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NHDES is providing a Table of Contents for the 145 Temple Street, LLC – Greenridge LLC temporary permit application. Please note that updated information has been added to the end of this document.

Received March 14, 2023
ARD Permitting &
Environmental Health Bureau

ARD-1 FORM
GENERAL FACILITY INFORMATION

Air Resources Division/Permitting and Environmental Health Bureau

RSA/Rule: RSA 125-C:12 and Env-A 1700

This ARD-1 General Facility Information form shall be submitted with every application for an air permit, except for a Permit by Notification (PBN).

1. TYPE OF FACILITY[1]

☐ Title V ☒ Non-Title V ☐ Unknown

2. TYPE OF PERMIT[2]

☒ Temporary Permit (Construction) ☐ State Permit to Operate ☐ Title V Operating Permit
☐ General State Permit ☐ Limitation on Potential to Emit (Env-A 625)

3. TYPE OF APPLICATION[3]

☒ New ☐ Renewal ☐ Modification ☐ Administrative Amendment

4. FACILITY INFORMATION

FACILITY NAME[4]: 145 Temple Street, LLC – Greenridge LLC	AFS NUMBER[5]:	
PHYSICAL ADDRESS: 145 Temple Street		
TOWN/CITY: Nashua	STATE: NH	ZIP: 03060
GOVERNMENT FACILITY CODE[6]: 0		

5. BUSINESS INFORMATION AS REGISTERED WITH SECRETARY OF STATE (If applicable)

REGISTERED NAME: 145 Temple Street, LLC - Greenridge LLC		
REGISTERED ADDRESS: 145 Temple Street		
TOWN/CITY: Nashua	STATE: NH	ZIP: 03060

6. PARENT CORPORATION INFORMATION (If applicable)

PARENT CORPORATION NAME:		
MAILING ADDRESS:		
TOWN/CITY: Nashua	STATE: NH	ZIP: 03060

7. MAJOR ACTIVITY OR PRODUCT DESCRIPTION
List all activities performed at this facility and provide SIC and/or NAICS Code(s).

SIC Code	Activity Description	NAICS Code	Activity Description
2951	Hot Mix Asphalt (HMA) Production		

At a minimum, please provide contact information below for Responsible Official, Prepared Application, Technical, and Invoicing contacts. Make as many copies of this page as necessary in order to include all contacts that you wish to associate with the application. Multiple people can be assigned one role; multiple roles can be assigned to one person.

8. RESPONSIBLE OFFICIAL INFORMATION		
RESPONSIBLE OFFICIAL NAME[7]: Richard DeFelice		
TITLE: President		
COMPANY NAME: 145 Temple Street, LLC – Greenridge LLC		
MAILING ADDRESS: 145 Temple Street		
TOWN/CITY: Nashua	STATE: NH	ZIP: 03060
EMAIL ADDRESS: Rdefel6875@gmail.com		
TELEPHONE NUMBER: (617) 459-9775	EXTENSION:	
FAX NUMBER:		
ROLES: ☒ Responsible Official ☐ Technical ☐ Invoicing ☐ Legal ☐ Emissions ☐ Prepared Application ☐ Corporate ☒ Owner/Operator ☐ Consultant		

9. ADDITIONAL CONTACT INFORMATION		
CONTACT NAME: Christine M. Gibbons		
TITLE: Manager of Environmental Services		
COMPANY NAME: ETG/Engineering Technologies Group, Inc.		
MAILING ADDRESS: 71 South Street		
TOWN/CITY: Hopkinton	STATE: MA	ZIP: 01748
EMAIL ADDRESS: Chris@etg-engineering.com		
TELEPHONE NUMBER: (508) 250-6676 (cell)	EXTENSION:	
FAX NUMBER: N/A		
ROLES: ☐ Responsible Official ☐ Technical ☐ Invoicing ☐ Legal ☒ Emissions ☒ Prepared Application ☐ Corporate ☐ Owner/Operator ☒ Consultant		

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☐ Prepared Application	☐ Corporate	☐ Owner/Operator	☐ Consultant	
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For ALL APPLICATIONS except Administrative Amendments, General State Permits, and Limitations on Potential to Emit:

14. FACILITY-WIDE EMISSIONS (Drum Mix Plant (EU1) and Hot Oil Heater (EU2))		
POLLUTANT[8]	POTENTIAL TPY (UNRESTRICTED/UNCONTROLLED)	ACTUAL TPY (PROPOSED POTENTIAL RESTRICTED)
Nitrogen oxides (NOx)	73.40	14.07
Carbon Monoxide (CO)	171.48	32.69
Particulate Matter (PM10)	30.32	5.78
Volatile Organic Compounds (VOC), Hazardous Air Pollutants (HAPs)	42.09, 11.8	8.01, 2.24
Asphalt Fumes	15.77	3.0

Please include calculations used in determining emissions and include any non-permitted emission devices.

15. FOR NEW APPLICATIONS OR IF CHANGES ARE MADE – PLEASE INCLUDE:	
☒	A copy of the USGS map, property identified, which shows the facility's location.
☒	A site plan to scale of the facility showing: 1. The locations of all emission points; 2. The dimensions of all buildings and tiers, including roof heights; and 3. The facility's property boundary and any security features (fences, walls, etc.).

16. FOR TITLE V PERMIT APPLICATIONS – PLEASE INCLUDE:[9]		
Included in Application	**Previously Submitted and Unchanged**	
☐	☐	A. Identification and details of limitations on source operation, or any work practice standards affecting emissions for all regulated pollutants.
☐	☐	B. Information required by any other applicable requirement of the Act, including, but not limited to, information related to stack height limitations developed pursuant to section 123 of the federal Clean Air Act (42 U.S.C. §7401).
☐	☐	C. A citation and description of state and federal air pollution control regulations and requirements applicable to each emission unit.
☐	☐	D. A narrative description or reference to test methods used or required for initial compliance demonstration with each applicable regulation.
☐	☐	E. Any additional information required to be provided pursuant to the Act or to determine applicability of any other requirements of the Act.
☐	☐	F. A written explanation of proposed exemptions.
☐	☐	G. Any information required to be provided to the director pursuant to the Act in order to evaluate alternative operating scenarios, or to define permit terms and conditions.
☐	☐	H. A list of all equipment and devices located at the source classified as insignificant

		activities pursuant to Env-A 600, including appropriate sizing data for equipment and devices which are exempt from permitting requirements based on their process ratings, fuel consumption rate, or both.

16. CONTINUED - FOR TITLE V PERMIT APPLICATIONS – PLEASE INCLUDE:[10]	
Included in Application	
☐	I. Compliance plan information containing: 1. A narrative description of the compliance status of the source with respect to all applicable requirements; 2. A narrative statement of methods used to determine continued compliance, including a description of monitoring, recordkeeping and reporting requirements and test methods; 3. A statement indicating the source's compliance status with an applicable enhanced monitoring and compliance certification requirements specified in Env-A 800; 4. A statement that the source shall continue to comply with all applicable requirements; 5. A statement that the source shall meet all applicable requirements that will become effective during the permit term on a timely basis; 6. A compliance schedule stating all applicable requirements with which the source is not in compliance, consistent with the following: a. The compliance schedule shall incorporate the requirements of and be at least as stringent as that contained in any judicial consent decree or administrative order to which the source is subject; b. Such compliance schedule shall be supplemental to, and not sanction non-compliance with, the applicable requirements on which it is based; and c. The compliance schedule shall include the following statements and schedules: i. A narrative description of how the source shall achieve compliance with such requirements; ii. A schedule of remedial measures, including an enforceable sequence of actions with milestones leading to compliance with any applicable requirements for which the source shall be in non-compliance with at the time of permit issuance; and iii. A schedule for submission of certified progress reports no less frequently than every 6 months. 7. For sources deemed in compliance with all applicable requirements, a certified statement signed by a responsible official stating: "The undersigned certifies that, based on information and belief formed after reasonable inquiry, the source is in compliance with all applicable regulations"; and 8. A schedule for submission of compliance certifications during the permit term, to be submitted annually or more frequently as specified by the underlying applicable requirement.
☐	J. For sources subject to Title IV of the Act, the compliance plan requirements, specified in (I.) above, shall apply to and be included in the acid rain portion of a compliance plan for an affected source, except as specifically superseded by regulations promulgated under Title IV of the Act with regard to the schedule and method(s) the source will use to achieve compliance with the acid rain emission limitations.
☐	K. In addition to the forms required pursuant to Env-A 1700, sources subject to Title IV of the Act shall use the nationally standardized forms for the acid rain portions of the Title V operating permit application, pursuant to 40 CFR 72.30.

This section of the form must be completed and signed by the Responsible Official only.

17. CERTIFICATIONS	
	I certify that the applicant, or the owner or operator the applicant represents, has right, title, or interest in all of the property that is proposed for development or use because the owner or operator owns, leases, or has binding options to purchase all of the property proposed for development or use.
☒	I am authorized to make this submission on behalf of the affected source or affected units for which this submission is made. I certify under penalty of law that I have personally examined, and am familiar with, the information submitted in this document and all of its attachments. Based on my inquiry of those individuals with primary responsibility for obtaining the information, I certify that the statements and information are to the best of my knowledge and belief true, accurate, and complete. I am aware that there are significant penalties for submitting false statements and information or omitting required statements and information, including the possibility of fine or imprisonment.

18. RESPONSIBLE OFFICIAL INFORMATION AND SIGNATURE	
RESPONSIBLE OFFICIAL NAME: Richard DeFelice	
TITLE: President	
Richard J. DeFelice RESPONSIBLE OFFICIAL'S SIGNATURE	3/13/23 DATE:

Received March 14, 2023
ARD Permitting &
Environmental Health Bureau

ARD-8 FORM
INFORMATION REQUIRED FOR PERMITS FOR STATIONARY HOT MIX ASPHALT PLANTS

Air Resources Division/Permitting and Environmental Health Bureau

RSA/Rule: RSA 125-C:12 and Env-A 1700

I. EQUIPMENT INFORMATION – *Complete a separate form for each hot mix asphalt plant.*

Hot Mix Asphalt Plant Description: Drum Mix Plant

Date Construction Commenced[1] Estimated 2023 Start-Up Date[1]: _____

Equipment Manufacturer: CMI Roadbuilding Inc

Model Number: Magnum 300 Stationary 300 TPH Counterflow Drum Mix Serial Number: Recycled Asphalt Product (RAP) – up to 35%

Plant Type: ☐ Batch ☒ Drum

Maximum Plant Capacity (tons HMA/hr) 300

Dryer Burner Heat Input Rating (MMBtu/hr): 82.5

Hot Oil Heater Burner Input Rating (MMBtu/hr): 1.84

II. OPERATIONAL INFORMATION

A. Fuel Information *List each fuel utilized by each device, as applicable*:

Device	Fuel Type	Heat Value[2]	Units	Sulfur Content (%)	Maximum Fuel Flow Rate	Units	Maximum Gross Heat Input Rate	Units
Dryer Burner (Example)	*ULSD (Example)*	*137,000 (Example)*	*Btu/gal (Example)*	*0.0015 (Example)*	*20 (Example)*	*gal/hr (Example)*	*2.74 (Example)*	*MMBtu/hr (Example)*
Dryer Burner	natural gas	1020	BTU/scf	nil	80,882	cuft/hour	82.5	MMBTU/hr
	ULSD	140,000	BTU/gal	0.0015%	589	gal/hour	82.5	MMBTU/hr
Hot Oil Heater	natural gas	1020	BTU/scf	nil	1840	cuft/hour	1.84	MMBTU/hr
	ULSD	140,000	BTU/gal	0.0015%	13.14	gal/hour	1.84	MMBTU/hr

B. Operating Hours and/or Production Rates

Hours per day: 13 Tons per day: 3900

Days per year: 365 Tons per year: 500,000

C. Stack Information

Is device equipped with multiple stacks? ☐ Yes ☒ No *(If yes, provide data for each stack)*

Are multiple units connected to this stack? ☐ Yes ☒ No

(If yes, identify other devices on this stack:) _____

Stack #	Discharge Height Above Ground Level (ft)	Inside Diameter (ft) or Area (ft^2) at Stack Exit[3]	Exhaust Temperature (°F)	Exhaust Flow (acfm)	Stack Capped or Otherwise Restricted[4] (Yes-Type/No)	Exhaust Orientation[5]	Stack Monitor (Yes/No) and Description
#5 (Ex)	*65 ft (Example)*	*4 ft (Example)*	*70 °F (Example)*	*1500 acfm (Example)*	*Yes - Rain Cap (Example)*	*Vertical (Example)*	*Yes – CEM for PM (Example)*
# 1	45 ft	3.28 ft	265	57,348	No	vertical	No
# 2	10 ft	0.833 ft	400		No	vertical	No

III. UNCONTROLLED AIR POLLUTANT EMISSIONS (list emissions that result from the burning of each fuel utilized by the hot mix asphalt plant prior to add on controls – *use additional sheets if necessary*)

Pollutant	Emission Factor	Units	Emission Factor Source[6]	Actual (lb/hr)	Potential (lb/hr)	Actual (tpy)	Potential (tpy)
NOx	0.026, 0.055	lbs/ton	AP-42	TBD	7.8, 16.5	TBD	34.16, 72.27
CO	0.13, 0.13	lbs/ton	AP-42	TBD	39.0, 39.0	TBD	170.8, 170.8
PM10	0.023, 0.023	lbs/ton	AP-42	TBD	6.9, 6.9	TBD	30.22, 30.22
VOC, HAPs	0.032 0.0055, 0.009	lbs/ton lbs/ton	AP-42	TBD	9.6 1.6, 2.7	TBD	42.05 7.21, 11.77

Provide an example of the calculations used to determine uncontrolled air pollutant emissions, if applicable:

Note in Table III above, the first emission factor and Potential (lb/hr) and Potential (tpy) is natural gas burning. The second numbers are from ULSD burning.

Asphalt fumes - 0.012 lbs/ton * 2,628,000 TPY (unrestricted) / 2000 lbs/ton = 15.77 TPY

Sulfur Dioxide (SO2) (natural gas) - 0.0034 lbs/ton *2,628,000 TPY / 2000 lbs/ton -= 4.47 TPY

Sulfur Dioxide (SO2) (ULSD) - 0.011 lbs/ton *2,628,000 TPY / 2000 lbs/ton -= 14.45 TPY

Based on unrestricted operation of 365 days/year, 24 hours/day (totals 2,628,000 TPY production)

IV. NEW HAMPSHIRE REGULATED TOXIC AIR POLLUTANTS (RTAPS) – ENV-A 1400

Do any of the devices burn a non-exempt fuel[7] and emit any of the RTAPs listed in Env-A 1400?

