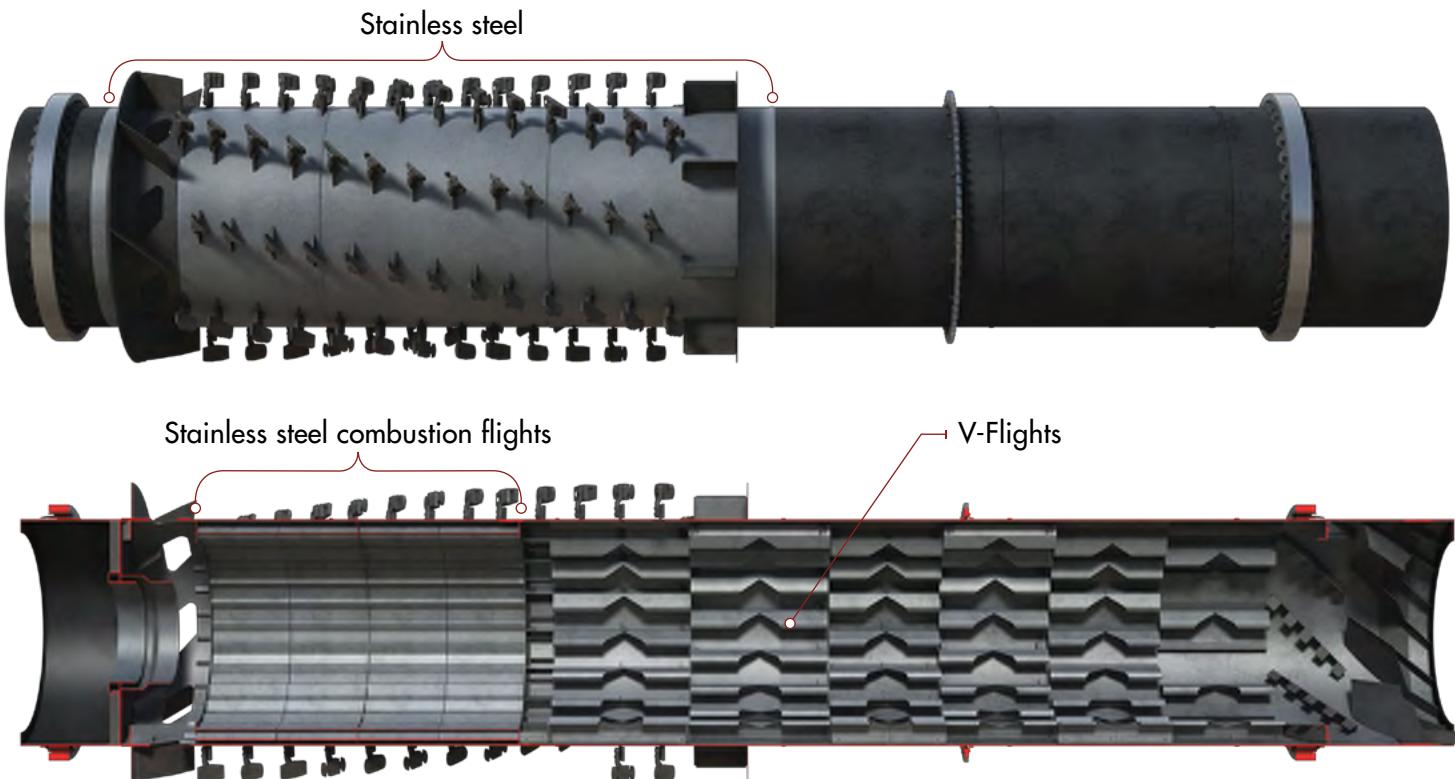
HIGH RAP AGGREGATE DRYER WITH EXTERNAL MIXER

The Double Barrel XHR system runs mix with up to 65% RAP*.

The Double Barrel XHR achieves a quality high RAP mix. To achieve this quality mix, it utilizes both an outer chamber on the drum and an external mixer with the addition of the V-Pac™ Stack Temperature Control System to maintain as low an exhaust temperature as

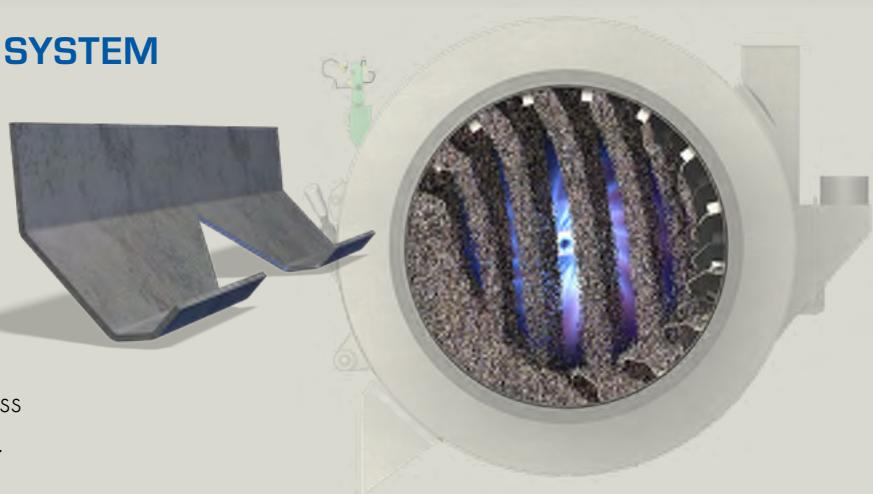
possible when running high RAP content. A stainless-steel drum and stainless-steel combustion flights withstand the higher temperatures associated with running high RAP. The Astec warm mix system comes standard on all Double Barrel XHR mixing systems.

* 65% RAP based on 5% RAP moisture



V-PAC™ STACK TEMPERATURE CONTROL SYSTEM

Astec's V-Pac Stack Temperature Control System uses v-flights and a variable frequency drive (VFD) drum to help facilitate producing many different types of mixes, while controlling stack temperature, without the added cost and time of flight changes. Astec's v-flights shower along the edge of its notch, as well as its tips, creating a wider veil that increases the effectiveness of the veil by exposing more material to hot gases.



Double Barrel®

TWO PAGE PHOTO SPREAD

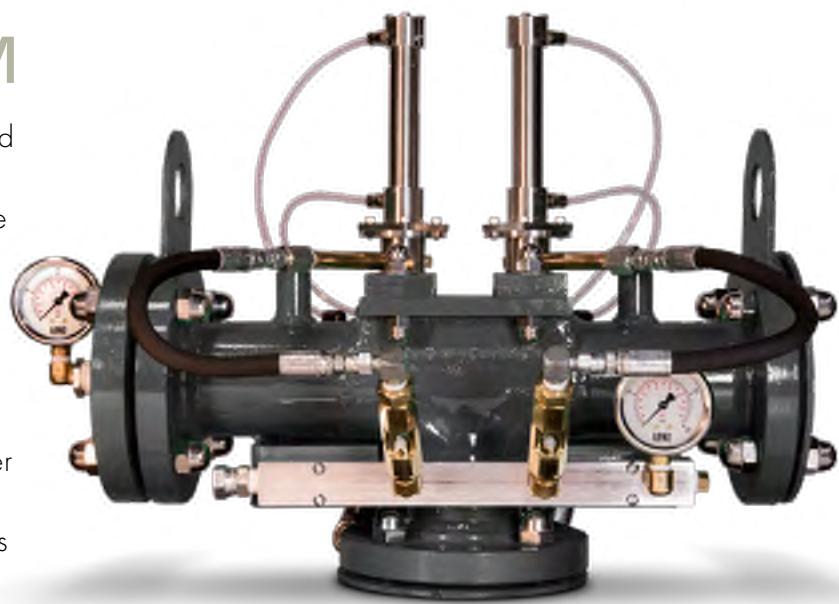




ASTEC

WARM MIX SYSTEM

The benefits of warm mix asphalt, such as reduced energy consumption, lowered emissions, and elimination of visible smoke, are well-known in the asphalt paving industry. Warm mix technology allows mix to be prepared and placed at lower temperatures than conventional hot mix. To achieve this, the viscosity of the liquid asphalt cement (AC) must remain low at the reduced temperatures. Maintaining a low viscosity at lower temperatures allows mix to flow freely through storage, transfer, and placement equipment and is more easily compacted.



The Astec warm mix system achieves a lower temperature at a lower cost by eliminating the need for additives or special asphalt cement. Instead, the Astec warm mix system injects a small amount of water into the liquid AC to create microscopic steam bubbles. These small bubbles reduce the viscosity of the liquid AC, allowing the mix to be worked at lower temperatures.

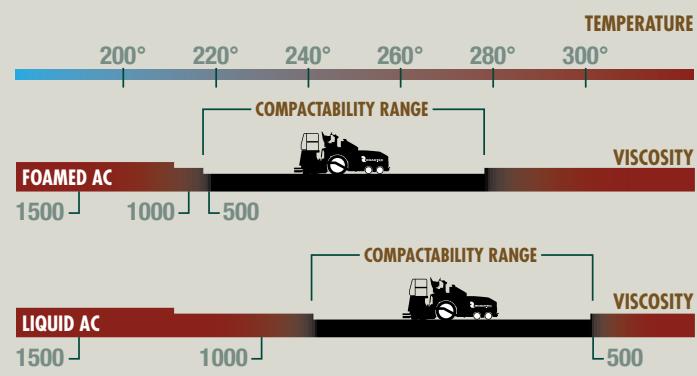
BETTER COATING

Foamed liquid AC has a greater volume, which allows it to cover a greater surface area, while using the same amount of liquid. This means that the liquid is better distributed over the aggregate. Lower mix temperatures can also increase maximum production rate.



LESS OXIDATION

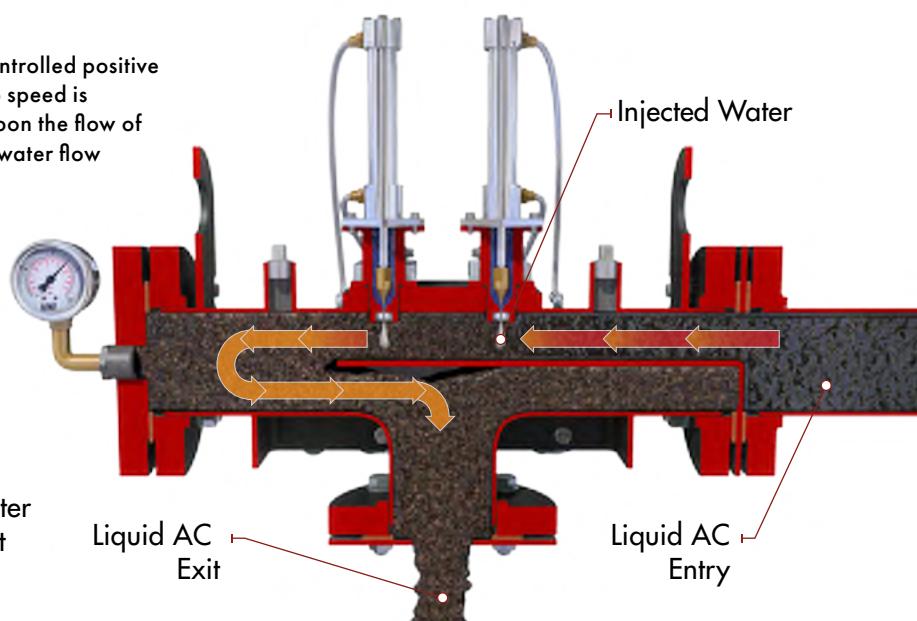
Producing asphalt mix at lower temperatures leads to less oxidation, resulting in longer pavement life. Every 25°F increase in temperature doubles the rate of oxidation of liquid AC.



SOLENOID INJECTION

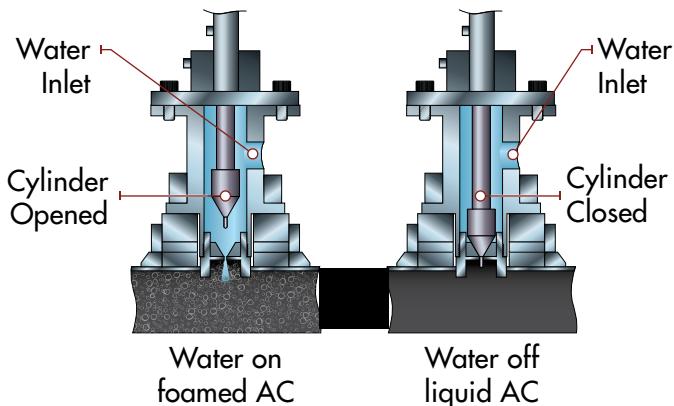
Water is accurately metered into the system by a feedback-controlled positive displacement piston pump. Using feedback controls, the pump speed is modulated to maintain the appropriate flow of water based upon the flow of the liquid AC. PLC controls provide for smooth and consistent water flow as production rates increase or decrease.

Water is injected into the liquid AC through two stainless steel water injectors which continuously inject high-pressure water into a foaming chamber.



AC MANIFOLD

Field-proven and highly reliable.



As the water is injected into the liquid AC, the water droplets quickly flash to steam, creating microscopic bubbles of steam that reduce liquid AC viscosity.

BLUE SMOKE REDUCTION

In the silos pictured below, the left silo contains traditional hot mix asphalt. The right silo contains asphalt mixed at lower temperatures using the Astec warm mix system. It is apparent that there is less blue smoke coming out of the right silo. Less blue smoke means less visible emissions and reduced odor.

The lower amount of blue smoke is not only applicable to the asphalt when it is exiting the silos, but also at the job site where the asphalt is being laid.



WATER RESERVOIR

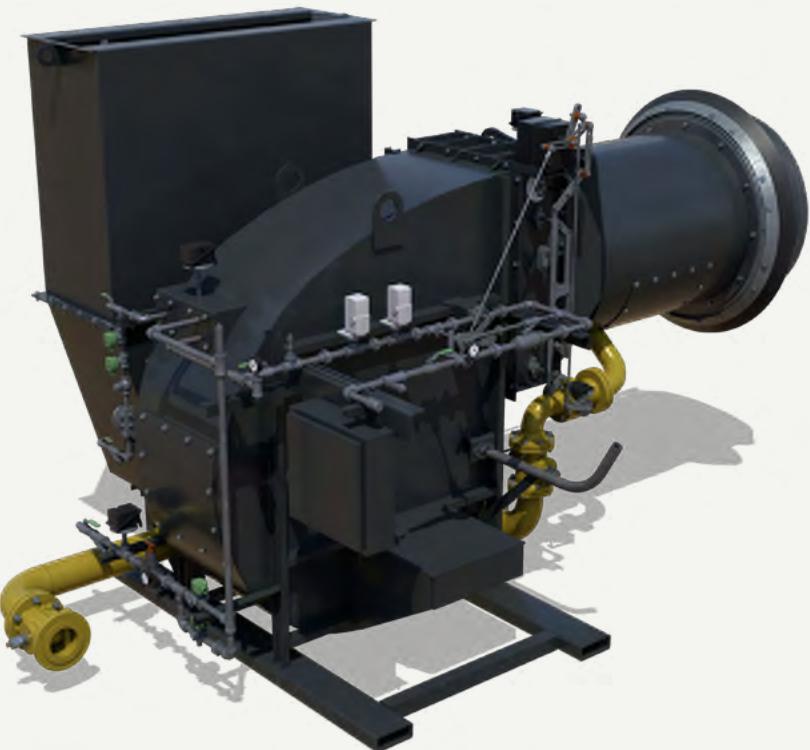
A skid-mounted, corrosion-free water reservoir is included with warm mix system packages. An optional cold weather package is available to prevent damage to components during cold weather operations. If supply water is lost, then a low-water alarm alerts plant personnel, so the problem may be resolved quickly without wasting mix. Water reservoir systems are sized based on customer needs.



ASTEC

BURNERS

Astec offers the most technologically advanced burners in the industry with the Phoenix® and Whisper Jet® burner lines.



WHISPER JET® BURNER

The Whisper Jet burner delivers unmatched reliability and hassle-free maintenance. The Whisper Jet cleanly and efficiently burns oil or gas and has a compact flame.

THE MOST TECHNOLOGICALLY ADVANCED BURNERS



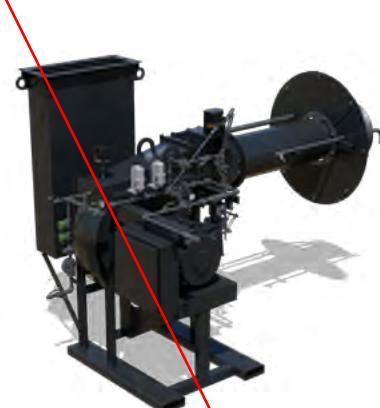
PHOENIX® PHANTOM™ BURNER

Astec's premium Ultra-Low NOx Phoenix Phantom burner leads the pack with the lowest available combustion and noise emissions (gaseous fuels only). The Phantom also achieves the highest electrical energy efficiency with innovations like variable speed drives. The Phantom offers advanced mixing technology and the latest technological innovations to deliver the absolute minimum gaseous emissions available today.



PHOENIX® TALON II™ BURNER

The Astec Phoenix Talon II burner sets the standard for power and efficiency, while maintaining very low emissions. With the optional silencing package, it is quiet enough to have a phone conversation on the burner platform while it is firing.



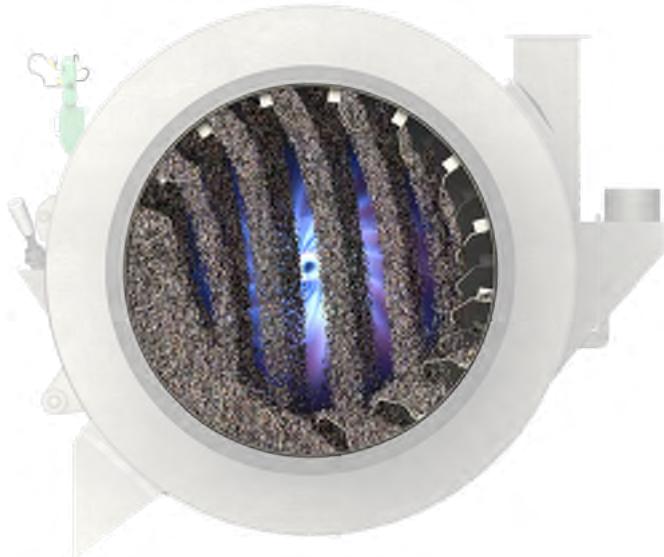
PHOENIX® FURY™ BURNER

A robust build and simple, accessible construction makes the Astec Phoenix Fury burner a great cost-effective choice. Compared to other open-fired designs, the Fury burner achieves better emissions and fuel efficiency by putting 50% more combustion air through the burner.

Optional V-PAC™ SYSTEM

In today's market, many asphalt plants produce a wide range of mixes. Switching between mixes or significantly varying tonnage rates can cause swings in stack temperatures. If these temperature swings exceed the limits of the baghouse adjustments to the flighting arrangement must be made to prevent baghouse damage. These changes can be costly and time consuming, especially if changes are needed when the mix type changes.