☐ Yes ☒ No

If **Yes**, attach your facility's most recent compliance demonstration.

V. POLLUTION CONTROL EQUIPMENT

☐ **Not Applicable**

Note: If the devices utilize more than one type of pollution control equipment, provide data for each type of equipment.

A. Type of Equipment

☐ cyclone or knock-out box
☒ baghouse
☐ other (specify): _____
☐ baffled settling chamber
☐ wet scrubber

For each control device, include an Air Pollution Control Equipment Monitoring Plan pursuant to Env-A 810.

B. Controlled Air Pollution Emissions (list emissions that result from the burning of each fuel utilized by the hit mix asphalt plant after all add on controls – *use additional sheets if necessary*)

Pollutant	Controlled Emission Factor	Units	Emission Factor Source[6]	Actual (lb/hr)	Potential (lb/hr)	Actual (tpy)	Potential (tpy)
NOx	0.026, 0.055	Lbs/ton	AP-42	TBD	7.8, 16.5	TBD	6.50, 13.75
CO	0.13	Lbs/ton	AP-42	TBD	39.0 39.0	TBD	32.5 32.5
PM10	0.023	Lbs/ton	AP-42	TBD	6.9 6.9	TBD	5.75 5.75
VOC, HAPs Asphalt Fumes	0.032 0.0055, 0.009 0.012	Lbs/ton (all)	AP-42 NH DES	TBD	9.6, 9.6 1.6, 2.7 3.6, 3.6	TBD	8.0, 8.0 1.37, 2.24 3.0, 3.0

Provide an example of the calculations used to determine controlled air pollutant emissions, if applicable:

Potential emissions are based on a maximum of 500,000 TPY of asphalt production.

Adjusted in-stack concentration = in-stack conc / 700
X = 3.6 lbs/hour of asphalt fumes
Y = x/7.94 = 3.6/7.94 = 0.4534
Z = y x 10^6 = 0.4534 x 10^6 = 453,400
A = 57,348 ACFM
B= 57348/2119 = 27.064
In-stack = 453,400 / 27.064 = 16,752.9 / 700 = Adjusted in-stack concentration **23.9 ug/m3** < 25 ug/m3

ARD-8 FORM INFORMATION INSTRUCTIONS

1 If exact date is unknown for Date Construction Commenced or Start-Up Date, you may use 01/01/year. If dates are not available at the time of application, please provide to the department upon installation. Date Construction Commenced refers to the date the owner or operator has entered into a contractual obligation to undertake and complete a continuous program of construction, reconstruction, or modification of the emission unit. Start-Up Date refers to the date the emission unit is first operated at the facility.

2

Liquid Fuels	Heat Value
Ultra-Low Sulfur Diesel (ULSD)	137,000 Btu/gal
#2 Fuel Oil	140,000 Btu/gal
Kerosene	135,000 Btu/gal
Other – Liquid	Obtain from Fuel Supplier

Gaseous Fuels	Heat Value
Natural Gas	1,020 Btu/cubic foot
Propane (LPG)	94,000 Btu/gal
Gasoline	130,000 Btu/gal
Other (Gaseous)	Obtain from Fuel Supplier

3 Examples of Inside Diameter or Area at Stack Exit: Diameter at discharge point of convergence cone, if applicable

4 Flapper valves and other devices which do not restrict the vertical exhaust flow while the device is operating are not considered obstructions or restrictions.

5 Examples of Exhaust Orientation: Vertical, Horizontal, Downward
Note: for a stack to be considered vertical and unobstructed, there shall be no impediment to vertical flow, and the exhaust stack extends 2 feet higher than any roofline within 10 horizontal feet of the exhaust stack

6 Emission factor sources may include:
- Continuous Emissions Monitor (CEM)
- Stack Test (Provide Date)
- Vendor Guaranteed Rates (Provide Documentation)
- AP-42 Emission Factors
- Material Balance (Provide Sample Calculation)
- Engineering Estimate

7 Fuels exempt from Env-A 1400 include:
- Virgin Petroleum Products (#2, #4, or #6 fuel oil, gasoline, kerosene, jet fuel, etc.)
- Coal
- Natural Gas
- Propane
- Biofuels – as defined in Env-A 1401.03(b)
- Biomass – as defined in Env-A 1401.03(c)

ENGINEERING TECHNOLOGIES GROUP, INC.
ENGINEERED PRODUCTS ◆ DESIGN SOLUTIONS ◆ ENVIRONMENTAL PERMITTING

Received January 30, 2023
ARD Permitting & Environmental
Health Bureau

January 27, 2023

NH Department of Environmental Services
Air Resources Division
29 Hazen Drive
P.O. Box 95
Concord, NH 03302

Attn.: Ms. Barbara Dorfschmidt, Environmental Engineer

Re.: Newport Bituminous LLC
147 Temple Street
Nashua, NH 03060

Subj.: Temporary permit application

Dear Barbara,

Enclosed, please find two (2) copies of an air permit application (Temporary Permit) for a Proposed New Hot Mix Asphalt Drum Plant to be located at the above referenced address. We have included the required forms (ARD-1, ARD-8), calculations, a Monitoring Plan for the Drum Mix Plant, Site Drawings, Equipment Description, and other supporting documentation herein.

The facility would like the ability to produce up to 500,000 tons per year (TPY) of hot mix asphalt. They would also like the ability to use up to a maximum of 35% Recycled Asphalt Product (RAP) in the product. In addition, we are permitting the site for both natural gas and No. 2 fuel oil.

If you have any questions, please feel free to contact me on my cell at (508) 250-6676 or via email at: Chris@ETG-engineering.com.

Thank you in advance for your attention to this matter.

Sincerely,
For ETG/Engineering Technologies Group, Inc.

Christine M. Gibbons
Manager of Environmental Services

enclosure

cc w enclosure: Mr. Richard DeFelice, Newport Bituminous LLC

71 South Street ◆ Hopkinton ◆ Massachusetts ◆ 01748 ◆ (508) 435-2600 ◆ fax (508) 435-0194

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ARD-1 FORM
GENERAL FACILITY INFORMATION

Air Resources Division/Permitting and Environmental Health Bureau

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☐	☐	C. A citation and description of state and federal air pollution control regulations and requirements applicable to each emission unit.
☐	☐	D. A narrative description or reference to test methods used or required for initial compliance demonstration with each applicable regulation.
☐	☐	E. Any additional information required to be provided pursuant to the Act or to determine applicability of any other requirements of the Act.
☐	☐	F. A written explanation of proposed exemptions.
☐	☐	G. Any information required to be provided to the director pursuant to the Act in order to evaluate alternative operating scenarios, or to define permit terms and conditions.
☐	☐	H. A list of all equipment and devices located at the source classified as insignificant

		activities pursuant to Env-A 600, including appropriate sizing data for equipment and devices which are exempt from permitting requirements based on their process ratings, fuel consumption rate, or both.

16. CONTINUED - FOR TITLE V PERMIT APPLICATIONS – PLEASE INCLUDE:[10]	
Included in Application	
☐	I. Compliance plan information containing: 1. A narrative description of the compliance status of the source with respect to all applicable requirements; 2. A narrative statement of methods used to determine continued compliance, including a description of monitoring, recordkeeping and reporting requirements and test methods; 3. A statement indicating the source's compliance status with an applicable enhanced monitoring and compliance certification requirements specified in Env-A 800; 4. A statement that the source shall continue to comply with all applicable requirements; 5. A statement that the source shall meet all applicable requirements that will become effective during the permit term on a timely basis; 6. A compliance schedule stating all applicable requirements with which the source is not in compliance, consistent with the following: a. The compliance schedule shall incorporate the requirements of and be at least as stringent as that contained in any judicial consent decree or administrative order to which the source is subject; b. Such compliance schedule shall be supplemental to, and not sanction non-compliance with, the applicable requirements on which it is based; and c. The compliance schedule shall include the following statements and schedules: i. A narrative description of how the source shall achieve compliance with such requirements; ii. A schedule of remedial measures, including an enforceable sequence of actions with milestones leading to compliance with any applicable requirements for which the source shall be in non-compliance with at the time of permit issuance; and iii. A schedule for submission of certified progress reports no less frequently than every 6 months. 7. For sources deemed in compliance with all applicable requirements, a certified statement signed by a responsible official stating: "The undersigned certifies that, based on information and belief formed after reasonable inquiry, the source is in compliance with all applicable regulations"; and 8. A schedule for submission of compliance certifications during the permit term, to be submitted annually or more frequently as specified by the underlying applicable requirement.
☐	J. For sources subject to Title IV of the Act, the compliance plan requirements, specified in (I.) above, shall apply to and be included in the acid rain portion of a compliance plan for an affected source, except as specifically superseded by regulations promulgated under Title IV of the Act with regard to the schedule and method(s) the source will use to achieve compliance with the acid rain emission limitations.
☐	K. In addition to the forms required pursuant to Env-A 1700, sources subject to Title IV of the Act shall use the nationally standardized forms for the acid rain portions of the Title V operating permit application, pursuant to 40 CFR 72.30.

This section of the form must be completed and signed by the Responsible Official only.

17. CERTIFICATIONS	
	I certify that the applicant, or the owner or operator the applicant represents, has right, title, or interest in all of the property that is proposed for development or use because the owner or operator owns, leases, or has binding options to purchase all of the property proposed for development or use.
☒	I am authorized to make this submission on behalf of the affected source or affected units for which this submission is made. I certify under penalty of law that I have personally examined, and am familiar with, the information submitted in this document and all of its attachments. Based on my inquiry of those individuals with primary responsibility for obtaining the information, I certify that the statements and information are to the best of my knowledge and belief true, accurate, and complete. I am aware that there are significant penalties for submitting false statements and information or omitting required statements and information, including the possibility of fine or imprisonment.

18. RESPONSIBLE OFFICIAL INFORMATION AND SIGNATURE	
RESPONSIBLE OFFICIAL NAME: Richard DeFelice	
TITLE: President	
RESPONSIBLE OFFICIAL'S SIGNATURE 	1/24/23 DATE:

ARD-1 GENERAL FACILITY INFORMATION INSTRUCTIONS

1 A list of Title V facilities in NH can be found to the NHDES website. Most facilities are Non-Title V. Check Unknown if you are unsure.

2 Temporary Permit = New Construction at Existing or New Facility
State Permit to Operate = Existing Non-Title V Facilities
Title V Operating Permit = Existing Title V Facilities
GSP = General State Permit
Limitation on Potential to Emit = Small Facilities requesting coverage under Env-A 625

3 New = New devices at facility, change in operation at Existing facility or New facility never permitted before
Renewal = Renewal of any permit type
Modification = Currently permitted by non-expired permit and wants to make amendment/modification to information contained in permit. This includes adding/removing devices covered by GSP.
Administrative Amendment = changes in ownership or responsible official.

4 Facility Name = Trade Name or Doing Business As

5 AFS number is assigned by NHDES and is a 10-digit number starting with 33 (example 3300100001).

6 0 = Facility is not government owned
1 = Source owned by the Federal Government
2 = Source owned by the State
3 = Source owned by the County
4 = Source owned by the Municipality
5 = Source owned by the District

7 Responsible Official:
For a corporation = President, Secretary, treasurer, or vice-president in charge of a principal business function
For a partnership = General partner or proprietor
For a municipality = Principal executive officer or ranking elected official

8 For Title V sources, include facility wide emissions of filterable PM, filterable PM_{10}, filterable $PM_{2.5}$, condensable PM, SO_2, NO_x, CO, NMVOCs, Pb (if appropriate), HAPs, and CO_2e.

9 If any of the information requested in Section 16 A-H was submitted in a previous Title V Operating Permit application and has **not** changed, it can be incorporated by reference in the renewal application package. This previous information must be clearly referenced in the renewal application package and must accurately reflect current operations at the facility. If any changes have occurred at the facility or if changes are proposed in the renewal application package, new information must be provided. The information requested in Section 16 I-K must be completed based on current operations at the facility. Due to the time sensitive nature of this required information, incorporation by reference in the application package is **not** allowed.