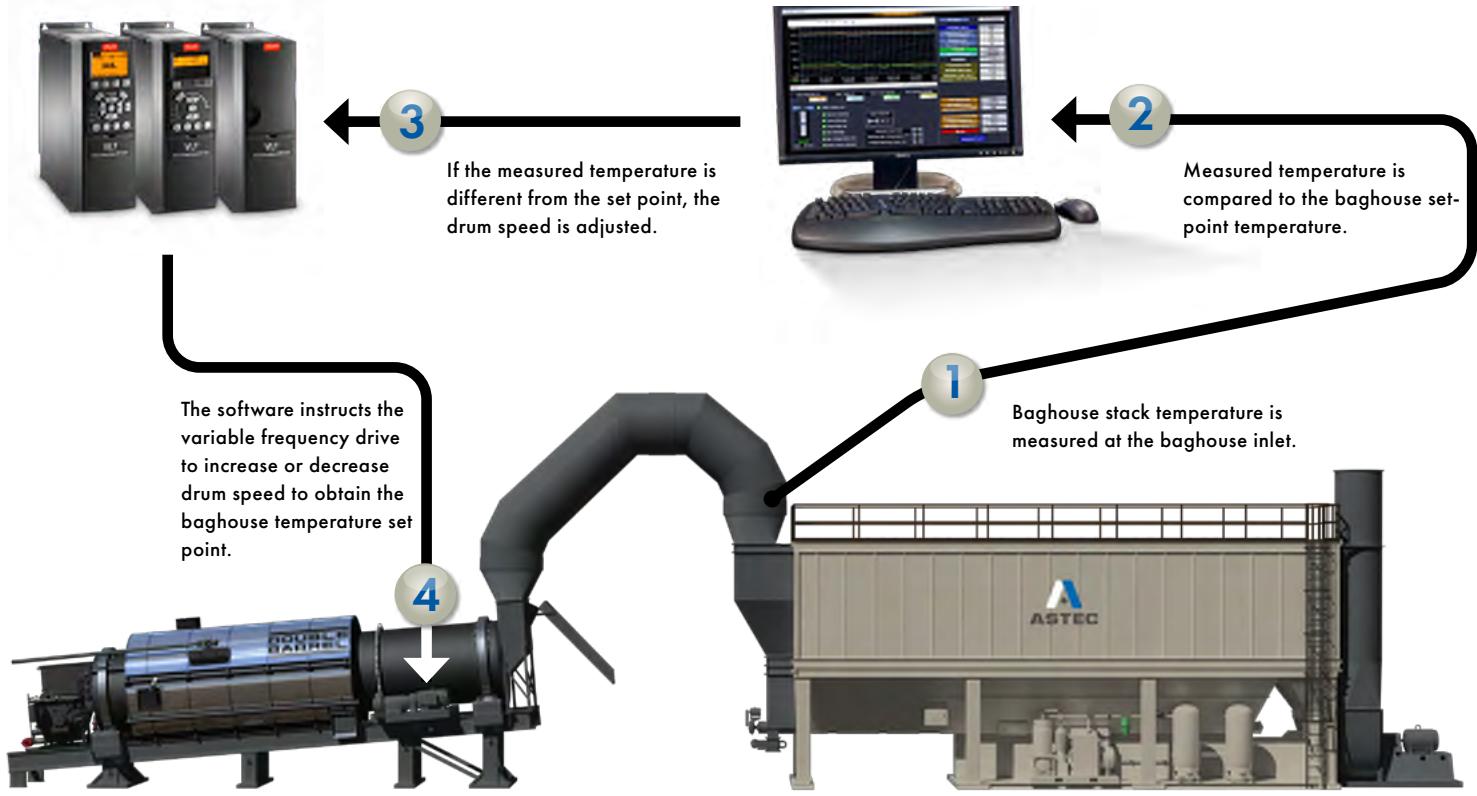
The V-PAC combines Astec's v-flights and a variable frequency drive (VFD) drum to enable optimization of stack temperature, for a broad range of mix types without costly flighting changes. V-flights are uniquely designed to maximize heat transfer by exposing more material to the heat produced by the burner.



V-FLIGHT VEIL

The Astec v-flight is taller and incorporates a v-shaped notch. The increased size allows the v-flight to carry the same amount of material as a standard flight. Material begins to veil through the notch sooner and, instead of just showering from the tip, v-flights shower along the edge of the notch, as well as the tip. The result is a more even veil at both higher and lower tonnage rates, which increases the effectiveness of the veil by exposing more material to hot gases.

V-PAC STACK TEMPERATURE CONTROL SYSTEM



ASTEC Drum Comparison Chart

					
MAX RECYCLE*	0%				
	30%				
	40%				
	50%	X	X	X	
	65%				X
	150		X		
PRODUCTION RANGE (TPH)	180		X		
	200		X	X	X
	250		X	X	X
	300	X	X	X	X
	400	X	X	X	X
	500	X	X	X	X
KEY FEATURES	600	X	X	X	X
	Enhanced Materials?	NO	NO	NO	YES
	Veiling End Drum Shell Material	Heat-Resistant Steel	Structural Steel	Structural Steel	Structural Steel
	Burner End Drum Shell Material	Heat-Resistant Steel	Heat-Resistant Steel	Heat-Resistant Steel	Stainless Steel
	Combustion Flighting Materials	Stainless Steel	Stainless Steel	Stainless Steel	Stainless Steel
	Warm Mix System	Optional	Optional	Optional	Standard
V-PAC	Optional	Optional	Optional	Standard	
	NA	Yes	NA	NA	
Mixing Location	All Constituents Mixed Behind the Extended Burner Nose	All Constituents Mixed in Outer Shell of Double Barrel	Recycle, Baghouse Dust, and Additives Mixed in Outer Shell of Double Barrel; AC Added in External Mixer	Recycle, Baghouse Dust, and Additives Mixed in Outer Shell of Double Barrel; AC Added in External Mixer	

* Max Recycle at 5% RAP Moisture
50% is achieved with patented V-Pac





ASTECTM

www.astecindustries.com

Phoenix® Talon 2 Burner

The Astec Phoenix Talon 2 burner utilizes the latest burner technology to deliver very low emissions combined with energy efficiency. With the optional silencer, it's even possible to have a phone conversation on the burner platform while it is firing.

ADVANCED EMISSION REDUCTION

The Phoenix Talon 2 burners use the most advanced technology to precisely and completely mix the air and gaseous fuel to achieve an advanced low NOx and CO method called lean burn premix. They employ a multiple, parallel, turbulent, tube mixer to achieve near perfect mixing of fuel and air.

ELECTRIC POWER EFFICIENCY

The variable speed main combustion blower drive helps provide precise firing rate control and uses much less electrical energy. It also eliminates the need for an air damper and for drive motor adjustments and maintenance.

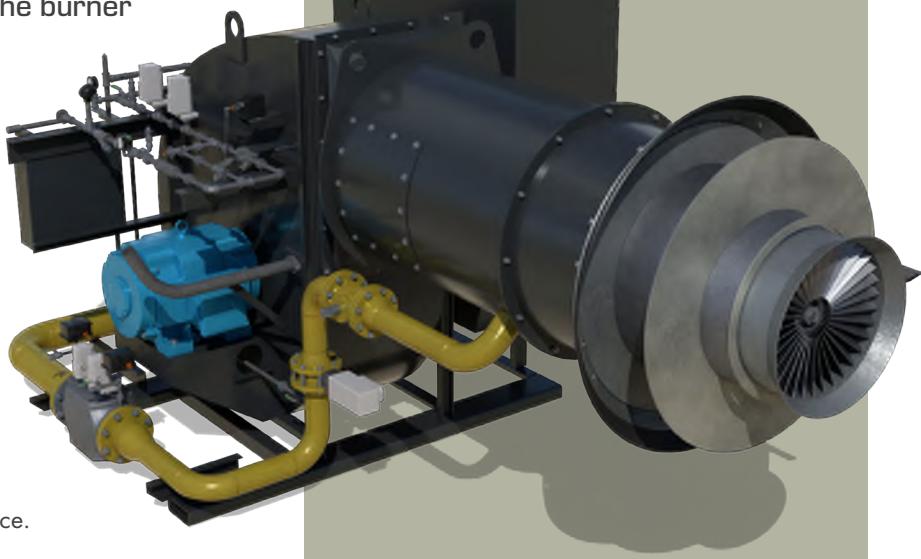
FIRING EFFICIENCY AND COMPACT FLAME SIZE

High quality mixing of air and fuel creates the most compact flame available with a small combustion zone. This ensures that all of the fuel is combusted for peak efficiency without taking away valuable dryer heating capacity.

BURNER FIRING SPECS

MODEL NUMBER	PT2-35	PT2-50	PT2-75	PT2-100	PT2-125	PT2-150
RATED CAPACITY MILLIONS OF BTU/HR (WITH 20% XSA)	35	50	75	100	125	150
NOMINAL AGGREGATE DRYING CAPACITY TPH (AT 5% MOISTURE)	140	200	300	400	500	600
BURNER AIR CAPACITY SCFH (MILLIONS)	0.42	0.60	0.90	1.20	1.50	1.80
INTEGRAL BLOWER HORSEPOWER	30	40	60	75	100	125
OIL ATOMIZING AIR REQUIREMENT SCF (LOW FIRE / HIGH FIRE)	55 / 45	55 / 45	100 / 85	100 / 80	110 / 80	125 / 90

Above conditions are standard at 75° F at sea level. See detailed capacity, performance sheets for each size for more information and specific flows and pressures. Nominal aggregate drying capacity based on typical exhaust stack temperatures of 240° F, 0.2 BTU/Lbm F specific heat in the aggregate. Burner maximum design capacity is 100% of rated capacity. Advertised numbers are achievable in some conditions, but not guaranteed.



ASTEC BAGHOUSES

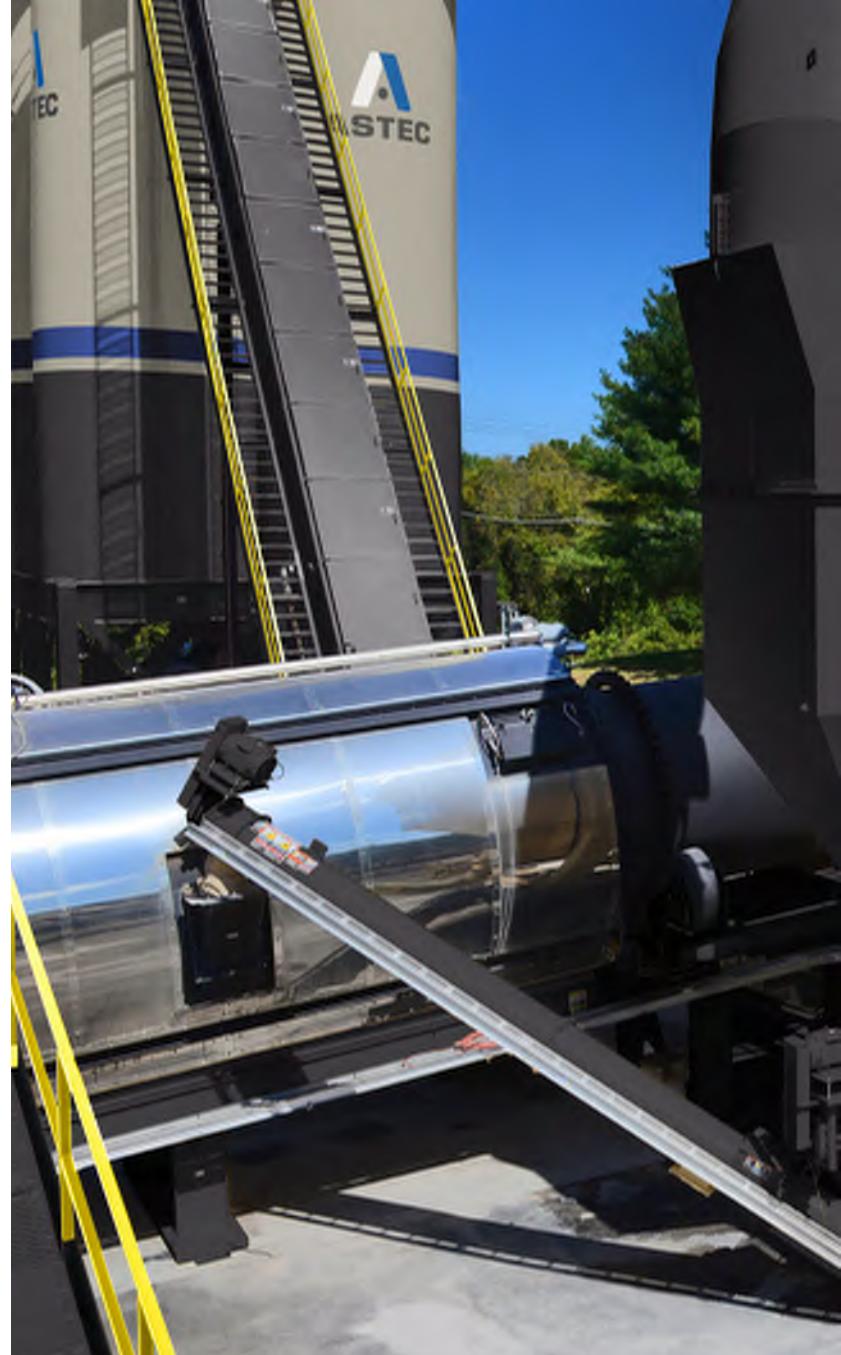
PULSE JET BAGHOUSE



PULSE JET BAGHOUSE For Asphalt Mixing Plants

They remove particulates from the exhaust stream to efficiencies greater than 99.9%, and lower emissions to less than one quarter of EPA standards.

The baghouse exhaust fan provides the draft needed to evacuate gases from the drum, including steam, products of combustion, and air (leakage and unused combustion). The control system regulates airflow through the system by regulating fan speed when there is a VFD, or opening and closing the exhaust fan damper.



BAGHOUSE Facility Style

Whether you need the quick setup and mobility of a portable plant, the flexibility and operating capacity of a stationary, or something in-between – Astec baghouses can be configured for any of the three Astec plant styles.



STATIONARY

Stationary asphalt mixing plants provide a high degree of flexibility for customized layouts and special features. The stationary baghouse is supplied with steel legs to grade. The legs are anchored to your prepared concrete foundations.

Astec baghouses deliver superior performance and efficiency, while helping your plant meet the most stringent clean air standards.



RELOCATABLE

Modular construction and built-in steel foundations eliminate the need for concrete foundations, making setup of the relocatable baghouse fast and easy. Relocatable baghouses are delivered on steel plate foundations. At the site, the top weldment bolts to the hopper section.



PORTABLE

The Astec portable baghouse is designed as an integral component of the Six Pack® portable hot mix facility. Built-in running gear, high-rise air bag suspension and optional retractable plate foundations eliminate setup hassles. Portable baghouses are available in a range of capacities.

Complete Astec Pulse Jet Baghouse System

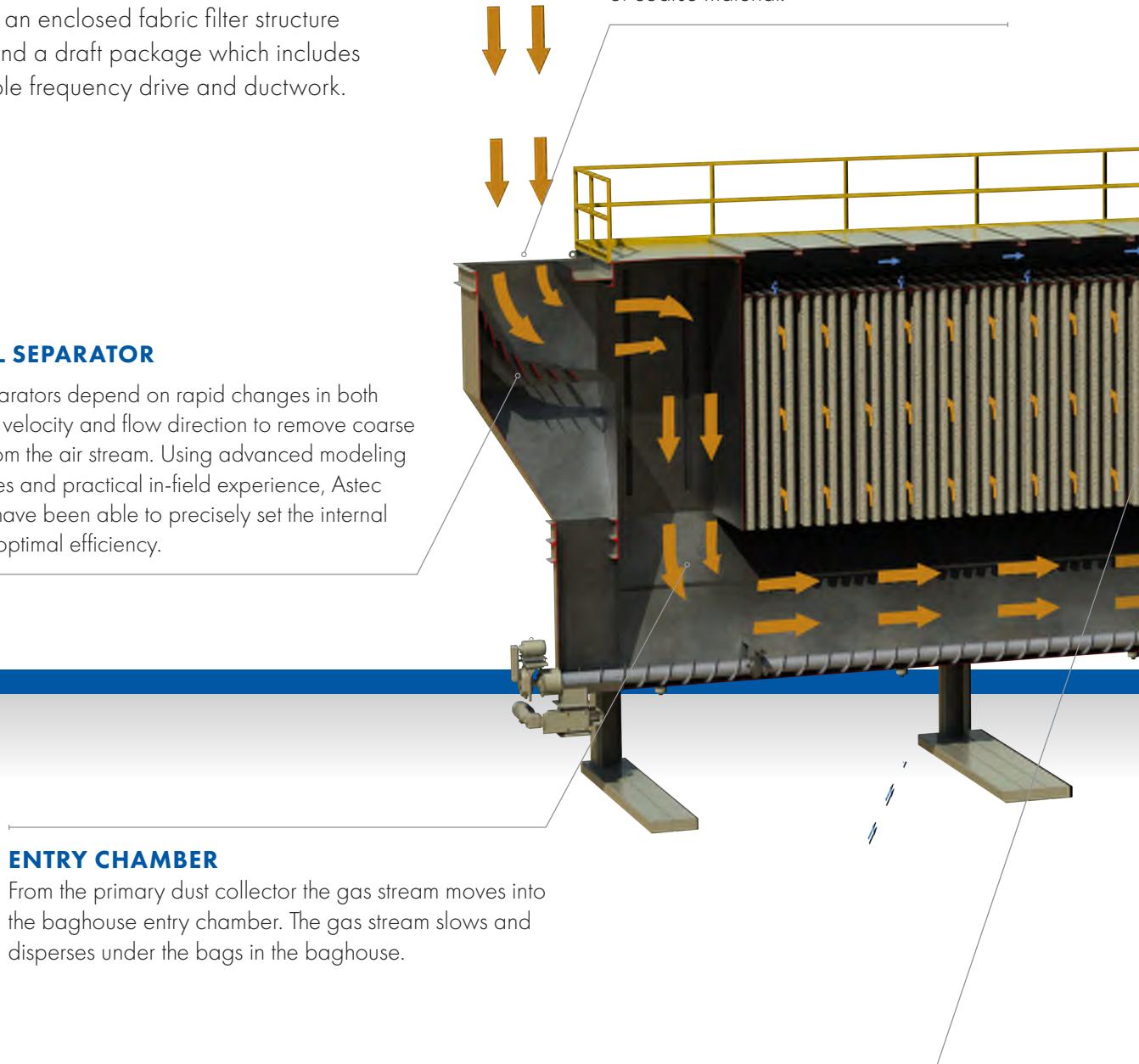
The complete baghouse system consists of a primary dust collector, an enclosed fabric filter structure (baghouse), and a draft package which includes the fan, variable frequency drive and ductwork.