NHDES-A-02-029

ARD-8 FORM
INFORMATION REQUIRED FOR PERMITS FOR STATIONARY HOT MIX ASPHALT PLANTS

Air Resources Division/Permitting and Environmental Health Bureau

RSA/Rule: RSA 125-C:12 and Env-A 1700

I. EQUIPMENT INFORMATION – *Complete a separate form for each hot mix asphalt plant.*

Hot Mix Asphalt Plant Description: Drum Mix Plant

Date Construction Commenced[1] Estimated 2023 Start-Up Date[1]: _____

Equipment Manufacturer: CMI Roadbuilding Inc

Model Number: Magnum 300 Stationary 300 TPH Counterflow Drum Mix Serial Number: Recycled Asphalt Product (RAP) – up to 35%

Plant Type: ☐ Batch ☒ Drum

Maximum Plant Capacity (tons HMA/hr) 300

Dryer Burner Heat Input Rating (MMBtu/hr): 82.5

Hot Oil Heater Burner Input Rating (MMBtu/hr): 1.84

II. OPERATIONAL INFORMATION

A. Fuel Information *List each fuel utilized by each device, as applicable*:

Device	Fuel Type	Heat Value[2]	Units	Sulfur Content (%)	Maximum Fuel Flow Rate	Units	Maximum Gross Heat Input Rate	Units
Dryer Burner (Example)	*ULSD (Example)*	*137,000 (Example)*	*Btu/gal (Example)*	*0.0015 (Example)*	*20 (Example)*	*gal/hr (Example)*	*2:74 (Example)*	*MMBtu/hr (Example)*
Dryer Burner	natural gas	1020	BTU/scf	nil	80,882	cuft/hour	82.5	MMBTU/hr
	ULSD	140,000	BTU/gal	0.0015%	589	gal/hour	82.5	MMBTU/hr
Hot Oil Heater	natural gas	1020	BTU/scf	nil	1840	cuft/hour	1.84	MMBTU/hr
	ULSD	140,000	BTU/gal	0.0015%	13.14	gal/hour	1.84	MMBTU/hr

B. Operating Hours and/or Production Rates

Hours per day: 13

Days per year: 365

Tons per day: 3900

Tons per year: 500,000

C. Stack Information

Is device equipped with multiple stacks? Yes No *(If yes, provide data for each stack)*
Are multiple units connected to this stack? ☐ Yes ☒ No
(If yes, identify other devices on this stack:) _____

Stack #	Discharge Height Above Ground Level (ft)	Inside Diameter (ft) or Area (ft^2) at Stack Exit[3]	Exhaust Temperature (°F)	Exhaust Flow (acfm)	Stack Capped or Otherwise Restricted[4] (Yes-Type/No)	Exhaust Orientation[5]	Stack Monitor (Yes/No) and Description
#5 (Ex)	*65 ft (Example)*	*4 ft (Example)*	*70 °F (Example)*	*1500 acfm (Example)*	*Yes - Rain Cap (Example)*	*Vertical (Example)*	*Yes – CEM for PM (Example)*
# 1	45 ft	3.28 ft	265	57,348	No	vertical	No
# 2	10 ft	0.833 ft	400		No	vertical	No

III. UNCONTROLLED AIR POLLUTANT EMISSIONS (list emissions that result from the burning of each fuel utilized by the hot mix asphalt plant prior to add on controls – *use additional sheets if necessary*)

Pollutant	Emission Factor	Units	Emission Factor Source[6]	Actual (lb/hr)	Potential (lb/hr)	Actual (tpy)	Potential (tpy)
NOx	0.026, 0.055	lbs/ton	AP-42	TBD	7.8, 16.5	TBD	34.16, 72.27
CO	0.13, 0.13	lbs/ton	AP-42	TBD	39.0, 39.0	TBD	170.8, 170.8
PM10	0.023, 0.023	lbs/ton	AP-42	TBD	6.9, 6.9	TBD	30.22, 30.22
VOC, HAPs	0.032 0.0055, 0.009	lbs/ton lbs/ton	AP-42	TBD	9.6 1.6, 2.7	TBD	42.05 7.21, 11.77

Provide an example of the calculations used to determine uncontrolled air pollutant emissions, if applicable:

Note in Table III above, the first emission factor and Potential (lb/hr) and Potential (tpy) is natural gas burning. The second numbers are from ULSD burning.

Asphalt fumes - 0.012 lbs/ton * 2,628,000 TPY (unrestricted) / 2000 lbs/ton = 15.77 TPY

Sulfur Dioxide (SO2) (natural gas) - 0.0034 lbs/ton *2,628,000 TPY / 2000 lbs/ton -= 4.47 TPY

Sulfur Dioxide (SO2) (ULSD) - 0.011 lbs/ton *2,628,000 TPY / 2000 lbs/ton -= 14.45 TPY

Based on unrestricted operation of 365 days/year, 24 hours/day (totals 2,628,000 TPY production)

IV. NEW HAMPSHIRE REGULATED TOXIC AIR POLLUTANTS (RTAPS) – ENV-A 1400

Do any of the devices burn a non-exempt fuel[7] and emit any of the RTAPs listed in Env-A 1400?
☐ Yes ☒ No
If **Yes**, attach your facility's most recent compliance demonstration.

V. POLLUTION CONTROL EQUIPMENT

☐ **Not Applicable**

Note: If the devices utilize more than one type of pollution control equipment, provide data for each type of equipment.

A. Type of Equipment

☐ cyclone or knock-out box
☒ baghouse
☐ other (specify): _____
☐ baffled settling chamber
☐ wet scrubber

For each control device, include an Air Pollution Control Equipment Monitoring Plan pursuant to Env-A 810.

B. Controlled Air Pollution Emissions (list emissions that result from the burning of each fuel utilized by the hit mix asphalt plant after all add on controls – *use additional sheets if necessary*)

Pollutant	Controlled Emission Factor	Units	Emission Factor Source[6]	Actual (lb/hr)	Potential (lb/hr)	Actual (tpy)	Potential (tpy)
NOx	0.026, 0.055	Lbs/ton	AP-42	TBD	7.8, 16.5	TBD	6.50, 13.75
CO	0.13	Lbs/ton	AP-42	TBD	39.0 39.0	TBD	32.5 32.5
PM10	0.023	Lbs/ton	AP-42	TBD	6.9 6.9	TBD	5.75 5.75
VOC, HAPs Asphalt Fumes	0.032 0.0055, 0.009 0.012	Lbs/ton (all)	AP-42 NH DES	TBD	9.6, 9.6 1.6, 2.7 3.6, 3.6	TBD	8.0, 8.0 1.37, 2.24 3.0, 3.0

Provide an example of the calculations used to determine controlled air pollutant emissions, if applicable:

The facility is restricted to 500,000 Tons of bituminous concrete production per year (TPY):

SO2 (natural gas) – 0.0034 lbs/ton * 500,000 TPY / 2000 lbs/ton = 0.85 TPY
SO2 (ULSD) – 0.011 lbs/ton * 500,000 TPY / 2000 lbs/ton = 2.75 TPY
Asphalt Fumes -0.012 * 500,000 TPY / 2000 lbs/ton = 3.0 TPY

ARD-8 FORM INFORMATION INSTRUCTIONS

1 If exact date is unknown for Date Construction Commenced or Start-Up Date, you may use 01/01/year. If dates are not available at the time of application, please provide to the department upon installation. Date Construction Commenced refers to the date the owner or operator has entered into a contractual obligation to undertake and complete a continuous program of construction, reconstruction, or modification of the emission unit. Start-Up Date refers to the date the emission unit is first operated at the facility.

2

3 Liquid Fuels
Ultra-Low Sulfur Diesel (ULSD)
#2 Fuel Oil
Kerosene
Other – Liquid

Gaseous Fuels
Natural Gas
Propane (LPG)
Gasoline
Other (Gaseous)

Heat Value
137,000 Btu/gal
140,000 Btu/gal
135,000 Btu/gal
Obtain from Fuel Supplier

Heat Value
1,020 Btu/cubic foot
94,000 Btu/gal
130,000 Btu/gal
Obtain from Fuel Supplier

4 Examples of Inside Diameter or Area at Stack Exit: Diameter at discharge point of convergence cone, if applicable

5 Flapper valves and other devices which do not restrict the vertical exhaust flow while the device is operating are not considered obstructions or restrictions.

6 Examples of Exhaust Orientation: Vertical, Horizontal, Downward
Note: for a stack to be considered vertical and unobstructed, there shall be no impediment to vertical flow, and the exhaust stack extends 2 feet higher than any roofline within 10 horizontal feet of the exhaust stack

7 Emission factor sources may include:
- Continuous Emissions Monitor (CEM)
- Stack Test (Provide Date)

- Vendor Guaranteed Rates (Provide Documentation)
- AP-42 Emission Factors
- Material Balance (Provide Sample Calculation)
- Engineering Estimate

8 Fuels exempt from Env-A 1400 include:

- Virgin Petroleum Products (#2, #4, or #6 fuel oil, gasoline, kerosene, jet fuel, etc.)
- Coal
- Natural Gas
- Propane
- Biofuels – as defined in Env-A 1401.03(b)
- Biomass – as defined in Env-A 1401.03(c)

CALCULATIONS

UNRESTRICTED/UNCONTROLLED POTENTIAL EMISSION CALCULATIONS

Emission factors for NOx, CO, VOC,PM10, SO2, and HAPs were taken from the latest version of AP-42, Section 11.1 Hot Mix Asphalt Plants (3/04).
Based on unrestricted operation of 24 hours/day or operation for 365 days/year (8760 hours/year).

UNIT NO. 1 - DRUM MIX PLANT	Primary Fuel	Back-up fuel	Maximum
Fuel	Natural gas	No. 2 oil	
Sulfur Content	nil	0.0015 %	
Burner Rating	82.5 MMBTU/hour	82.5 MMBTU/hour	
Maximum Fuel Firing Rate	80,882 cuft/hr	589 Gal/Hr	
Higher Heating Value	1,020 BTU/scf	140,000 BTU/gallon	
Production (Tons/Hour)	300 TPH	300 TPH	
Annual Production (Tons/Year)	2,628,000 TPY	2,628,000 TPY	2,628,000
Nitrogen Oxides (NO_x)			
Emission Factor	0.026 Lbs/ton	0.055 Lbs/ton	
x Hourly production rate =	7.8 lbs/hour	16.5 lbs/hour	16.50
x Annual Production/2000 =	34.16 TPY	72.27 TPY	72.27
Sulfur Dioxide (SO_2)			
Emission Factor	0.0034 Lbs/ton	0.011 Lbs/ton	
x Hourly production rate =	1.0 lbs/hour	3.3 lbs/hour	3.30
x Annual Production/2000 =	4.47 TPY	14.45 TPY	14.45
Carbon Monoxide (CO)			
Emission Factor	0.13 Lbs/ton	0.13 Lbs/ton	
x Hourly production rate =	39.0 lbs/hour	39.0 lbs/hour	39.00
x Annual Production/2000 =	170.8 TPY	170.8 TPY	170.82
Volatile Organic Compounds (VOC)			
Emission Factor	0.032 Lbs/ton	0.032 Lbs/ton	
x Hourly production rate =	9.6 lbs/hour	9.6 lbs/hour	9.60
x Annual Production/2000 =	42.05 TPY	42.05 TPY	42.05
Particulate Matter (PM10)			
Emission Factor	0.023 Lbs/ton	0.023 Lbs/ton	
x Hourly production rate =	6.9 lbs/hour	6.9 lbs/hour	6.90
x Annual Production/2000 =	30.22 TPY	30.22 TPY	30.22
Asphalt fumes			
Emission Factor	0.012 Lbs/ton	0.012 Lbs/ton	
x Hourly production rate =	3.6 lbs/hour	3.6 lbs/hour	3.60
x Annual Production/2000 =	15.77 TPY	15.77 TPY	15.77
Total HAPs			
Emission Factor	5.49E-03 Lbs/ton	8.96E-03 Lbs/ton	
x Hourly production rate =	1.6 lbs/hour	2.7 lbs/hour	2.69
x Annual Production/2000 =	7.21 TPY	11.77 TPY	11.77

UNIT 2 - HOT OIL HEATER

Emission factors for the criteria pollutants were obtained from AP-42, Section 11.1 (Table 11.1-13) (3/04)
Emission factors for HAPs while burning natural gas were obtained from AP-42, Section 1.4 Natural Gas Combustion, (Table 1.4-3 and Table 1.4-4) (7/98).
Emission factors for HAPs while burning no. 2 fuel oil were obtained from AP-42, Section 11.1 (Table 11.1-13) (3/04) and AP-42, Section 1.3, Fuel Oil Combustion, (Table 1.3-10) (5/10).
Based on unrestricted operation of 24 hours/day or operation for 365 days/year (8760 hours/year).
Natural gas is based on a heating value of 1020 BTU/scf, ULSD is based on a heating value of 140,000 BTU/gallon.

	Natural gas	#2 Oil	Maximum
Fuel			
Maximum fuel firing rate	1,840 cuft/hour	13.14 GPH	
Hours of Operation	8,760 Hrs/Year	8,760 Hrs/Year	
Annual Fuel Usage	16.1 MMSCF	115,131 Gallons	
Nitrogen Oxides			
Emission Factor	100 lbs/MMscf	20 lbs/1000 gal	
x Hourly Fuel Usage/2000 =	0.18 lbs/hour	0.26 lbs/hour	0.26
x Annual Fuel Usage/2000 =	0.81 TPY	1.15 TPY	1.15

Sulfur Dioxide			
Emission Factor	0.6 lbs/MMscf	0.213 lbs/1000 gal	
x Hourly Fuel Usage/2000 =	0.00 lbs/hour	0.00 lbs/hour	0.00
x Annual Fuel Usage/2000 =	0.005 TPY	0.01 TPY	0.01
Carbon Monoxide			
Emission Factor	84 Lbs/MMscf	5.0 lbs/1000 gal	
x Hourly Fuel Usage/2000 =	0.15 lbs/hour	0.07 lbs/hour	0.15
x Annual Fuel Usage/2000 =	0.68 TPY	0.29 TPY	0.68
Volatile Organic Compounds			
Emission Factor	5.5 lbs/MMscf	0.34 lbs/1000 gal	
x Hourly Fuel Usage/2000 =	0.01 lbs/hour	0.00 lbs/hour	0.01
x Annual Fuel Usage/2000 =	0.04 TPY	0.02 TPY	0.04
Particulate Matter 10 (PM10)			
Emission Factor	1.9 lbs/MMscf	1.8 lbs/1000 gal	
x Hourly Fuel Usage/2000 =	0.00 lbs/hour	0.02 lbs/hour	0.02
x Annual Fuel Usage/2000 =	0.02 TPY	0.10 TPY	0.10
Total HAPs			
Emission Factor	1.80E+00 Lbs/MMCuFt	7.55E-05 lbs/gal	
x Hourly Fuel Usage/2000 =	3.31E-03 lbs/hour	9.92E-04 lbs/hour	3.3E-03
x Annual Fuel Usage/2000 =	1.45E-02 TPY	4.35E-03 TPY	1.5E-02

Total Facility Wide Emissions (Lbs/Hour)

	NOx	SO2	CO	VOC	PM10	HAPs	Asphalt Fumes
UNIT NO. 1 - DRUM MIX PLANT	16.5	3.3	39.0	9.6	6.9	2.69E+00	3.60
UNIT NO. 2 - HOT OIL HEATER	0.26	0.00	0.15	0.01	0.02	3.31E-03	N/A
TOTAL FACILITY WIDE (LBS/HOUR)	16.76	3.30	39.15	9.61	6.92	2.69E+00	3.60

Total Facility Wide Emissions (TPY)

	NOx	SO2	CO	VOC	PM10	HAPs	Asphalt Fumes
UNIT NO. 1 - DRUM MIX PLANT	72.3	14.5	170.8	42.0	30.2	1.18E+01	15.77
UNIT NO. 2 - HOT OIL HEATER	1.15	0.01	0.68	0.04	0.10	1.45E-02	N/A
TOTAL FACILITY WIDE (TPY)	73.42	14.47	171.50	42.09	30.33	1.18E+01	15.77

PROPOSED POTENTIAL EMISSION CALCULATIONS

Emission factors for NOx, CO, VOC,PM10, SO2, and HAPs were taken from the latest version of AP-42, Section 11.1 Hot Mix Asphalt Plants (3/04).
Restrictions are for a total of 500,000 TPY of product.