INERTIAL SEPARATOR

Inertial separators depend on rapid changes in both gas stream velocity and flow direction to remove coarse particles from the air stream. Using advanced modeling technologies and practical in-field experience, Astec engineers have been able to precisely set the internal baffles for optimal efficiency.

DUST COLLECTOR

Gas stream exits the drum mixer or dryer through the duct and enters primary dust collector (inertial separator) for removal of coarse material.



ENTRY CHAMBER

From the primary dust collector the gas stream moves into the baghouse entry chamber. The gas stream slows and disperses under the bags in the baghouse.

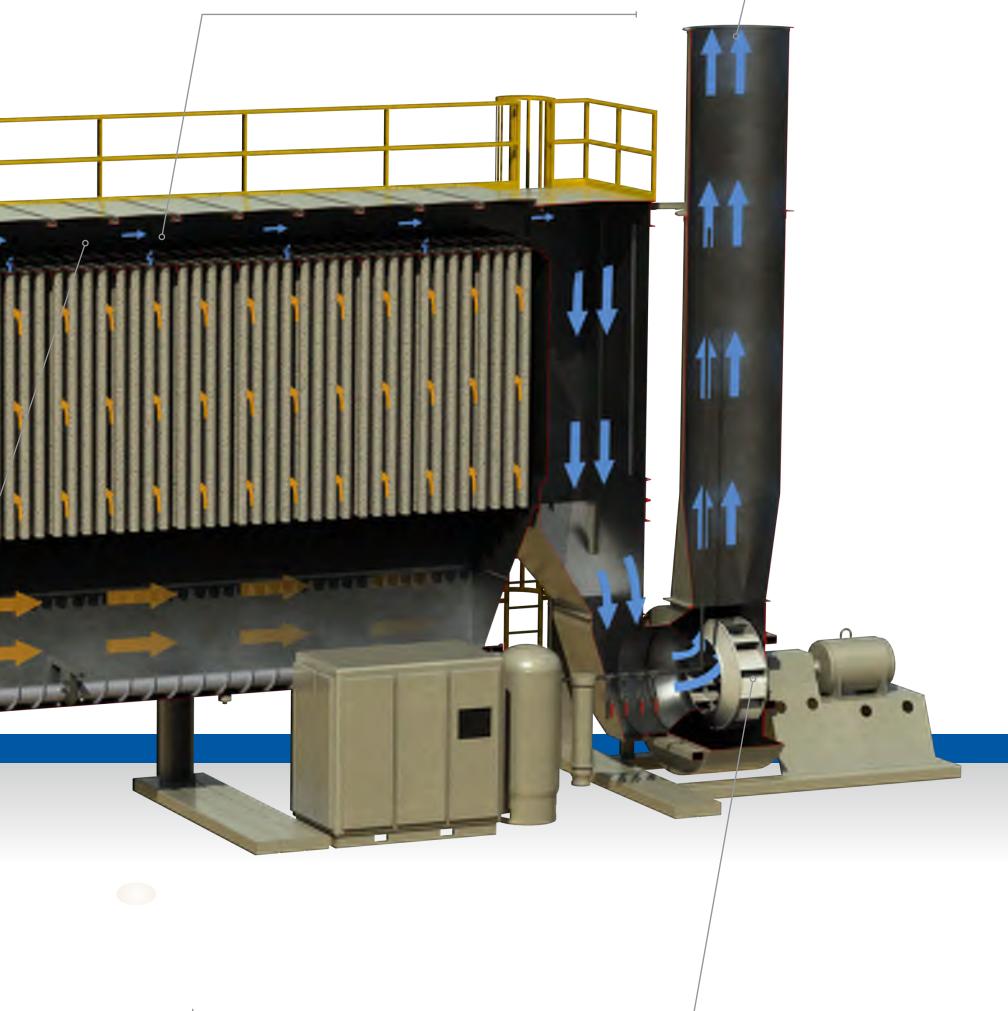
CLEAN AIR PLENUM

Negative pressure in the clean air plenum above pulls the dust-laden air through the filter bags. The fine dust collects on the outside of the bags.

CLEANING BURSTS

Periodically, bursts of compressed air are injected into the tops of two rows of bags. Dust breaks free and falls into the hopper(s) to be removed by screw conveyor(s).

The collected dust is then able to be returned to the mix as needed.



FANS MAINTAIN STABLE AIRFLOW

The Astec exhaust fan is designed for a wide range of operating conditions and is capable of operating at high differential pressures. The fan's backward-curved blade runs quieter and uses less power than other fan designs. The drives can be configured to be driven either by belts and sheaves or direct coupling. Optional stack silencers are also available.

EXHAUST STACK

The cleaned gas stream travels through the plenum, passes through the fan, and exits the baghouse through the exhaust stack.

The Benefits of a Variable Frequency Drive

The Variable Frequency Drive (VFD) on the baghouse fan minimizes electrical power consumption and reduces the number of mechanical parts necessary for optimum plant performance. VFD works by only running the fan at the speed necessary to induce the ideal balance of flow through the plant equipment at a given tonnage rate. With a VFD, the fan duct no longer needs a mechanical damper – so the pressure losses from the damper are eliminated.

Expensive electricity consumption is minimized in two unique ways. First, electrical energy is saved since the fan is only run at a speed necessary for a given production rate. In contrast, a fan/damper arrangement runs full-speed at all times. For example, at 80% capacity a fan with a VFD only uses 50% of the electrical energy of a fan with a damper -- savings increase to 75% running at 50% capacity. Second, a VFD-equipped baghouse fan avoids expensive electrical demand charges. A fan/damper arrangement quickly brings the fan to full speed. This creates a very short high energy demand. With a VFD, the fan is able to start spinning very slowly using a small amount of energy.

BAGHOUSE Dust Particles

Coarse and fine dust are collected separately. The coarse dust is collected by a primary collector and then returned to the mix 100% of the time. The fine dust is collected by the baghouse and may all be returned to the mix, or it can be wasted, metered into the mix, or stored in a fines silo with the addition of a VFD airlock.



SCREW CONVEYOR

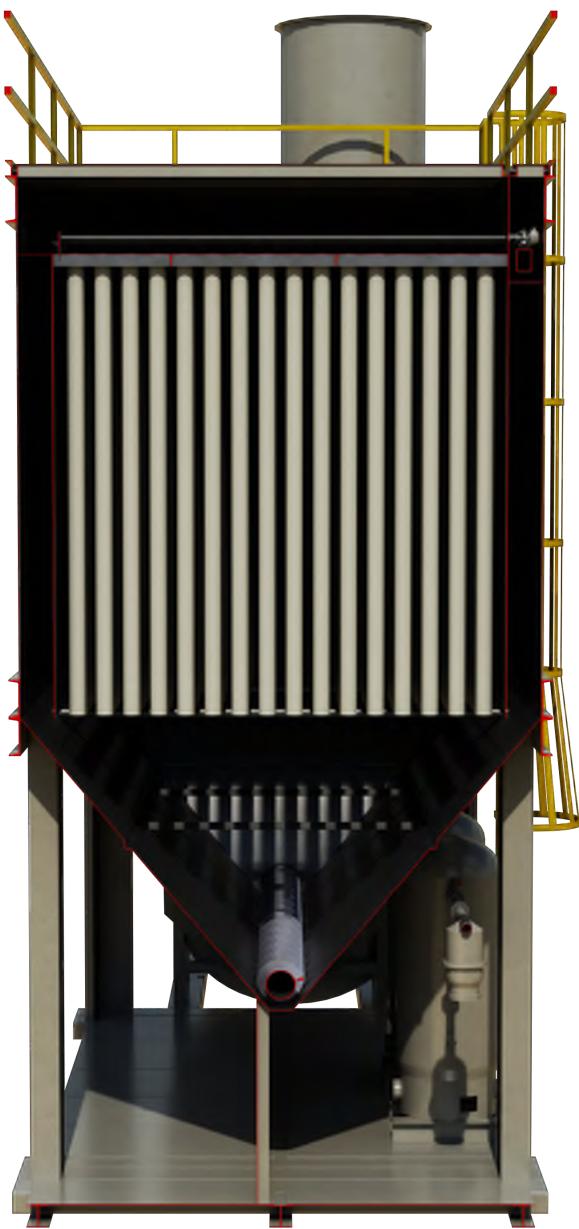
Fine particles collect in the bottom of the baghouse and are removed from the baghouse by the screw conveyor. These fine particles may be returned to the mix, stored or wasted.



PARTICLES by size

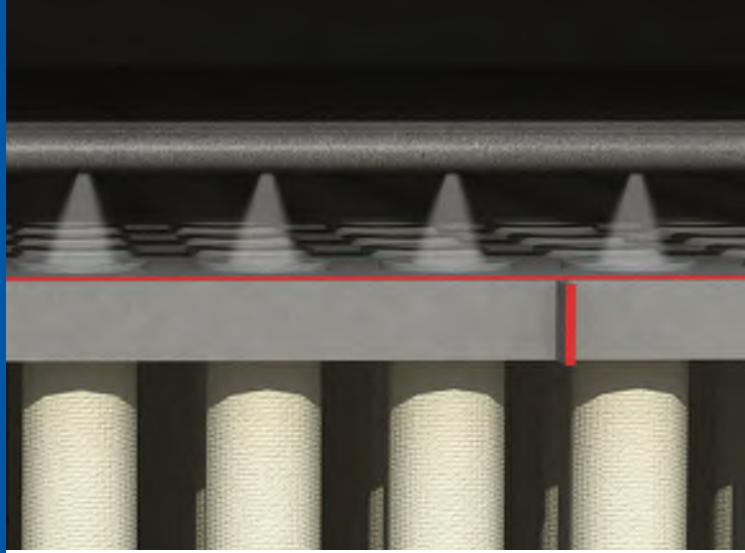
Astec primary collectors capture coarse dust as air flows into the baghouse. Generally, the dust gathered in the primary collector is in the 30, 50, 80 mesh range.

Since very few coarse particles enter the baghouse, it can collect small fines very efficiently. Coarse particles entering the baghouse would cause the dust cake to be very porous, making it harder to collect very fine particles. A dense dust cake of fine particles has a higher collection efficiency. Removal of coarse fines in the primary collector also reduces wear on the bags.



REMOVAL OF FINE PARTICLES

The gas stream exits the primary dust collector and moves into the baghouse entry chamber. The gas stream slows down and passes under the wall that protects the bags. Negative pressure in the clean air plenum pulls the gas stream up through the filter bags. Fine particles entrained in the gas stream collect on the outside of the bags. The cleaned gas stream travels through the plenum and exits the baghouse through the exhaust stack.



PULSE JET CLEANING

The Astec pulse jet baghouse works in a continuous cleaning process. The pulse jet bags never stop filtering because the bags do not need to be taken offline for cleaning. To clean the bags, air exits a venturi which concentrates a burst of air. The resulting air wave pops the bags away from the cage. This movement of the bag dislodges the dust cake, allowing it to fall into the hopper.



RETURN FINES TO THE MIX

With an optional variable speed air lock, you can choose what percentage, if any, of fine baghouse dust you want to mix with the coarse dust to be returned to the mix. An optional blower or screw conveyor can be installed to divert baghouse dust to storage or disposal. Rotation sensors on all dust handling conveyors signal the operator in the event of a stoppage.

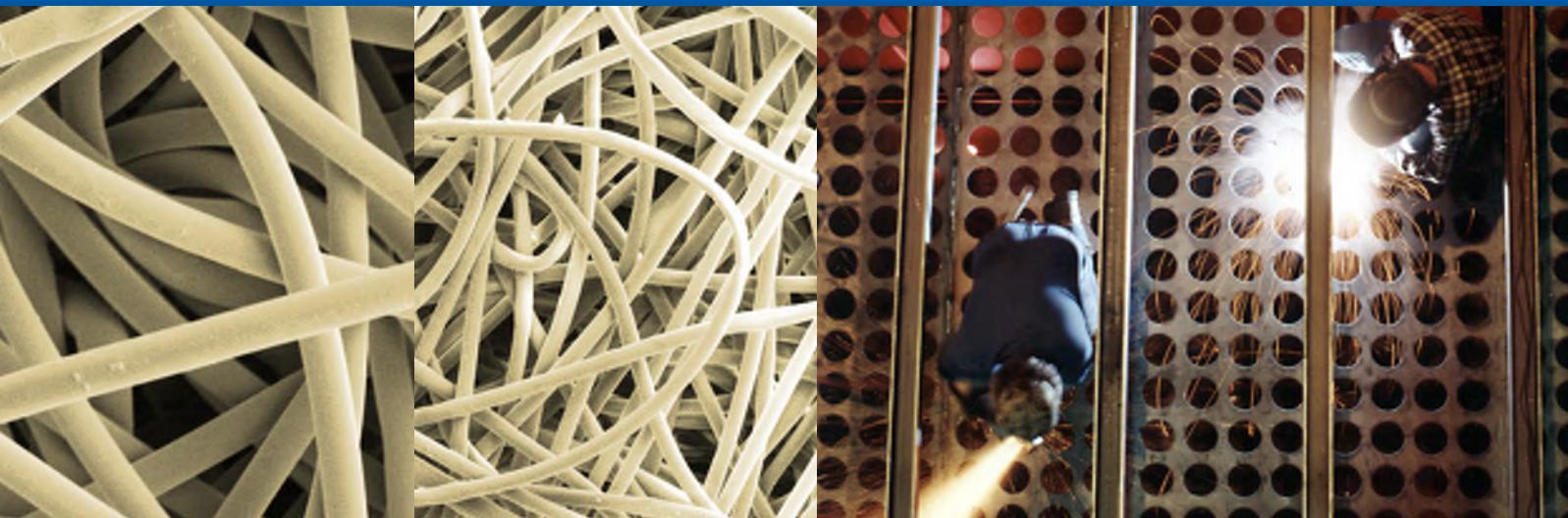


BAGHOUSE Bag Material

Thanks to a proprietary material, bags used in Astec baghouses do a more reliable job. Astec felt is made of 2-denier virgin aramid fiber with high density needling. All Astec felts are also singed for superior dust cake release. The bag material is specially made for Astec, with a guaranteed minimum density per square inch of 14 ounces.* Manufacturers using bags of lesser quality may claim an average density of 14 ounces, but their bags can be thinner than that average in spots, which leads to less reliable filtering and faster bag wear. The density of Astec bags is never less than 14 ounces.

Astec offers micro-denier bags in addition to standard denier bags. Micro-denier bags are made of the same type aramid fibers except they are smaller in diameter than the 2-denier and can form an even tighter configuration to improve filtration of microscopic particulates for areas with high particulate emission restrictions.

*14 ounces is the standard minimum density for relocatable and stationary ASTEC baghouses.
16 ounces is the standard minimum density for a portable ASTEC baghouse.



The micro-denier aramid felt fiber is available for compliance with tight particulate restrictions.

The tube sheet separates the dirty and clean air plenums. The dirty air must pass through the bags.

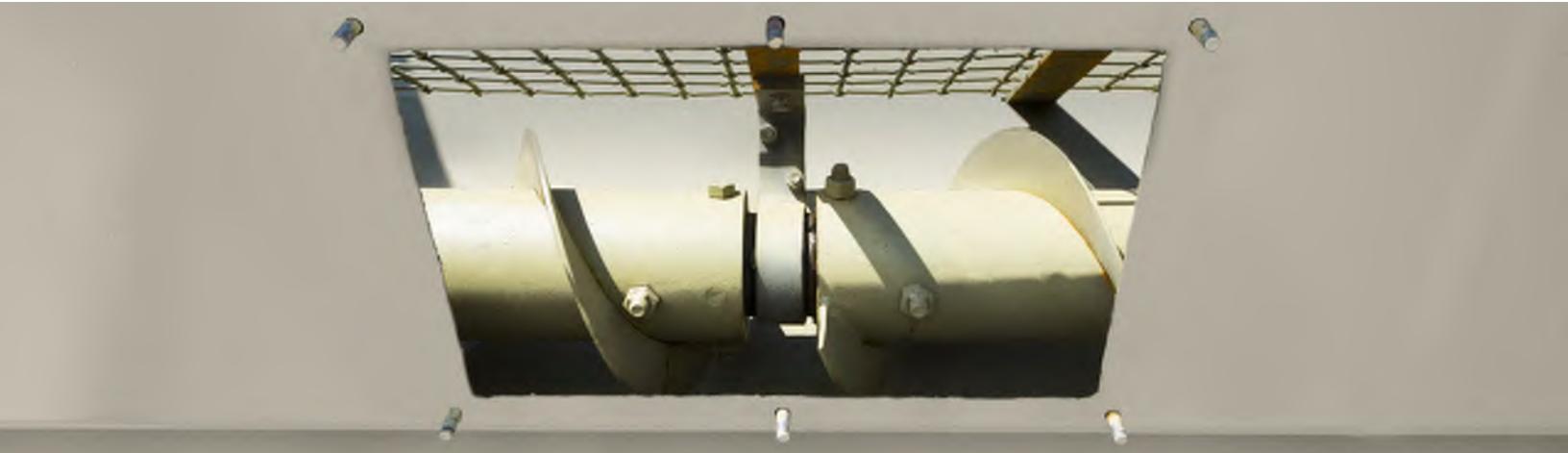


BAGHOUSE

Additional Features

The extra features you get with Astec make a real difference because they reduce maintenance and operating concerns and improve efficiency.

Duct transition wear surfaces and duct elbows are made of formable AR (abrasion resistant steel). Stiffeners strengthen baghouse walls and prevent flexing. Astec baghouses resist corrosion thanks to epoxy-coating on the inner surfaces of the baghouse and primary dust collector, and plenum access doors fabricated of stainless steel. Exhaust fan, motors and drives ship pre-assembled. All bags, blow pipes, manifolds, valves and solenoids are installed at the factory, saving you considerable time at setup.



ACCESS DOORS

Key parts of the baghouse are simple to access and service.



LESS MAINTENANCE TIME AND COST

Caged ladders lead to the top of the baghouse with handrails installed all around. Stainless steel plenum access doors let you easily reach bags. Snap-in bags are simple to change.

The dust screw on an Astec baghouse features a large screw shaft design with a reduced number of hanger bearings.

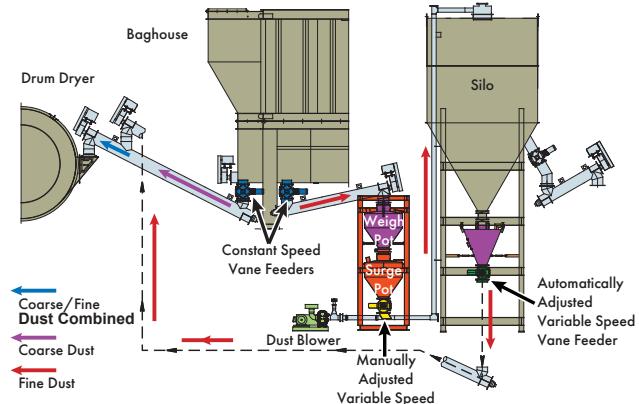
The hanger bearings on the hopper screws are lubricated, long-wearing and operate quietly. Screws and bearings are conveniently reached through ground-level access doors at each bearing.