UNIT NO. 1 - DRUM MIX PLANT	Primary Fuel	Back-up fuel	Maximum
Fuel	Natural gas	No. 2 oil	
Sulfur Content	nil	0.0015 %	
Burner Rating	82.5 MMBTU/hour	82.5 MMBTU/hour	
Maximum Fuel Firing Rate	80,882 cuft/hr	589 Gal/Hr	
Higher Heating Value	1,020 BTU/scf	140,000 BTU/gallon	
Production (Tons/Hour)	300 TPH	300 TPH	
Annual Production (Tons/Year)	500,000 TPY	500,000 TPY	500,000
Nitrogen Oxides (NO_x)			
Emission Factor	0.026 Lbs/ton	0.055 Lbs/ton	
x Hourly production rate =	7.8 lbs/hour	16.5 lbs/hour	16.50
x Annual Production/2000 =	6.50 TPY	13.75 TPY	13.75
Sulfur Dioxide (SO_2)			
Emission Factor	0.0034 Lbs/ton	0.011 Lbs/ton	
x Hourly production rate =	1.0 lbs/hour	3.3 lbs/hour	3.30
x Annual Production/2000 =	0.85 TPY	2.75 TPY	2.75
Carbon Monoxide (CO)			
Emission Factor	0.13 Lbs/ton	0.13 Lbs/ton	
x Hourly production rate =	39.0 lbs/hour	39.0 lbs/hour	39.00
x Annual Production/2000 =	32.5 TPY	32.5 TPY	32.50
Volatile Organic Compounds (VOC)			
Emission Factor	0.032 Lbs/ton	0.032 Lbs/ton	
x Hourly production rate =	9.6 lbs/hour	9.6 lbs/hour	9.60
x Annual Production/2000 =	8.00 TPY	8.00 TPY	8.00
Particulate Matter (PM10)			
Emission Factor	0.023 Lbs/ton	0.023 Lbs/ton	
x Hourly production rate =	6.9 lbs/hour	6.9 lbs/hour	6.90
x Annual Production/2000 =	5.75 TPY	5.75 TPY	5.75
Asphalt fumes			
Emission Factor	0.012 Lbs/ton	0.012 Lbs/ton	
x Hourly production rate =	3.6 lbs/hour	3.6 lbs/hour	3.60
x Annual Production/2000 =	3.00 TPY	3.00 TPY	3.00
Total HAPs			
Emission Factor	5.49E-03 Lbs/ton	8.96E-03 Lbs/ton	
x Hourly production rate =	1.6 lbs/hour	2.7 lbs/hour	2.69
x Annual Production/2000 =	1.37 TPY	2.24 TPY	2.24

UNIT 2 - HOT OIL HEATER

Emission factors for the criteria pollutants were obtained from AP-42, Section 11.1 (Table 11.1-13) (3/04)
Emission factors for HAPs while burning natural gas were obtained from AP-42, Section 1.4. Natural Gas Combustion, (Table 1.4-3 and Table 1.4-4) (7/98).
Emission factors for HAPs while burning no. 2 fuel oil were obtained from AP-42, Section 11.1 (Table 11.1-13) (3/04) and AP-42, Section 1.3, Fuel Oil Combustion, (Table 1.3-10) (5/10).
Natural gas is based on a heating value of 1020 BTU/scf, ULSD is based on a heating value of 140,000 BTU/gallon.

	Natural gas	#2 Oil	Maximum
Fuel			
Maximum fuel firing rate	1,840 cuft/hour	13.14 GPH	
Hours of Operation	4,745 Hrs/Year	4,745 Hrs/Year	
Annual Fuel Usage	8.7 MMSCF	62,363 Gallons	
Nitrogen Oxides			
Emission Factor	100 lbs/MMscf	20 lbs/1000 gal	
x Hourly Fuel Usage/2000 =	0.18 lbs/hour	0.26 lbs/hour	0.26
x Annual Fuel Usage/2000 =	0.44 TPY	0.62 TPY	0.62

Sulfur Dioxide			
Emission Factor	0.6 lbs/MMscf	0.213 lbs/1000 gal	
x Hourly Fuel Usage/2000 =	0.00 lbs/hour	0.00 lbs/hour	0.00
x Annual Fuel Usage/2000 =	0.003 TPY	0.01 TPY	0.01
Carbon Monoxide			
Emission Factor	84 Lbs/MMscf	5.0 lbs/1000 gal	
x Hourly Fuel Usage/2000 =	0.15 lbs/hour	0.07 lbs/hour	0.15
x Annual Fuel Usage/2000 =	0.37 TPY	0.16 TPY	0.37
Volatile Organic Compounds			
Emission Factor	5.5 lbs/MMscf	0.34 lbs/1000 gal	
x Hourly Fuel Usage/2000 =	0.01 lbs/hour	0.00 lbs/hour	0.01
x Annual Fuel Usage/2000 =	0.02 TPY	0.01 TPY	0.02
Particulate Matter 10 (PM10)			
Emission Factor	1.9 lbs/MMscf	1.8 lbs/1000 gal	
x Hourly Fuel Usage/2000 =	0.00 lbs/hour	0.02 lbs/hour	0.02
x Annual Fuel Usage/2000 =	0.01 TPY	0.06 TPY	0.06
Total HAPs			
Emission Factor	1.80E+00 Lbs/MMCuFt	7.55E-05 lbs/gal	
x Hourly Fuel Usage/2000 =	3.31E-03 lbs/hour	9.92E-04 lbs/hour	3.3E-03
x Annual Fuel Usage/2000 =	7.86E-03 TPY	2.35E-03 TPY	7.9E-03

Total Facility Wide Emissions (Lbs/Hour)

	NOx	SO2	CO	VOC	PM10	HAPs	Asphalt Fumes
UNIT NO. 1 - DRUM MIX PLANT	16.5	3.3	39.0	9.6	6.9	2.69	3.60
UNIT NO. 2 - HOT OIL HEATER	0.26	0.00	0.15	0.01	0.02	3.31E-03	N/A
TOTAL FACILITY WIDE (LBS/HOUR)	16.76	3.30	39.15	9.61	6.92	2.69E+00	3.60

Total Facility Wide Emissions (TPY)

	NOx	SO2	CO	VOC	PM10	HAPs	Asphalt Fumes
UNIT NO. 1 - DRUM MIX PLANT	13.8	2.8	32.5	8.0	5.8	2.24	3.00
UNIT NO. 2 - HOT OIL HEATER	0.62	0.01	0.37	0.02	0.06	7.86E-03	N/A
TOTAL FACILITY WIDE (TPY)	14.37	2.76	32.87	8.02	5.81	2.25E+00	3.00

RELEVANT SECTIONS OF AP-42 -- SECTIONS 11.1, 1.3, 1.4

Table 11.1-3. PARTICULATE MATTER EMISSION FACTORS FOR DRUM MIX HOT MIX ASPHALT PLANTS[a]

Process	Filterable PM				Condensable PM[b]				Total PM			
	PM[c]	EMISSION FACTOR RATING	PM-10[d]	EMISSION FACTOR RATING	Inorganic	EMISSION FACTOR RATING	Organic	EMISSION FACTOR RATING	PM[e]	EMISSION FACTOR RATING	PM-10[f]	EMISSION FACTOR RATING
Dryer[g] (SCC 3-05-002-05,-55 to -63)												
Uncontrolled	28[h]	D	6.4	D	0.0074[j]	E	0.058[k]	E	28	D	6.5	D
Venturi or wet scrubber	0.026[m]	A	ND	NA	0.0074[n]	A	0.012[p]	A	0.045	A	ND	NA
Fabric filter	0.014[q]	A	0.0039	C	0.0074[n]	A	0.012[p]	A	0.033	A	0.023	C

[a] Factors are lb/ton of product. SCC = Source Classification Code. ND = no data. NA = not applicable. To convert from lb/ton to kg/Mg, multiply by 0.5.

[b] Condensable PM is that PM collected using an EPA Method 202, Method 5 (analysis of "back-half" or impingers), or equivalent sampling train.

[c] Filterable PM is that PM collected on or before the filter of an EPA Method 5 (or equivalent) sampling train.

[d] Particle size data from Reference 23 were used in conjunction with the filterable PM emission factors shown.

[e] Total PM is the sum of filterable PM, condensable inorganic PM, and condensable organic PM.

[f] Total PM-10 is the sum of filterable PM-10, condensable inorganic PM, and condensable organic PM.

[g] Drum mix dryer fired with natural gas, propane, fuel oil, and waste oil. The data indicate that fuel type does not significantly effect PM emissions.

[h] References 31, 36-38, 340.

[j] Because no data are available for uncontrolled condensable inorganic PM, the emission factor is assumed to be equal to the maximum controlled condensable inorganic PM emission factor.

[k] References 36-37.

[m] Reference 1, Table 4-14. Average of data from 36 facilities. Range: 0.0036 to 0.097 lb/ton. Median: 0.020 lb/ton. Standard deviation: 0.022 lb/ton.

[n] Reference 1, Table 4-14. Average of data from 30 facilities. Range: 0.0012 to 0.027 lb/ton. Median: 0.0051 lb/ton. Standard deviation: 0.0063 lb/ton.

[p] Reference 1, Table 4-14. Average of data from 41 facilities. Range: 0.00035 to 0.074 lb/ton. Median: 0.0046 lb/ton. Standard deviation: 0.016 lb/ton.

[q] Reference 1, Table 4-14. Average of data from 155 facilities. Range: 0.00089 to 0.14 lb/ton. Median: 0.010 lb/ton. Standard deviation: 0.017 lb/ton.

Table 11.1-7. EMISSION FACTORS FOR CO, CO_2, NO_x, AND SO_2 FROM DRUM MIX HOT MIX ASPHALT PLANTS[a]

Process	CO[b]	EMISSION FACTOR RATING	CO_2[c]	EMISSION FACTOR RATING	NO_x	EMISSION FACTOR RATING	SO_2[c]	EMISSION FACTOR RATING
Natural gas-fired dryer (SCC 3-05-002-55,-56,-57)	0.13	B	33[d]	A	0.026[e]	D	0.0034[f]	D
No. 2 fuel oil-fired dryer (SCC 3-05-002-58,-59,-60)	0.13	B	33[d]	A	0.055[g]	C	0.011[h]	E
Waste oil-fired dryer (SCC 3-05-002-61,-62,-63)	0.13	B	33[d]	A	0.055[g]	C	0.058[j]	B
Coal-fired dryer[k] (SCC 3-05-002-98)	ND	NA	33[d]	A	ND	NA	0.19[m]	E

[a] Emission factor units are lb per ton of HMA produced. SCC = Source Classification Code. ND = no data available. NA = not applicable. To convert from lb/ton to kg/Mg, multiply by 0.5.

[b] References 25, 44, 48, 50, 149, 154, 197, 214, 229, 254, 339-342, 344, 346, 347, 390. The CO emission factors represent normal plant operations without scrutiny of the burner design, operation, and maintenance. Information is available that indicates that attention to burner design, periodic evaluation of burner operation, and appropriate maintenance can reduce CO emissions. Data for dryers firing natural gas, No. 2 fuel oil, and No. 6 fuel oil were combined to develop a single emission factor because the magnitude of emissions was similar for dryers fired with these fuels.

[c] Emissions of CO_2 and SO_2 can also be estimated based on fuel usage and the fuel combustion emission factors (for the appropriate fuel) presented in AP-42 Chapter 1. The CO_2 emission factors are an average of all available data, regardless of the dryer fuel (emissions were similar from dryers firing any of the various fuels). Fifty percent of the fuel-bound sulfur, up to a maximum (as SO_2) of 0.1 lb/ton of product, is expected to be retained in the product, with the remainder emitted as SO_2.

[d] Reference 1, Table 4-15. Average of data from 180 facilities. Range: 2.6 to 96 lb/ton. Median: 31 lb/ton. Standard deviation: 13 lb/ton.

[e] References 44-45, 48, 209, 341, 342.

[f] References 44-45, 48.

[g] References 25, 50, 153, 214, 229, 344, 346, 347, 352-354.

[h] References 50, 119, 255, 340

[j] References 25, 299, 300, 339, 345, 351, 371-377, 379, 380, 386-388.

[k] Dryer fired with coal and supplemental natural gas or fuel oil.

[m] References 88, 108, 189-190.

Table 11.1-8. EMISSION FACTORS FOR TOC, METHANE, VOC, AND HCl FROM DRUM MIX HOT MIX ASPHALT PLANTS[a]

Process	TOC[b]	EMISSION FACTOR RATING	CH_4[c]	EMISSION FACTOR RATING	VOC[d]	EMISSION FACTOR RATING	HCl[e]	EMISSION FACTOR RATING
Natural gas-fired dryer (SCC 3-05-002-55, -56,-57)	0.044[f]	B	0.012	C	0.032	C	ND	NA
No. 2 fuel oil-fired dryer (SCC 3-05-002-58, -59,-60)	0.044[f]	B	0.012	C	0.032	C	ND	NA
Waste oil-fired dryer (SCC 3-05-002-61, -62,-63)	0.044[f]	E	0.012	C	0.032	E	0.00021	D

[a] Emission factor units are lb per ton of HMA produced. SCC = Source Classification Code. ND = no data available. NA = not applicable. To convert from lb/ton to kg/Mg, multiply by 0.5.

[b] TOC equals total hydrocarbons as propane as measured with an EPA Method 25A or equivalent sampling train plus formaldehyde.

[c] References 25, 44-45, 48, 50, 339-340, 355. Factor includes data from natural gas-, No. 2 fuel oil, and waste oil-fired dryers. Methane measured with an EPA Method 18 or equivalent sampling train.

[d] The VOC emission factors are equal to the TOC factors minus the sum of the methane emission factors and the emission factors for compounds with negligible photochemical reactivity shown in Table 11.1-10; differences in values reported are due to rounding.

[e] References 348, 374, 376, 379, 380.

[f] References 25, 44-45, 48, 50, 149, 153-154, 209-212, 214, 241, 242, 339-340, 355.

Table 11.1-10. EMISSION FACTORS FOR ORGANIC POLLUTANT EMISSIONS FROM DRUM MIX HOT MIX ASPHALT PLANTS[a]

Process	Pollutant		Emission Factor, lb/ton	Emission Factor Rating	Ref. No.
	CASRN	Name			
Natural gas-fired dryer with fabric filter[b] (SCC 3-05-002-55, -56,-57)	Non-PAH hazardous air pollutants[c]				
	71-43-2	Benzene[d]	0.00039	A	25,44,45,50, 341, 342, 344-351, 373, 376, 377, 383, 384
	100-41-4	Ethylbenzene	0.00024	D	25,44,45
	50-00-0	Formaldehyde[e]	0.0031	A	25,35,44,45,50, 339-344, 347-349, 371-373, 384, 388
	110-54-3	Hexane	0.00092	E	339-340
	540-84-1	Isooctane (2,2,4-trimethylpentane)	4.0×10^{-5}	E	339-340
	71-55-6	Methyl chloroform[f]	4.8×10^{-5}	E	35
	108-88-3	Toluene	0.00015	D	35,44,45
	1330-20-7	Xylene	0.00020	D	25,44,45
		Total non-PAH HAPs	0.0051		
	PAH HAPs				
	91-57-6	2-Methylnaphthalene[g]	7.4×10^{-5}	D	44,45,48
	83-32-9	Acenaphthene[g]	1.4×10^{-6}	E	48
	208-96-8	Acenaphthylene[g]	8.6×10^{-6}	D	35,45,48
	120-12-7	Anthracene[g]	2.2×10^{-7}	E	35,48
	56-55-3	Benzo(a)anthracene[g]	2.1×10^{-7}	E	48
	50-32-8	Benzo(a)pyrene[g]	9.8×10^{-9}	E	48
	205-99-2	Benzo(b)fluoranthene[g]	1.0×10^{-7}	E	35,48
	192-97-2	Benzo(e)pyrene[g]	1.1×10^{-7}	E	48
	191-24-2	Benzo(g,h,i)perylene[g]	4.0×10^{-8}	E	48
	207-08-9	Benzo(k)fluoranthene[g]	4.1×10^{-8}	E	35,48
	218-01-9	Chrysene[g]	1.8×10^{-7}	E	35,48
	206-44-0	Fluoranthene[g]	6.1×10^{-7}	D	35,45,48
	86-73-7	Fluorene[g]	3.8×10^{-6}	D	35,45,48,163
	193-39-5	Indeno(1,2,3-cd)pyrene[g]	7.0×10^{-9}	E	48
	91-20-3	Naphthalene[g]	9.0×10^{-5}	D	35,44,45,48,163
	198-55-0	Perylene[g]	8.8×10^{-9}	E	48
	85-01-8	Phenanthrene[g]	7.6×10^{-6}	D	35,44,45,48,163
	129-00-0	Pyrene[g]	5.4×10^{-7}	D	45,48
		Total PAH HAPs	0.00019		

Table 11.1-10 (cont.)

Process	Pollutant		Emission Factor, lb/ton	Emission Factor Rating	Ref. No.
	CASRN	Name			
Natural gas-fired dryer with fabric filter[b] (SCC 3-05-002-55, -56,-57) (cont.)	Total HAPs		0.0053		
	Non-HAP organic compounds				
	106-97-8	Butane	0.00067	E	339
	74-85-1	Ethylene	0.0070	E	339-340
	142-82-5	Heptane	0.0094	E	339-340
	763-29-1	2-Methyl-1-pentene	0.0040	E	339,340
	513-35-9	2-Methyl-2-butene	0.00058	E	339,340
	96-14-0	3-Methylpentane	0.00019	D	339,340
	109-67-1	1-Pentene	0.0022	E	339-340
	109-66-0	n-Pentane	0.00021	E	339-340
		Total non-HAP organics	0.024		
No. 2 fuel oil-fired dryer with fabric filter (SCC 3-05-002-58, -59,-60)	Non-PAH HAPs[c]				
	71-43-2	Benzene[d]	0.00039	A	25,44,45,50, 341, 342, 344-351, 373, 376, 377, 383, 384
	100-41-4	Ethylbenzene	0.00024	D	25,44,45
	50-00-0	Formaldehyde[e]	0.0031	A	25,35,44,45,50, 339-344, 347-349, 371-373, 384, 388
	110-54-3	Hexane	0.00092	E	339-340
	540-84-1	Isooctane (2,2,4-trimethylpentane)	4.0×10^{-5}	E	339-340
	71-55-6	Methyl chloroform[f]	4.8×10^{-5}	E	35
	108-88-3	Toluene	0.0029	E	25, 50, 339-340
	1330-20-7	Xylene	0.00020	D	25,44,45
		Total non-PAH HAPs	0.0078		
	PAH HAPs				
	91-57-6	2-Methylnaphthalene[g]	0.00017	E	50
	83-32-9	Acenaphthene[g]	1.4×10^{-6}	E	48
	208-96-8	Acenaphthylene[g]	2.2×10^{-5}	E	50
	120-12-7	Anthracene[g]	3.1×10^{-6}	E	50,162
	56-55-3	Benzo(a)anthracene[g]	2.1×10^{-7}	E	48
	50-32-8	Benzo(a)pyrene[g]	9.8×10^{-9}	E	48
	205-99-2	Benzo(b)fluoranthene[g]	1.0×10^{-7}	E	35,48
	192-97-2	Benzo(e)pyrene[g]	1.1×10^{-7}	E	48

Table 11.1-10 (cont.)

Process	Pollutant		Emission Factor, lb/ton	Emission Factor Rating	Ref. No.
	CASRN	Name			
No. 2 fuel oil-fired dryer with fabric filter (SCC 3-05-002-58, -59,-60) (cont.)	191-24-2	Benzo(g,h,i)perylene[g]	4.0×10^{-8}	E	48
	207-08-9	Benzo(k)fluoranthene[g]	4.1×10^{-8}	E	35,48
	218-01-9	Chrysene[g]	1.8×10^{-7}	E	35,48
	206-44-0	Fluoranthene[g]	6.1×10^{-7}	D	35,45,48
	86-73-7	Fluorene[g]	1.1×10^{-5}	E	50,164
	193-39-5	Indeno(1,2,3-cd)pyrene[g]	7.0×10^{-9}	E	48
	91-20-3	Naphthalene[g]	0.00065	D	25,50,162,164
	198-55-0	Perylene[g]	8.8×10^{-9}	E	48
	85-01-8	Phenanthrene[g]	2.3×10^{-5}	D	50,162,164
	129-00-0	Pyrene[g]	3.0×10^{-6}	E	50
		Total PAH HAPs	0.00088		
		Total HAPs	0.0087		
	Non-HAP organic compounds				
	106-97-8	Butane	0.00067	E	339
	74-85-1	Ethylene	0.0070	E	339-340
	142-82-5	Heptane	0.0094	E	339-340
	763-29-1	2-Methyl-1-pentene	0.0040	E	339,340
	513-35-9	2-Methyl-2-butene	0.00058	E	339,340
	96-14-0	3-Methylpentane	0.00019	D	339,340
	109-67-1	1-Pentene	0.0022	E	339-340
	109-66-0	n-Pentane	0.00021	E	339-340
		Total non-HAP organics	0.024		

Table 11.1-10 (cont.)

Process	Pollutant		Emission Factor, lb/ton	Emission Factor Rating	Ref. No.
	CASRN	Name			
Fuel oil- or waste oil-fired dryer with fabric filter (SCC 3-05-002-58, -59,-60,-61,-62, -63)	Dioxins				
	1746-01-6	2,3,7,8-TCDD[g]	2.1×10^{-13}	E	339
		Total TCDD[g]	9.3×10^{-13}	E	339
	40321-76-4	1,2,3,7,8-PeCDD[g]	3.1×10^{-13}	E	339
		Total PeCDD[g]	2.2×10^{-11}	E	339-340
	39227-28-6	1,2,3,4,7,8-HxCDD[g]	4.2×10^{-13}	E	339
	57653-85-7	1,2,3,6,7,8-HxCDD[g]	1.3×10^{-12}	E	339
	19408-24-3	1,2,3,7,8,9-HxCDD[g]	9.8×10^{-13}	E	339
		Total HxCDD[g]	1.2×10^{-11}	E	339-340
	35822-46-9	1,2,3,4,6,7,8-HpCDD[g]	4.8×10^{-12}	E	339
		Total HpCDD[g]	1.9×10^{-11}	E	339-340
	3268-87-9	Octa CDD[g]	2.5×10^{-11}	E	339
		Total PCDD[g]	7.9×10^{-11}	E	339-340
	Furans				
	51207-31-9	2,3,7,8-TCDF[g]	9.7×10^{-13}	E	339
		Total TCDF[g]	3.7×10^{-12}	E	339-340
		1,2,3,7,8-PeCDF[g]	4.3×10^{-12}	E	339-340
		2,3,4,7,8-PeCDF[g]	8.4×10^{-13}	E	339
		Total PeCDF[g]	8.4×10^{-11}	E	339-340
		1,2,3,4,7,8-HxCDF[g]	4.0×10^{-12}	E	339
		1,2,3,6,7,8-HxCDF[g]	1.2×10^{-12}	E	339
		2,3,4,6,7,8-HxCDF[g]	1.9×10^{-12}	E	339
		1,2,3,7,8,9-HxCDF[g]	8.4×10^{-12}	E	340
		Total HxCDF[g]	1.3×10^{-11}	E	339-340
		1,2,3,4,6,7,8-HpCDF[g]	6.5×10^{-12}	E	339
		1,2,3,4,7,8,9-HpCDF[g]	2.7×10^{-12}	E	339
		Total HpCDF[g]	1.0×10^{-11}	E	339-340
	39001-02-0	Octa CDF[g]	4.8×10^{-12}	E	339
		Total PCDF[g]	4.0×10^{-11}	E	339-340
		Total PCDD/PCDF[g]	1.2×10^{-10}	E	339-340

Table 11.1-10 (cont.)

Process	Pollutant		Emission Factor, lb/ton	Emission Factor Rating	Ref. No.
	CASRN	Name			
Fuel oil- or waste oil-fired dryer (uncontrolled) (SCC 3-05-002-58, -59,-60,-61,-62, -63)	Hazardous air pollutants[c]				
	Dioxins				
		Total HxCDD[g]	5.4×10^{-12}	E	340
	35822-46-9	1,2,3,4,6,7,8-HpCDD[g]	3.4×10^{-11}	E	340
		Total HpCDD[g]	7.1×10^{-11}	E	340
	3268-87-9	Octa CDD[g]	2.7×10^{-9}	E	340
		Total PCDD[g]	2.8×10^{-9}	E	340
	Furans				
		Total TCDF[g]	3.3×10^{-11}	E	340
		Total PeCDF[g]	7.4×10^{-11}	E	340
		1,2,3,4,7,8-HxCDF[g]	5.4×10^{-12}	E	340
		2,3,4,6,7,8-HxCDF[g]	1.6×10^{-12}	E	340
		Total HxCDF[g]	8.1×10^{-12}	E	340
Fuel oil- or waste oil-fired dryer (uncontrolled) (SCC 3-05-002-58, -59,-60,-61,-62, -63) (cont.)		1,2,3,4,6,7,8-HpCDF[g]	1.1×10^{-11}	E	340
		Total HpCDF[g]	3.8×10^{-11}	E	340
		Total PCDF[g]	1.5×10^{-10}	E	340
		Total PCDD/PCDF[g]	3.0×10^{-9}	E	340

Table 11.1-12. EMISSION FACTORS FOR METAL EMISSIONS FROM DRUM MIX HOT MIX ASPHALT PLANTS[a]

Process	Pollutant	Emission Factor, lb/ton	Emission Factor Rating	Reference Numbers
Fuel oil-fired dryer, uncontrolled (SCC 3-05-002-58, -59,-60)	Arsenic[b]	1.3×10^{-6}	E	340
	Barium	0.00025	E	340
	Beryllium[b]	0.0	E	340
	Cadmium[b]	4.2×10^{-6}	E	340
	Chromium[b]	2.4×10^{-5}	E	340
	Cobalt[b]	1.5×10^{-5}	E	340
	Copper	0.00017	E	340
	Lead[b]	0.00054	E	340
	Manganese[b]	0.00065	E	340
	Nickel[b]	0.0013	E	340
	Phosphorus[b]	0.0012	E	340
	Selenium[b]	2.4×10^{-6}	E	340
	Thallium	2.2×10^{-6}	E	340
	Zinc	0.00018	E	340
Natural gas- or propane-fired dryer, with fabric filter (SCC 3-05-002-55, -56,-57))	Antimony	1.8×10^{-7}	E	339
	Arsenic[b]	5.6×10^{-7}	D	25, 35, 339-340
	Barium	5.8×10^{-6}	E	25, 339-340
	Beryllium[b]	0.0	E	339-340
	Cadmium[b]	4.1×10^{-7}	D	25, 35, 162, 301, 339-340
	Chromium[b]	5.5×10^{-6}	C	25, 162-164, 301, 339-340
	Cobalt[b]	2.6×10^{-8}	E	339-340
	Copper	3.1×10^{-6}	D	25, 162-164, 339-340
	Hexavalent chromium[b]	4.5×10^{-7}	E	163
	Lead[b]	6.2×10^{-7}	E	35
	Manganese[b]	7.7×10^{-6}	D	25, 162-164, 339-340
	Mercury[b]	2.4×10^{-7}	E	35, 163
	Nickel[b]	6.3×10^{-5}	D	25, 163-164, 339-340
	Phosphorus[b]	2.8×10^{-5}	E	25, 339-340
	Silver	4.8×10^{-7}	E	25, 339-340
	Selenium[b]	3.5×10^{-7}	E	339-340
	Thallium	4.1×10^{-9}	E	339-340
	Zinc	6.1×10^{-5}	C	25, 35, 162-164, 339-340

Table 11.1-12 (cont.)