Baghouses have clean-out plates at the bottom of the hopper. In the unlikely event of a blockage at the screw conveyor, these plates can be removed and dust can be evacuated manually.

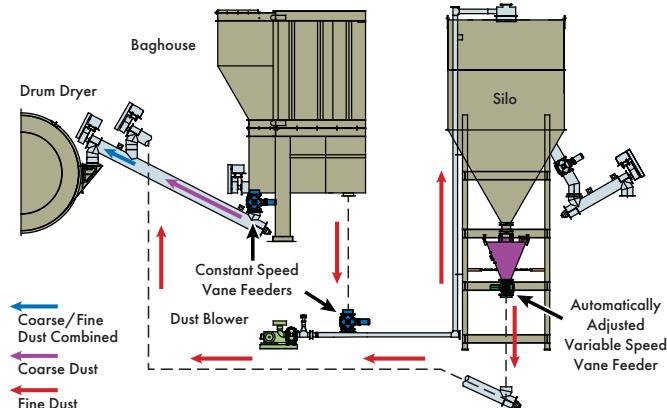
Choose Your Material Handling System

Select systems depending on your operating environment. The choices for controlling material flow out of the baghouse include a range of rotary air locks with dust blowers or dust transfer screws.

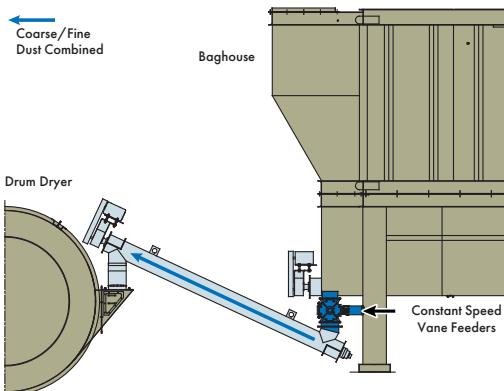
Total Control



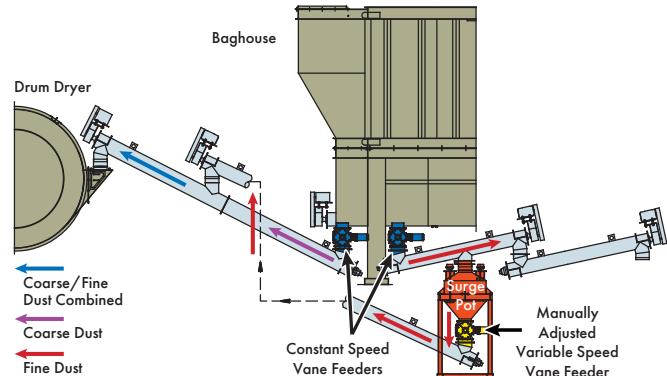
Split Return With Weigh Pot



Return All



Split Return With Surge Pot



DUST SILOS

Dust silos are available in sizes ranging from 350 to 900 barrels and equipped with Astec's mass-flow technology to assure precision metering.

Dust storage silo systems are either stationary or portable. Portable models have the option to include crane-erect or hydraulic self-erection packages and permanent or removable running gear.



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ASTEC ASPHALT STORAGE SOLUTIONS



STORAGE SOLUTIONS

Astec has the answer

After asphalt paving mix has been produced, it is transported to a silo or silos to be batched into waiting trucks or stored for sale at a later time. Silo storage brings the economies of long production runs to the asphalt mixing industry. Whether you need the quick setup and mobility of a portable silo or the flexibility and capacity of a stationary/relocatable, several options are available depending on requirements at your plant.

STATIONARY/RELOCATABLE ASPHALT STORAGE SILOS

Use the silos as a conventional surge bin during the busy time of day, and at day's end avoid time-consuming start/stop operations and begin filling silos while continuing load-out. The next work-day, begin selling mix right away from full silos. Nobody has to wait for mix. Uninterrupted production runs allow you to maximize equipment efficiency and reduce material waste. Incorporate multiple silos in your plant layout and you will be ready to meet customer needs for a number of different mixes. That's how Astec storage silos reduce operating costs and improve plant operating efficiency.

Astec hot mix storage systems come complete with drag conveyors, traverse conveyors, and batchers. Bucket elevators are available. Silo support structures are designed to meet the site specific design criteria at your location based on the current building codes in your area. Our structural engineering staff will design your foundations based on soil conditions at your site.

PORTABLE ASPHALT STORAGE SILOS

Astec portable loadout systems combine several features in one useful package: drag conveying, surge or storage, truck loading and weighing. Astec thinks of everything when designing these units for our portable customers. Included hydraulic packs help make set-up in the field easy and fast, while load-cells ensure that each load is ticketed accurately.





Long-Term Storage

Store mix longer with Astec long-term storage silos. To store mix without loss of quality, Astec silos are completely sealed to prevent mix oxidation, or premature hardening of the mix, which happens when the mix is exposed to air.



Short-Term Storage

Maximize production capabilities with a short-term storage silo system. Engineered for maximum performance and years of reliable service, Astec short-term storage silos are made to withstand today's high production requirements.



Self-Erecting Surge Silos

True overnight storage capabilities for portable plants. An optional oil-sealed gate and an enclosed silo top equipped with a grease seal can prevent oxygen penetration to allow longer-term storage. In addition, the silo and drag are erected together using hydraulic cylinders.



Self-Erecting Bins

The self-erecting bin (SEB) for portable asphalt mixing plants is contained on one load. Astec technology assures trouble-free operation and simplified maintenance of the entire system. The SEB self-erects in less than 15 minutes.

Long-Term Asphalt Storage Silo

Astec silos store mix for four days* without loss of mix quality. That's true storage.



Long-Term Silo Diameter and Capacity

Each capacity available in 12 ft. (3.66 meters) or 14 ft. (4.27 meters) diameter.

Capacities are based on 120 lbs./cu. ft. for mix (1.92 metric tons / cu. meter)

Tons	100	150	200	250	300 [†]
Metric Tons	91	136	181	227	272 [†]

[†]14 ft (4.27 meters) diameter only



Features

1 Drag Conveyor

The Astec drag conveyor is tough. Lined with hard alloy castings, and bottom-mounted tensioning, it is made to withstand the demands of asphalt production.

2 Batcher

Astec's innovative batcher helps eliminate mix segregation. It is designed to ensure that the quality of mix that leaves the drum is the same quality stored in the silos.

3 Work Platforms & Stair Cases

OSHA standard work platforms and staircases provide a safe environment for routine maintenance. An optional second staircase is available for the drag conveyor.

4 High Performance Insulation

Astec uses thick, high R-value, non-compressed insulation: 6" insulation on the sides and 12" insulation on the top

5 Mass Flow Load Out Technology

The steeper angle of the Astec cone allows mix to move by "mass flow," helping prevent mix build-up on silo walls. An insulated electric blanket surrounds the lower part of the cone, preventing excessive heat loss. Abrasion-resistant steel liners surround the cone to prevent excessive wear. Optional ceramic liners are also available for even greater protection.

6 Long Term Storage Mode

Astec silos store mix for four days* without loss of mix quality.

In Long-Term storage mode, Astec silos are completely sealed from top to bottom.

The top seal of the batcher runs in rails that tightly wedge against a pump driven ring of grease while the exclusive design of the discharge gate completely seals the bottom of the cone

7 Strength and Longevity

Silo skins overlap providing further strength and longevity of the silos.

* polymer modified, open-graded and SMA mixes excluded



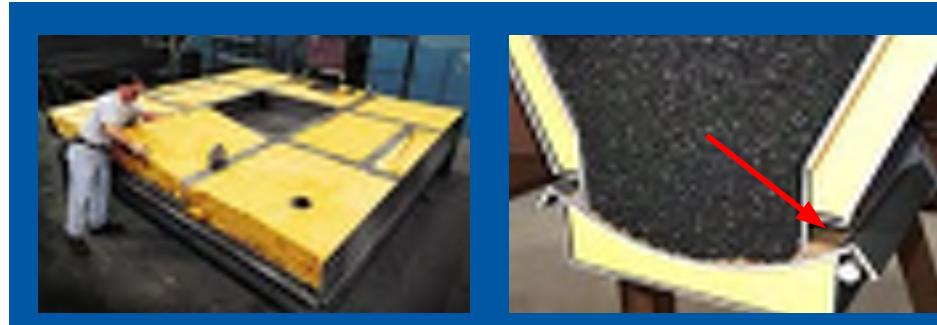
Fill Silos Without Segregating the Mix

The mix moves by drag conveyor or bucket elevator into a three-ton batcher atop the silo. When full, the batcher releases the slug of mix. Mix drops through the rapid-opening double-clam gate into the silo and flattens on impact. Astec's double-clam gates are not like conventional pinch-closed style double-clam gates. Astec's overlapping gates slice through material flow as the gate closes. This slicing action and overlapping gates result in better gate wear resistance when compared to pinch-closed style gates. The double gates also center the drop into the silo and form a flattened mix surface, which prevents mix segregation.

Keeping Mix Hot

Twelve inches of insulation at silo tops, four inches around the cone, and six inches along the cylinder keep the mix hot. Batchers are insulated as well, because uninsulated batchers are a major source of heat loss.

Two layers of stiff sheet insulation are staggered to eliminate heat-leaking seams along the silo cylinder. Astec uses thick, high R-value, non-compressed insulation.



Sealed Silos

In storage mode, it is crucial to seal the silo. Oxidation, or premature hardening of the mix, happens in the silo when the mix is exposed to air. In storage mode, Astec silos are completely sealed from top to bottom.