Process	Pollutant	Emission Factor, lb/ton	Emission Factor Rating	Reference Numbers
No. 2 fuel oil-fired dryer or waste oil/drain oil/No. 6 fuel oil-fired dryer, with fabric filter (SCC 3-05-002-58, -59,-60,-61,-62,-63)	Antimony	$1.8x10^{-7}$	E	339
	Arsenic[b]	$5.6x10^{-7}$	D	25, 35, 339-340
	Barium	$5.8x10^{-6}$	E	25, 339-340
	Beryllium[b]	0.0	E	339-340
	Cadmium[b]	$4.1x10^{-7}$	D	25, 35, 162, 301, 339-340
	Chromium[b]	$5.5x10^{-6}$	C	25, 162-164, 301, 339-340
	Cobalt[b]	$2.6x10^{-8}$	E	339-340
	Copper	$3.1x10^{-6}$	D	25, 162-164, 339-340
	Hexavalent chromium[b]	$4.5x10^{-7}$	E	163
	Lead[b]	$1.5x10^{-5}$	C	25, 162, 164, 178-179, 183, 301, 315, 339-340
	Manganese[b]	$7.7x10^{-6}$	D	25, 162-164, 339-340
	Mercury[b]	$2.6x10^{-6}$	D	162, 164, 339-340
	Nickel[b]	$6.3x10^{-5}$	D	25, 163-164, 339-340
	Phosphorus[b]	$2.8x10^{-5}$	E	25, 339-340
	Silver	$4.8x10^{-7}$	E	25, 339-340
	Selenium[b]	$3.5x10^{-7}$	E	339-340
	Thallium	$4.1x10^{-9}$	E	339-340
	Zinc	$6.1x10^{-5}$	C	25, 35, 162-164, 339-340

[a] Emission factor units are lb/ton of HMA produced. SCC = Source Classification Code. To convert from lb/ton to kg/Mg, multiply by 0.5. Emission factors apply to facilities processing virgin aggregate or a combination of virgin aggregate and RAP.

[b] Arsenic, beryllium, cadmium, chromium, hexavalent chromium, cobalt, lead, manganese, mercury, nickel, and selenium compounds are HAPs as defined in the 1990 CAAA. Elemental phosphorus also is a listed HAP, but the phosphorus measured by Method 29 is not elemental phosphorus.

Table 11.1-13. EMISSION FACTORS FOR HOT MIX ASPHALT HOT OIL SYSTEMS[a]

Process	Pollutant		Emission factor	Emission factor units	EMISSION FACTOR RATING	Reference
	CASRN	Name				
Hot oil system fired with natural gas (SCC 3-05-002-06)	630-08-0	Carbon monoxide	8.9×10^{-6}	lb/ft^3	C	395
	124-38-9	Carbon dioxide	0.20	lb/ft^3	C	395
	50-00-0	Formaldehyde	2.6×10^{-8}	lb/ft^3	C	395
Hot oil system fired with No. 2 fuel oil (SCC 3-05-002-08)	630-08-0	Carbon monoxide	0.0012	lb/gal	C	395
	124-38-9	Carbon dioxide	28	lb/gal	C	395
	50-00-0	Formaldehyde	3.5×10^{-6}	lb/gal	C	395
	83-32-9	Acenaphthene[b]	5.3×10^{-7}	lb/gal	E	35
	208-96-8	Acenaphthylene[b]	2.0×10^{-7}	lb/gal	E	35
	120-12-7	Anthracene[b]	1.8×10^{-7}	lb/gal	E	35
	205-99-2	Benzo(b)fluoranthene[b]	1.0×10^{-7}	lb/gal	E	35
	206-44-0	Fluoranthene[b]	4.4×10^{-8}	lb/gal	E	35
	86-73-7	Fluorene[b]	3.2×10^{-8}	lb/gal	E	35
	91-20-3	Naphthalene[b]	1.7×10^{-5}	lb/gal	E	35
	85-01-8	Phenanthrene[b]	4.9×10^{-6}	lb/gal	E	35
	129-00-0	Pyrene[b]	3.2×10^{-8}	lb/gal	E	35
	Dioxins					
	19408-74-3	1,2,3,7,8,9-HxCDD[b]	7.6×10^{-13}	lb/gal	E	35
	39227-28-6	1,2,3,4,7,8-HxCDD[b]	6.9×10^{-13}	lb/gal	E	35
		HxCDD[b]	6.2×10^{-12}	lb/gal	E	35
	35822-46-9	1,2,3,4,6,7,8-HpCDD[b]	1.5×10^{-11}	lb/gal	E	35
		HpCDD[b]	2.0×10^{-11}	lb/gal	E	35
	3268-87-9	OCDD[b]	1.6×10^{-10}	lb/gal	E	35
		Total PCDD	2.0×10^{-10}	lb/gal	E	35
	Furans					
		TCDF[b]	3.3×10^{-12}	lb/gal	E	35
		PeCDF[b]	4.8×10^{-13}	lb/gal	E	35
		HxCDF[b]	2.0×10^{-12}	lb/gal	E	35
		HpCDF[b]	9.7×10^{-12}	lb/gal	E	35
	67562-39-4	1,2,3,4,6,7,8-HpCDF[b]	3.5×10^{-12}	lb/gal	E	35
	39001-02-0	OCDF[b]	1.2×10^{-11}	lb/gal	E	35
		Total PCDF	3.1×10^{-11}	lb/gal	E	35
		Total PCDD/PCDF	2.3×10^{-10}	lb/gal	E	35

[a] Emission factor units are lb/gal of fuel consumed. To convert from pounds per standard cubic foot (lb/ft^3) to kilograms per standard cubic meter (kg/m^3), multiply by 16. To convert from lb/gal to kilograms per liter (kg/l), multiply by 0.12. CASRN = Chemical Abstracts Service Registry Number. SCC = Source Classification Code.

[b] Compound is classified as polycyclic organic matter, as defined in the 1990 Clean Air Act Amendments (CAAA). Total PCDD is the sum of the total tetra through octa dioxins; total PCDF is sum of the total tetra through octa furans; and total PCDD/PCDF is the sum of total PCDD and total PCDF.

Table 1.3-1. (cont.)

Firing Configuration (SCC)[a]	SO_2[b]		SO_3[c]		NO_x[d]		CO[e]		Filterable PM[f]	
	Emission Factor ($lb/10^3$ gal)	EMISSION FACTOR RATING	Emission Factor ($lb/10^3$ gal)	EMISSION FACTOR RATING	Emission Factor ($lb/10^3$ gal)	EMISSION FACTOR RATING	Emission Factor ($lb/10^3$ gal)	EMISSION FACTOR RATING	Emission Factor ($lb/10^3$ gal)	EMISSION FACTOR RATING
Boilers < 100 Million Btu/hr										
No. 6 oil fired (1-02-004-02/03) (1-03-004-02/03)	157S	A	2S	A	55	A	5	A	9.19(S)+3.22[i]	B
No. 5 oil fired (1-03-004-04)	157S	A	2S	A	55	A	5	A	10[i]	A
No. 4 oil fired (1-03-005-04)	150S	A	2S	A	20	A	5	A	7	B
Distillate oil fired (1-02-005-02/03) (1-03-005-02/03)	142S	A	2S	A	20	A	5	A	2	A
Residential furnace (A2104004/A2104011)	142S	A	2S	A	18	A	5	A	0.4[g]	B

a To convert from lb/103 gal to kg/103 L, multiply by 0.120. SCC = Source Classification Code.
b References 1-2,6-9,14,56-60. S indicates that the weight % of sulfur in the oil should be multiplied by the value given. For example, if the fuel is 1% sulfur, then S = 1.
c References 1-2,6-8,16,57-60. S indicates that the weight % of sulfur in the oil should be multiplied by the value given. For example, if the fuel is 1% sulfur, then S = 1.
d References 6-7,15,19,22,56-62. Expressed as NO2. Test results indicate that at least 95% by weight of NOx is NO for all boiler types except residential furnaces, where about 75% is NO. For utility vertical fired boilers use 105 lb/103 gal at full load and normal (>15%) excess air. Nitrogen oxides emissions from residual oil combustion in industrial and commercial boilers are related to fuel nitrogen content, estimated by the following empirical relationship: lb NO2 /103 gal = 20.54 + 104.39(N), where N is the weight % of nitrogen in the oil. For example, if the fuel is 1% nitrogen, then N = 1.
e References 6-8,14,17-19,56-61. CO emissions may increase by factors of 10 to 100 if the unit is improperly operated or not well maintained.
f References 6-8,10,13-15,56-60,62-63. Filterable PM is that particulate collected on or prior to the filter of an EPA Method 5 (or equivalent) sampling train. Particulate emission factors for residual oil combustion are, on average, a function of fuel oil sulfur content where S is the weight % of sulfur in oil. For example, if fuel oil is 1% sulfur, then S = 1.
g Based on data from new burner designs. Pre-1970's burner designs may emit filterable PM as high as 3.0 1b/103 gal.
h The SO2 emission factor for both no. 2 oil fired and for no. 2 oil fired with LNB/FGR, is 142S, not 157S. Errata dated April 28, 2000. Section corrected May 2010.
i The PM factors for No.6 and No. 5 fuel were reversed. Errata dated April 28, 2000. Section corrected May 2010.

Table 1.3-3. EMISSION FACTORS FOR TOTAL ORGANIC COMPOUNDS (TOC), METHANE, AND NONMETHANE TOC (NMTOC) FROM UNCONTROLLED FUEL OIL COMBUSTION[a]

EMISSION FACTOR RATING: A

Firing Configuration (SCC)	TOC[b] Emission Factor ($lb/10^3$ gal)	Methane[b] Emission Factor ($lb/10^3$ gal)	NMTOC[b] Emission Factor ($lb/10^3$ gal)
Utility boilers			
No. 6 oil fired, normal firing (1-01-004-01)	1.04	0.28	0.76
No. 6 oil fired, tangential firing (1-01-004-04)	1.04	0.28	0.76
No. 5 oil fired, normal firing (1-01-004-05)	1.04	0.28	0.76
No. 5 oil fired, tangential firing (1-01-004-06)	1.04	0.28	0.76
No. 4 oil fired, normal firing (1-01-005-04)	1.04	0.28	0.76
No. 4 oil fired, tangential firing (1-01-005-05)	1.04	0.28	0.76
Industrial boilers			
No. 6 oil fired (1-02-004-01/02/03)	1.28	1.00	0.28
No. 5 oil fired (1-02-004-04)	1.28	1.00	0.28
Distillate oil fired (1-02-005-01/02/03)	0.252	0.052	0.2
No. 4 oil fired (1-02-005-04)	0.252	0.052	0.2
Commercial/institutional/residential combustors			
No. 6 oil fired (1-03-004-01/02/03)	1.605	0.475	1.13
No. 5 oil fired (1-03-004-04)	1.605	0.475	1.13
Distillate oil fired (1-03-005-01/02/03)	0.556	0.216	0.34
No. 4 oil fired (1-03-005-04)	0.556	0.216	0.34
Residential furnace (A2104004/A2104011)	2.493	1.78	0.713

a To convert from lb/103 gal to kg/103 L, multiply by 0.12. SCC = Source Classification Code.

b References 29-32. Volatile organic compound emissions can increase by several orders of magnitude if the boiler is improperly operated or is not well maintained.

Table 1.3-8. EMISSION FACTORS FOR NITROUS OXIDE (N_2O), POLYCYCLIC ORGANIC MATTER (POM), AND FORMALDEHYDE (HCOH) FROM FUEL OIL COMBUSTION[a]

EMISSION FACTOR RATING: E

Firing Configuration (SCC)	Emission Factor ($lb/10^3$ gal)		
	N_2O[b]	POM[c]	HCOH[c]
Utility/industrial/commercial boilers			
No. 6 oil fired (1-01-004-01, 1-02-004-01, 1-03-004-01)	0.53	0.0011 - 0.0013[d]	0.024 - 0.061
Distillate oil fired (1-01-005-01, 1-02-005-01, 1-03-005-01)	0.26	0.0033[e]	0.035 - 0.061
Residential furnaces (A2104004/A2104011)	0.05	ND	ND

[a] To convert from $lb/10^3$ gal to $kg/10^3$ L, multiply by 0.12. SCC = Source Classification Code. ND = no data.
[b] References 45-46. EMISSION FACTOR RATING = B.
[c] References 29-32.
[d] Particulate and gaseous POM.
[e] Particulate POM only.

Table 1.3-9. EMISSION FACTORS FOR SPECIATED ORGANIC COMPOUNDS FROM FUEL OIL COMBUSTION[a]

Organic Compound	Average Emission Factor[b] ($lb/10^3$ Gal)	EMISSION FACTOR RATING
Benzene	2.14E-04	C
Ethylbenzene	6.36E-05[c]	E
Formaldehyde[d]	3.30E-02	C
Naphthalene	1.13E-03	C
1,1,1-Trichloroethane	2.36E-04[c]	E
Toluene	6.20E-03	D
o-Xylene	1.09E-04[c]	E
Acenaphthene	2.11E-05	C
Acenaphthylene	2.53E-07	D
Anthracene	1.22E-06	C
Benz(a)anthracene	4.01E-06	C
Benzo(b,k)fluoranthene	1.48E-06	C
Benzo(g,h,i)perylene	2.26E-06	C
Chrysene	2.38E-06	C
Dibenzo(a,h) anthracene	1.67E-06	D
Fluoranthene	4.84E-06	C
Fluorene	4.47E-06	C
Indo(1,2,3-cd)pyrene	2.14E-06	C
Phenanthrene	1.05E-05	C
Pyrene	4.25E-06	C
OCDD	3.10E-09[c]	E

[a] Data are for residual oil fired boilers, Source Classification Codes (SCCs) 1-01-004-01/04.

[b] References 64-72. To convert from $lb/10^3$ gal to $kg/10^3$ L, multiply by 0.12.

[c] Based on data from one source test (Reference 67).

[d] The formaldehyde number presented here is based only on data from utilities using No. 6 oil. The number presented in Table 1.3-7 is based on utility, commercial, and industrial boilers.

Table 1.3-10. EMISSION FACTORS FOR TRACE ELEMENTS FROM DISTILLATE FUEL OIL COMBUSTION SOURCES[a]

EMISSION FACTOR RATING: E

Firing Configuration (SCC)	Emission Factor ($lb/10^{12}$ Btu)										
	As	Be	Cd	Cr	Cu	Pb	Hg	Mn	Ni	Se	Zn
Distillate oil fired (1-01-005-01, 1-02-005-01, 1-03-005-01)	4	3	3	3	6	9	3	6	3	15	4

[a] Data are for distillate oil fired boilers, SCC codes 1-01-005-01, 1-02-005-01, and 1-03-005-01. References 29-32, 40-44 and 83. To convert from $lb/10^{12}$ Btu to pg/J, multiply by 0.43.