Top Seal

In storage mode, the cylinder-operated gate at the top of the batcher is completely sealed. The gate runs in rails which tightly wedge it against a ring of grease. This forms a tight seal and keeps air from entering at the silo top. When filling operations begin again, the gate is opened and remains open until filling operations stop. An air actuated grease pump replenishes the grease and ensures a continued, perfect seal.

Bottom Seal

The exclusive design of Astec's discharge gate (U.S. patent #3,949,907) completely seals the bottom of the cone when the silo is in storage mode. The heated and insulated discharge gate closes to completely cover the cone opening. Oil is pumped into the gate to seal the bottom silo opening. The oil reservoir is located by the silo legs, and a motor-driven pump moves the oil from the reservoir into the gate. A sensor monitors the oil level in the gate and controls the pump. When the silo is taken out of storage mode, the pump is reversed and the oil is withdrawn from the gate.

Silo Cone

Cone Design Prevents Mix Segregation

Astec silo cones are taller, because they are built with a steeper angle than other brands. To achieve optimal mass material flow, Astec, with the aid of third party research, determined that the precise angle at which the entire column of mix evenly flows through the cone is 66 degrees. This steeper angle of the cone provides true first-in/first-out inventory rotation, there is no mix buildup on silo walls, and mass flow load-out minimizes mix segregation. Mass flow occurs when mix flows out across the entire silo cross-section and that only happens with the correct cone angle.



Short-Term Storage Silo

Maximize production capabilities with an advanced short-term silo system.

Engineered for maximum performance and manufactured for years of reliable service, the Astec silo system is built to provide high efficiency at a low cost. These silos are made to withstand today's high production requirements and are stacked with features not found on competitive equipment.

System capacities from 100-ton single silos to 3,000-ton multiple silo systems. Custom arrangements can be configured for your requirements.

Short-Term Silo Diameter and Capacity

Each capacity available in 138". (3.50 meters) or 150". (3.81 meters) diameter.

Capacities are based on 120 lbs/cu. ft. for mix (0.5 metric tons / cu. meter).

Tons	100	150	200	250	300 [†]
Metric Tons	91	136	181	227	272 [†]



Features

① Drag Conveyor

The large capacity Astec drag conveyor is 50" X 36.5" (127cm X 90.17cm). Lined with hard alloy castings, and top-mounted tensioning, it is made to withstand the demands of asphalt production.

② Batcher

Features a built-in splitter to protect the leading edge of the gate and minimize maintenance. The splitter divides the flow of material as it drops to help reduce segregation.

③ Work Platforms & Stair Cases

OSHA standard handrail, walkway and checker-plate decking are standard on all short-term silos. The integral kick plate on the top deck eliminates spillage down the sides of the silo. An optional second staircase is available for the drag conveyor.

④ Silo Insulation

Industrial-grade insulation maximizes heat retention. 10" of insulation in the top deck and bottom enclosure, plus 5" running the entire length of the silo helps maintain mix temperature.

⑤ Reinforced Cone

The reinforced cone includes standard electric heat or optional hot oil heating. Optional ceramic full sheet AR or Hi-Tech premium cone liners are available.

⑥ Dual Clam Gates with Safety Gates

The dual clam gates on the silo allow for more even and accurate loading. Safety gates act as a backup to the clam gates. The safety gates can stop the silo from emptying out on a truck, helping prevent a serious accident.

⑦ Structure Support

Silos feature a bolt-on support structure. Heavy-duty steel beam legs, with cross bracing, offer structural integrity for all seismic zones. Steel beam legs are bolted on for ease of shipment.

Transfer Conveyor

A horizontal traverse conveyor transfers asphalt mix from a drag conveyor or bucket elevator to additional silos. The traverse conveyor is equipped with motors and coupled to in-line, heavy-duty reducers.

The transfer conveyor features a strong, all welded, U-box frame that eliminates cracking potential and improves the structural integrity. The heavy-duty chain arrangement includes reinforced flights. High-chrome blend liners protect the floors and side walls from wear. A heated floor with insulated heat covers helps prevent material build-up during start-up and assists in keeping the floor clean. Includes return-run idlers and adjustable take-up assemblies.



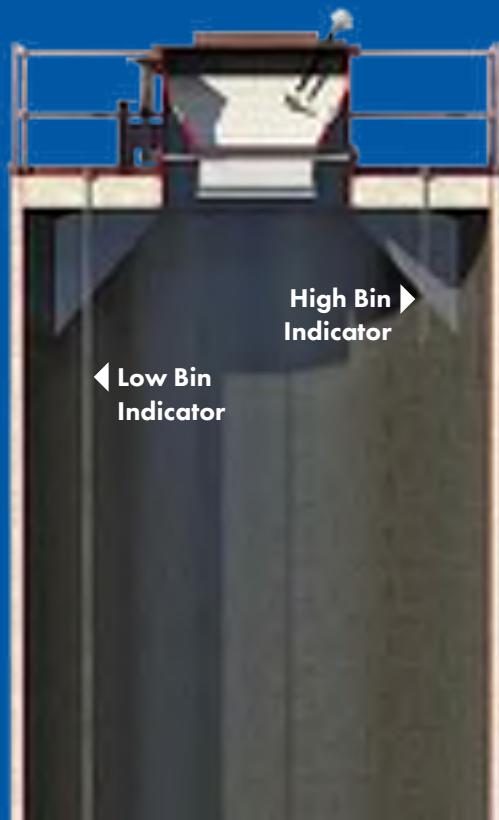
Bolt-On Divert Gate

The transfer conveyor includes an exclusive bolt-on divert gate assembly with liners. No more welding gates to shafts inside of the transfer body. The divert gate is easily replaced by simply unbolting the divert gate from the transfer conveyor. This allows replacing the highest wear area on the transfer conveyor without welding or torching and without having to also take the transfer down to the ground. The divert gates are lined with wear resistant plates for added life and have an access door for clean out.

Mix Level Indicators

Each silo has low level and high level indicator rods that extend through the top deck. The design eliminates weak points and allows service of the rods from the deck.

The low and high level indicators measure mix level and communicate that information to the control house. The high level indicator signal prevents overfilling the silo. The low level indicator prevents running the silo completely empty so that when you load from the batcher you are loading onto material rather than the cone.



Batcher with Built-in Splitter

The batcher features a built-in splitter to protect the leading edge of the gate and minimize maintenance. The splitter divides the flow of material as it drops to help reduce segregation.

Self-Erecting Bin

The highly portable NTEP Certified Self-Erecting Bin (SEB) self-erects quickly. The super functional SEB package reduces the number of loads by combining several operations into a single unit: drag conveying, batching, surge, truck loading and weighing.

A thick, steel truck loading platform is part of the frame (competing bins usually need expensive concrete foundations). The SEB includes a drag by-pass chute with a built-in bulkhead. Two large hydraulic cylinders raise the SEB into position.



Features

① Batcher

A five-ton (3.6 metric ton) batcher is installed at the top end of the drag conveyor. It collects the mix discharged from the drag conveyor. Segregation is minimized by dropping full batcher loads into the surge bin. Optional 3" of insulation is also available on the batcher to retain heat in the mix.

② Smooth Flow Bin

Rounded bin corners prevent mix build-up in the bin, and steep walls on the load-out cone let material flow freely. For load-out, two radial gates open at the bottom of the bin. The large bottom openings provide fast truck loading. The unique Astec discharge gate design minimizes segregation. Insulation around the cone also enhances good flow, especially if you have to hold mix in the bin for a while. Heating for the cone is optional.

③ Bin Gate Cylinders

Bin gate cylinders are located on the end plates of the gates for greater efficiency. This provides operating stability to the operation of longer gate sections and more than doubles the force to open the gates while consuming less compressed air. The strong skirt beam and solid bent plate corner supports provide a rigid and stable framework supporting the surge bin hopper atop the load cell package.

④ NTEP Certified

The silo weighing system utilizing load cells is NTEP Certified to ensure accurate ticketing at load-out.

⑤ Optional Control Center

Pre-wired Control Center can be mounted on the frame of the SEB for simplified transportation.



Self-Erecting Surge Silo

The NTEP Certified Astec Self-Erecting Surge Silo offers asphalt mix producers exceptional capabilities and advantages not found elsewhere. An optional oil-sealed gate and grease-sealed batcher provide industry-leading storage in a portable silo. A steeper cone angle helps achieve optimal mass material flow. The entire column of mix evenly flows through the cone thanks to the steeper angle of the cone. There is no mix buildup on silo walls, and mass flow loadout minimizes mix segregation in the cone. The silo and drag share a common chassis and are erected together using hydraulic cylinders.



Features

① NTEP Certified

The silo weighing system utilizing load cells is NTEP Certified to ensure accurate ticketing at load-out.

② True Portable Storage Capability

An optional oil-sealed gate and an enclosed silo top equipped with a grease seal prevent oxygen penetration to allow longer-term storage. The oil-seal gate and grease seal batcher in conjunction with insulation provide true overnight storage capabilities. An optional electric heat blanket on the cone and gate is available for this full-insulated silo. 1/4" AR liners above and below the cone joint enhance longevity. Silo and batcher are both equipped with a set of level-indicating indicators.

③ Self-Erecting Surge Silo Drag

The 36" drag includes liners for durability. Optional electric heat helps ensure flawless operation at start-up and a bottom drop out chute accommodates bypassing when needed. For enhanced safety and maintenance ease optional stairs can be mounted to the drag conveyor. Remove grease points for greaseable bearings on drag are easily accessible.

④ Easy Set-up

A single set of multi-stage cylinders lifts the drag and silo into operating position simultaneously without the need of a crane. Large landing pads accommodate set-up on compacted dirt. Once in operating position, the truck drive provides a full 12 feet of clearance.









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