Table 1.4-1. EMISSION FACTORS FOR NITROGEN OXIDES (NO_x) AND CARBON MONOXIDE (CO) FROM NATURAL GAS COMBUSTION[a]

Combustor Type (MMBtu/hr Heat Input) [SCC]	NO_x[b]		CO	
	Emission Factor ($lb/10^6$ scf)	Emission Factor Rating	Emission Factor ($lb/10^6$ scf)	Emission Factor Rating
Large Wall-Fired Boilers (>100) [1-01-006-01, 1-02-006-01, 1-03-006-01]				
Uncontrolled (Pre-NSPS)[c]	280	A	84	B
Uncontrolled (Post-NSPS)[c]	190	A	84	B
Controlled - Low NO_x burners	140	A	84	B
Controlled - Flue gas recirculation	100	D	84	B
Small Boilers (<100) [1-01-006-02, 1-02-006-02, 1-03-006-02, 1-03-006-03]				
Uncontrolled	100	B	84	B
Controlled - Low NO_x burners	50	D	84	B
Controlled - Low NO_x burners/Flue gas recirculation	32	C	84	B
Tangential-Fired Boilers (All Sizes) [1-01-006-04]				
Uncontrolled	170	A	24	C
Controlled - Flue gas recirculation	76	D	98	D
Residential Furnaces (<0.3) [No SCC]				
Uncontrolled	94	B	40	B

[a] Reference 11. Units are in pounds of pollutant per million standard cubic feet of natural gas fired. To convert from $lb/10^6$ scf to $kg/10^6$ m^3, multiply by 16. Emission factors are based on an average natural gas higher heating value of 1,020 Btu/scf. To convert from $lb/10^6$ scf to lb/MMBtu, divide by 1,020. The emission factors in this table may be converted to other natural gas heating values by multiplying the given emission factor by the ratio of the specified heating value to this average heating value. SCC = Source Classification Code. ND = no data. NA = not applicable.

[b] Expressed as NO_2. For large and small wall fired boilers with SNCR control, apply a 24 percent reduction to the appropriate NO_x emission factor. For tangential-fired boilers with SNCR control, apply a 13 percent reduction to the appropriate NO_x emission factor.

[c] NSPS=New Source Performance Standard as defined in 40 CFR 60 Subparts D and Db. Post-NSPS units are boilers with greater than 250 MMBtu/hr of heat input that commenced construction modification, or reconstruction after August 17, 1971, and units with heat input capacities between 100 and 250 MMBtu/hr that commenced construction modification, or reconstruction after June 19, 1984.

TABLE 1.4-2. EMISSION FACTORS FOR CRITERIA POLLUTANTS AND GREENHOUSE GASES FROM NATURAL GAS COMBUSTION[a]

Pollutant	Emission Factor ($lb/10^6$ scf)	Emission Factor Rating
CO_2[b]	120,000	A
Lead	0.0005	D
N_2O (Uncontrolled)	2.2	E
N_2O (Controlled-low-NO_X burner)	0.64	E
PM (Total)[c]	7.6	D
PM (Condensable)[c]	5.7	D
PM (Filterable)[c]	1.9	B
SO_2[d]	0.6	A
TOC	11	B
Methane	2.3	B
VOC	5.5	C

[a] Reference 11. Units are in pounds of pollutant per million standard cubic feet of natural gas fired. Data are for all natural gas combustion sources. To convert from $lb/10^6$ scf to $kg/10^6$ m^3, multiply by 16. To convert from $lb/10^6$ scf to lb/MMBtu, divide by 1,020. The emission factors in this table may be converted to other natural gas heating values by multiplying the given emission factor by the ratio of the specified heating value to this average heating value. TOC = Total Organic Compounds. VOC = Volatile Organic Compounds.

[b] Based on approximately 100% conversion of fuel carbon to CO_2. $CO_2[lb/10^6 \text{ scf}] = (3.67)(CON)(C)(D)$, where CON = fractional conversion of fuel carbon to CO_2, C = carbon content of fuel by weight (0.76), and D = density of fuel, 4.2×10^4 $lb/10^6$ scf.

[c] All PM (total, condensible, and filterable) is assumed to be less than 1.0 micrometer in diameter. Therefore, the PM emission factors presented here may be used to estimate PM_{10}, $PM_{2.5}$ or PM_1 emissions. Total PM is the sum of the filterable PM and condensible PM. Condensible PM is the particulate matter collected using EPA Method 202 (or equivalent). Filterable PM is the particulate matter collected on, or prior to, the filter of an EPA Method 5 (or equivalent) sampling train.

[d] Based on 100% conversion of fuel sulfur to SO_2. Assumes sulfur content is natural gas of 2,000 grains/10^6 scf. The SO_2 emission factor in this table can be converted to other natural gas sulfur contents by multiplying the SO_2 emission factor by the ratio of the site-specific sulfur content (grains/10^6 scf) to 2,000 grains/10^6 scf.

TABLE 1.4-3. EMISSION FACTORS FOR SPECIATED ORGANIC COMPOUNDS FROM NATURAL GAS COMBUSTION[a]

CAS No.	Pollutant	Emission Factor ($lb/10^6$ scf)	Emission Factor Rating
91-57-6	2-Methylnaphthalene[b, c]	2.4E-05	D
56-49-5	3-Methylcholanthrene[b, c]	<1.8E-06	E
	7,12-Dimethylbenz(a)anthracene[b,c]	<1.6E-05	E
83-32-9	Acenaphthene[b,c]	<1.8E-06	E
203-96-8	Acenaphthylene[b,c]	<1.8E-06	E
120-12-7	Anthracene[b,c]	<2.4E-06	E
56-55-3	Benz(a)anthracene[b,c]	<1.8E-06	E
71-43-2	Benzene[b]	2.1E-03	B
50-32-8	Benzo(a)pyrene[b,c]	<1.2E-06	E
205-99-2	Benzo(b)fluoranthene[b,c]	<1.8E-06	E
191-24-2	Benzo(g,h,i)perylene[b,c]	<1.2E-06	E
207-08-9	Benzo(k)fluoranthene[b,c]	<1.8E-06	E
106-97-8	Butane	2.1E+00	E
218-01-9	Chrysene[b,c]	<1.8E-06	E
53-70-3	Dibenzo(a,h)anthracene[b,c]	<1.2E-06	E
25321-22-6	Dichlorobenzene[b]	1.2E-03	E
74-84-0	Ethane	3.1E+00	E
206-44-0	Fluoranthene[b,c]	3.0E-06	E
86-73-7	Fluorene[b,c]	2.8E-06	E
50-00-0	Formaldehyde[b]	7.5E-02	B
110-54-3	Hexane[b]	1.8E+00	E
193-39-5	Indeno(1,2,3-cd)pyrene[b,c]	<1.8E-06	E
91-20-3	Naphthalene[b]	6.1E-04	E
109-66-0	Pentane	2.6E+00	E
85-01-8	Phenanathrene[b,c]	1.7E-05	D
74-98-6	Propane	1.6E+00	E

TABLE 1.4-3. EMISSION FACTORS FOR SPECIATED ORGANIC COMPOUNDS FROM NATURAL GAS COMBUSTION (Continued)

CAS No.	Pollutant	Emission Factor ($lb/10^6$ scf)	Emission Factor Rating
129-00-0	Pyrene[b, c]	5.0E-06	E
108-88-3	Toluene[b]	3.4E-03	C

[a] Reference 11. Units are in pounds of pollutant per million standard cubic feet of natural gas fired. Data are for all natural gas combustion sources. To convert from $lb/10^6$ scf to $kg/10^6$ m^3, multiply by 16. To convert from $1b/10^6$ scf to lb/MMBtu, divide by 1,020. Emission Factors preceeded with a less-than symbol are based on method detection limits.

[b] Hazardous Air Pollutant (HAP) as defined by Section 112(b) of the Clean Air Act.

[c] HAP because it is Polycyclic Organic Matter (POM). POM is a HAP as defined by Section 112(b) of the Clean Air Act.

[d] The sum of individual organic compounds may exceed the VOC and TOC emission factors due to differences in test methods and the availability of test data for each pollutant.

TABLE 1.4-4. EMISSION FACTORS FOR METALS FROM NATURAL GAS COMBUSTION[a]

CAS No.	Pollutant	Emission Factor ($lb/10^6$ scf)	Emission Factor Rating
7440-38-2	Arsenic[b]	2.0E-04	E
7440-39-3	Barium	4.4E-03	D
7440-41-7	Beryllium[b]	<1.2E-05	E
7440-43-9	Cadmium[b]	1.1E-03	D
7440-47-3	Chromium[b]	1.4E-03	D
7440-48-4	Cobalt[b]	8.4E-05	D
7440-50-8	Copper	8.5E-04	C
7439-96-5	Manganese[b]	3.8E-04	D
7439-97-6	Mercury[b]	2.6E-04	D
7439-98-7	Molybdenum	1.1E-03	D
7440-02-0	Nickel[b]	2.1E-03	C
7782-49-2	Selenium[b]	<2.4E-05	E
7440-62-2	Vanadium	2.3E-03	D
7440-66-6	Zinc	2.9E-02	E

[a] Reference 11. Units are in pounds of pollutant per million standard cubic feet of natural gas fired. Data are for all natural gas combustion sources. Emission factors preceeded by a less-than symbol are based on method detection limits. To convert from $lb/10^6$ scf to $kg/10^6$ m^3, multiply by l6. To convert from $lb/10^6$ scf to 1b/MMBtu, divide by 1,020.

[b] Hazardous Air Pollutant as defined by Section 112(b) of the Clean Air Act.

MONITORING PLAN FOR AIR POLLUTION CONTROL EQUIPMENT
DRUM MIX PLANT

Monitoring Plan for Air Pollution Control Equipment
Newport Bituminous LLC HMA Drum Plant - Nashua, NH

Newport Bituminous' site in Nashua, NH employs a CMI Corporation Magnum 300 Stationary counterflow Drum Mix Asphalt Plant, which contains a Wisper Jet-WJLE75 burner, having a maximum energy input capacity of 82,500,000 BTU/hour (82.5 MMBTU/hour). The plant's aggregate dryer is fired with natural gas or No. 2 fuel oil. The maximum production rate is 300 tons per hour (TPH). Particulate matter in the exhaust gases from the dryer is controlled with a primary dust collector (inertial dust collector), a CMI Stationary RA220S Roto-Aire baghouse, an exhaust fan, and associated ductwork.

The primary inertial dust collector serves to remove larger particles that may be swept from the dryer and thus reduces the load on the baghouse. The primary collector is designed to operate with a gas pressure loss of 2-3 inches w.g.

The baghouse collects fine particulate that has not been captured by the primary collector. The baghouse consists of 720, fourteen (14) ounce Aramid filter bags. Total filter area for the baghouse is 12,744 square feet. The baghouse operates with a gas pressure loss of 2 to 6 inches water gauge. Filtered particulate is released from the fabric by use of a reverse pulse of air, drops to a collector hopper, and is recovered to be added as an ingredient at the mixing zone of the drum mixer. The baghouse inlet ductwork is equipped with a high temperature sensor. In the event of excessive exhaust temperatures (greater than 375° F), the burner is switched off and the exhaust fan is stopped (slowed). If the baghouse operates above or below this range the operator must investigate the cause. The capture efficiency for this system is 100%. The capture efficiency value is determined based on the assumption that due to the negative pressure created by the baghouse exhaust fan all particulate that exits the dryer will enter the baghouse. The anticipated baghouse control efficiency is 99.95%. The combined baghouse plus inertial dust collector particulate control efficiency is anticipated to be 99.98%. The baghouse exhaust fan in combination with the baghouse and inertial dust collector produces a maximum design exhaust gas flow from the baghouse of 57,348 acfm at a nominal operating temperature of 265° F.

Daily maintenance and inspection procedures:

- Grease screws
- Listen as baghouse pulse timer cycles through all rows for any unusual sound when diaphragm valves fire. Investigate as needed.
- Check the dust level inside the baghouse
- Monitor the stack exhaust for presence of any visible emissions
- Monitor the plant equipment for any unusual fugitive emissions
- Maintain a log book with routine maintenance, inspections, fuel burned and sulfur content in the fuel, baghouse differential pressure, production and weather

Other maintenance and inspection procedures:
Perform a visolite test on the baghouse annually (within 10 days of spring start up and as needed).

SITE DRAWINGS

ABUTTERS:

LOT 93/SHEET 38
145 TEMPLE STREET, LLC
145 TEMPLE STREET
NASHUA, NH 03060
BK. 9158/PG. 2121
ACCT. NO. 6,500

LOT 90/SHEET 38
16 COMMERCIAL ST. REALTY, LLC
15 1/2 MAIN STREET
NASHUA, NH 03060
BK. 9058/PG. 130
ACCT. NO. 28,272

LOTS 55 & 56/SHEET 39
LEO M. LORRAINE J. LAVOIE
193 EAST HOLLIS STREET
NASHUA, NH 03060
BK. 8406/PG. 827
ACCT. NO. 13,720

LOT 57/SHEET 38
82 WEST HOLLIS STREET, LLC
31 BRIDGE STREET
NASHUA, NH 03060
BK. 6018/PG. 412
ACCT. NO. 19,648

LOT 96/SHEET 38
CITY OF NASHUA
229 MAIN STREET
NASHUA, NH 03060
BK. 5942/PG. 1804
ACCT. NO. 15,958

LOT 29/SHEET 36
JAMES & CATHERINE DECOLA
NICHOLAS & CYNTHIA QUARATIELLO
P.O. BOX 401
NORTH READING, MA. 01864-1951
BK. 5955/PG. 549
ACCT. NO. 23,674

LOT 85/SHEET 38
PUBLIC SERVICE OF NH
ATTN. SOUTHERN DIVISION MGR.
P.O. BOX 330
MANCHESTER, NH 03105
BK. 1228/PG. 345
ACCT. NO. 40,036

LOT 58/SHEET 36
2-4 SHEDDS AVENUE REALTY, LLC
339 MAIN STREET
NASHUA, NH 03060
BK. 9437/PG. 2472
ACCT. NO. 27,264

LOT 89/SHEET 38
RICHARD A. DEFELICE
151 TEMPLE STREET
NASHUA, NH 03060
BK. 8832/PG. 2599
ACCT. NO. 2,396

LOT 35/SHEET 39
ZJBV PROPERTIES, LLC
300 GAY STREET
MANCHESTER, NH 03103
BK. 9134/PG. 920
ACCT. NO. 7,842

LOT 92/SHEET 38
CAPITOL SUPPLY ASSOCIATES
6 STORRS STREET
CONCORD, NH 03301-4837
BK. 2389/PG. 226
ACCT. NO. 5,878

LOT 97/SHEET 38
LOT 44/SHEET 37
BOSTON & MAINE RAILROAD
C/O GUILFORD TRANSPORTATION
IRON HORSE ROAD
NORTH BILLERICA, MA. 01862
ACCT. NO. 50809

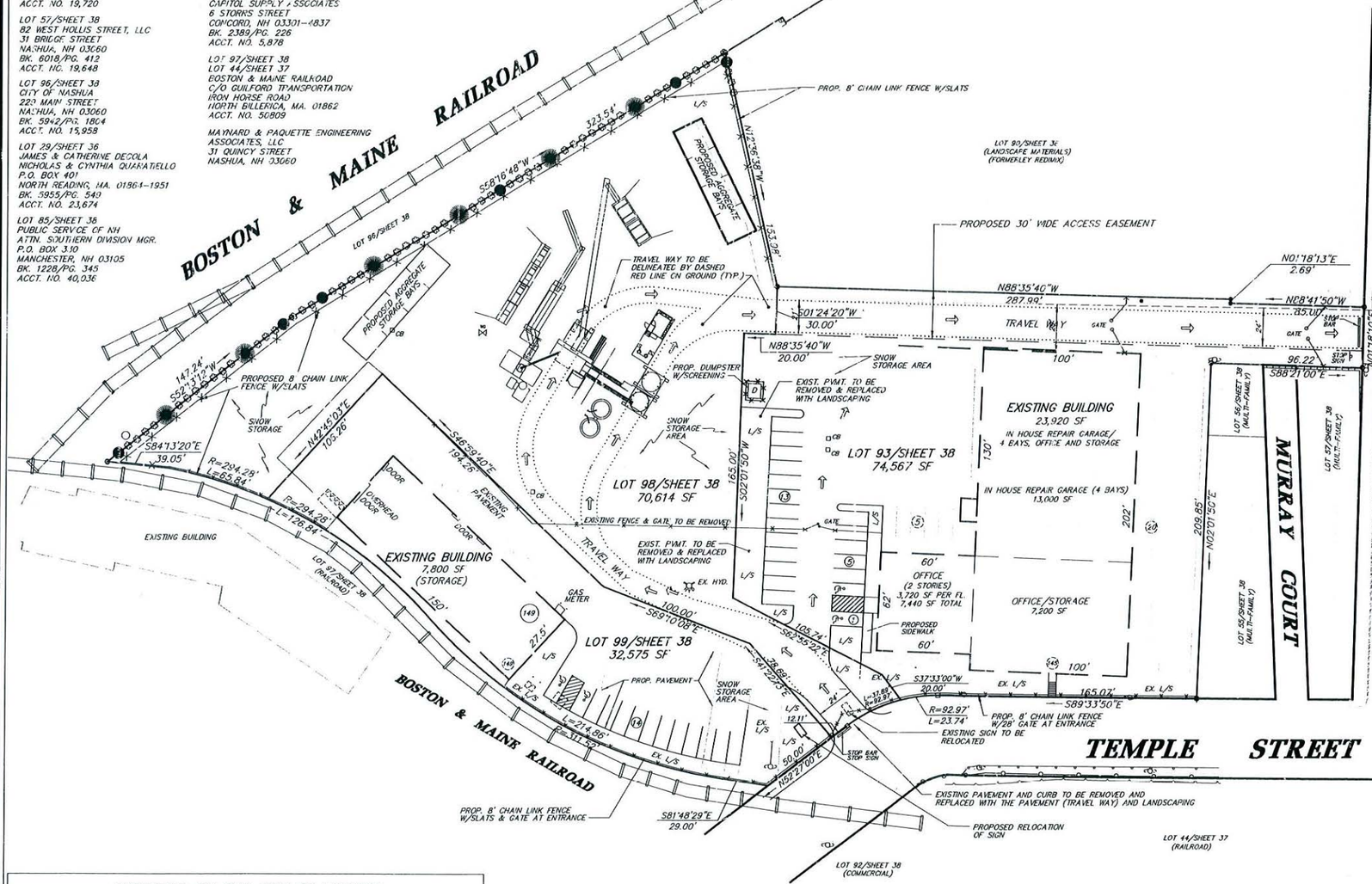
MAYNARD & PAQUETTE ENGINEERING
ASSOCIATES, LLC
31 QUINCY STREET
NASHUA, NH 03060

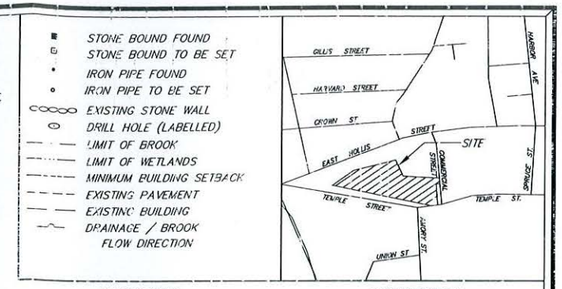
PLANT LIST

- (AR) ARBORVITAE – EMERALD GREEN, 5'-6'
- (RP) PJM RHODODRENRON – 5'-6'
- (DW) DOGWOOD/ORNAMENTAL SHADE TREES – 2" C
- (WS) WHITE SPRUCE – PLANTING SIZE 4'-6'

PLAN REFERENCES

1. SITE PLAN, 145 TEMPLE STREET, NASHUA, NH; FOR: G.V. MOORE LUMBER CO. & EMILE CHAGNON; BY: MAYNARD & PAQUETTE ENG. ASSOC., LLC; SCALE: 1"=40' DATED: NOVEMBER, 16, 2000, PLAN IS ON FILE AT THE CITY OF NASHUA PLANNING DEPT.





LEGEND VICINITY

NOTES:

1. PRESENT ZONING: "GI" / TOD
2. TOTAL LOT AREA: 70,614 SF
3. EXISTING USE: STORAGE AND FUTURE OFFICE
4. PROPOSED USE: ASPHALT MANUFACTURING
5. THE PURPOSE OF THIS PLAN IS TO AMEND PLAN NR1511 TO INDICATE THE PROPOSED USES FOR THE SITE AND TO SHOW THE PROPOSED ASPHALT MANUFACTURING STRUCTURES
6. DIMENSIONAL REQUIREMENTS:

GENERAL INDUSTRIAL – "GI"	TRANSIT ORIENTED DEV. – "TOD"
MINIMUM LOT AREA – 5,000 SF	MINIMUM LOT AREA – 5,000 SF
FRONT YARD SETBACK – 10 FEET	FRONT YARD SETBACK – 0 FEET
SIDE YARD SETBACK – 10 FEET	SIDE YARD SETBACK – 10 FEET
REAR YARD SETBACK – 15 FEET	REAR YARD SETBACK – 15 FEET
MIN. OPEN SPACE – 10% MIN. (PROP. 15%)	MIN. OPEN SPACE – 10% MIN. (PROP. 15%)
MIN. LOT WIDTH – 50 FEET	MIN. LOT WIDTH – 50 FEET
MIN. LOT DEPTH – 75 FEET	MIN. LOT DEPTH – 75 FEET
MIN. LOT FRONTAGE – 50 FEET	MIN. LOT FRONTAGE – 50 FEET

7. PARKING REQUIREMENTS: NO PARKING PROPOSED FOR THIS SITE.
   ASPHALT MANUFACTURING: 6,000+/– SF @ 1/1,500 SF = 4 SPACES
   PROPOSED PARKING: SEE PROPOSED & EXISTING PARKING (CROSS PARKING EASEMENT) ON ABUTTING SITE PLANS FOR 145 TEMPLE STREET AND 149 TEMPLE STREET.
8. LOT IS SERVICED BY MUNICIPAL SEWER AND PENNICHUCK WATER WORKS.
9. PLAN COMPLIES WITH MINIMUM REQUIREMENTS.
10. FUTURE BUILDING CONSTRUCTION SHALL INCORPORATE FOUNDATION DRAINAGE SYSTEMS EXCEPT WHERE AN INVESTIGATION ESTABLISHES THAT SPECIFIC BUILDING SITES ARE LOCATED IN WELL DRAINED SOILS AND THAT SUCH SYSTEMS ARE NOT REQUIRED. (NO FOUNDATION DRAINS)
11. THE CONTRACTOR SHALL BE RESPONSIBLE FOR VERIFYING AND DETERMINING THE LOCATION, SIZE AND ELEVATIONS OF ALL EXISTING UTILITIES SHOWN OR NOT SHOWN ON THIS PLAN PRIOR TO THE START OF ANY CONSTRUCTION. THE ENGINEER SHALL BE NOTIFIED IN WRITING OF ANY UTILITIES FOUND INTERFFRING WITH THE PROPOSED CONSTRUCTION, APPROPRIATE REMEDIAL ACTION SHALL BE TAKEN PRIOR TO PROCEEDING WITH THE WORK.
12. THE SITE IS LOCATED WITHIN ZONE X, OUTSIDE OF THE 0.2% ANNUAL CHANCE FLOOD PLAIN, PER F.I.R.M. COMMUNITY MAP NUMBER 33011C0514C, EFFECTIVE DATE: 4/18/2011.
13. FOR EXISTING AND PROPOSED ON-SITE/OFF-SITE FEATURES, SEE EXISTING CONDITIONS PLAN, SHEET 2.
14. UTILITIES INCLUDING ALL ELECTRIC, TELEPHONE, CABLE TELEVISION, AND OTHER COMMUNICATION LINES, BOTH MAIN AND SERVICE CONNECTIONS, SERVICING NEW DEVELOPMENTS SHALL BE PROVIDED BY OVERHARD WIRING, PER WAIVER REQUEST
15. STREET RESTORATION SHALL BE IN ACCORDANCE WITH CHAPTER 285 DIVISION 13 ARTICLE II OF THE CITY OF NASHUA ORDINANCES. ALL WORK WITHIN THE PUBLIC RIGHT-OF-WAY SHALL BE COMPLETED TO THE SATISFACTION OF THE DIVISION OF PUBLIC WORKS (NO NEW PUBLIC R.O.W.'S PROPOSED).
16. THERE ARE NO WETLANDS ON THE SITE.
17. PROPOSED CROSS ACCESS EASEMENTS AND CROSS PARKING EASEMENTS WILL BE RECORDED FOR THE PROPOSED CROSS AND EXISTING PARKING ON THIS LOT (LOT 98) AND LOT 93 AND LOT 99. NO PARKING PROPOSED ON THIS SITE.
18. ALL LANDSCAPING SHALL BE AS SHOWN ON THE PLAN AND CONFORM TO THE APPLICABLE CITY OF NASHUA ZONING REGULATIONS.
19. ALL SITE LIGHTING SHALL BE SHOWN ON THE PLAN, DIRECTED ONTO SITE AND CONFORM TO THE APPLICABLE CITY OF NASHUA ZONING REGULATIONS. NO NEW LIGHTING IS PROPOSED.
20. ALL SIGNAGE SHALL CONFORM TO APPLICABLE CITY OF NASHUA ZONING REGULATIONS WITH ALL PERMITS SECURED PRIOR TO INSTALLATION.
21. SITE IMPROVEMENTS DEPICTED ON THE PLAN SHALL CONFORM TO TITLE 111 OF THE AMERICANS WITH DISIBILITIES ACT WITH REGARD TO DIMENSIONS AND GRADE AND STIPULATIONS.
22. IT SHALL BE UNLAWFUL TO MODIFY, CHANGE, OR ALTER ANY STRUCTURE SHOWN ON THIS PLAN AN ANY WAY WHATSOEVER, OR CONVERT OR ALTER AND STRUCTURE SHOWN ON THIS SITE PLAN, OR CHANGE THE ABOVE USE INDICATED ON THE PLAN WITHOUT RECEIVING APPROVAL FROM THE CITY.
23. PRIOR TO ANY WORK BEING CONDUCTED A PRE-CONSTRUCTION CONFERENCE SHALL BE HELD WITH THE PLANNING STAFF AND OTHER CITY DEPARTMENTS AS NECESSARY TO REVIEW THE WORK PROPOSED.
24. HOURS OF OPERATION: 6AM TO 6PM, MONDAY – SATURDAY
25. THIS PORTION OF TEMPLE STREET IS IN THE STREET CUTTING MORITORIUM UNTIL SEPT. 8, 2023 UNLESS GRANTED PRIOR APPROVAL BY THE BOARD OF PUBLIC WORKS AND PER NRO 295-13 (G).
26. STREET OPENING PERMIT REQUIRED PRIOR TO ANY WORK IN RIGHT-OF-WAY.
27. PRIOR TO HOLDING A PRE-CONSTRUCTION MEEETING, A FINANCIAL GUARANTEE WILL BE POSTED FOR ANY WORK IN THE RIGHT-OF-WAY.

NO.	DATE	REVISION	BY
3	5-4-2022	REVISIONS PER ENGINEERING DEPT. MEMO DATED, APRIL 29, 2022	APB
2	4-4-2022	REVISED FENCE LOCATION AND ADDED LANDSCAPING ALONG REAR PROPERTY LINE	APB
1	2-10-2022	REVISIONS PER PLANNING DEPT. COMMENTS (1-18-2022)	APB

APPROVED BY THE CITY OF NASHUA
PLANNING BOARD

SECRETARY DATE

CHAIRMAN DATE

I, THE UNDERSIGNED, DO HEREBY AGREE TO PERFORM ALL THE SITE IMPROVEMENTS SHOWN ON THIS PLAN AND AS CONDITIONED OR STIPULATED BY THE CITY OF NASHUA PLANNING DEPARTMENT.

GREENRIDGE LLC 12-22-2021 DATE

I CERTIFY THAT THIS PLAN WAS PREPARED FROM BOUNDARY INFORMATION SHOWN ON PLAN REFERENCES 1 & 2 AND A FIELD SURVEY MADE ON THE GROUND IN NOVEMBER 2021 HAVING A MAXIMUM ERROR OF CLOSURE OF 1:10,000.

SITE PLAN LOT 98/SHEET 38

147 TEMPLE STREET
NASHUA, NEW HAMPSHIRE

PREPARED FOR:

APPLICANT:
GREENRIDGE LLC
145 TEMPLE STREET
NASHUA, NH 03060
PHONE NO.: 617-459-9775

OWNER:
145 TEMPLE STREET, LLC
145 TEMPLE STREET
NASHUA, NH 03060
PHONE NO.: 617-459-9775

80 40 20 0 40 80
SCALE: 1" = 40'

DATE: DECEMBER 13, 2021

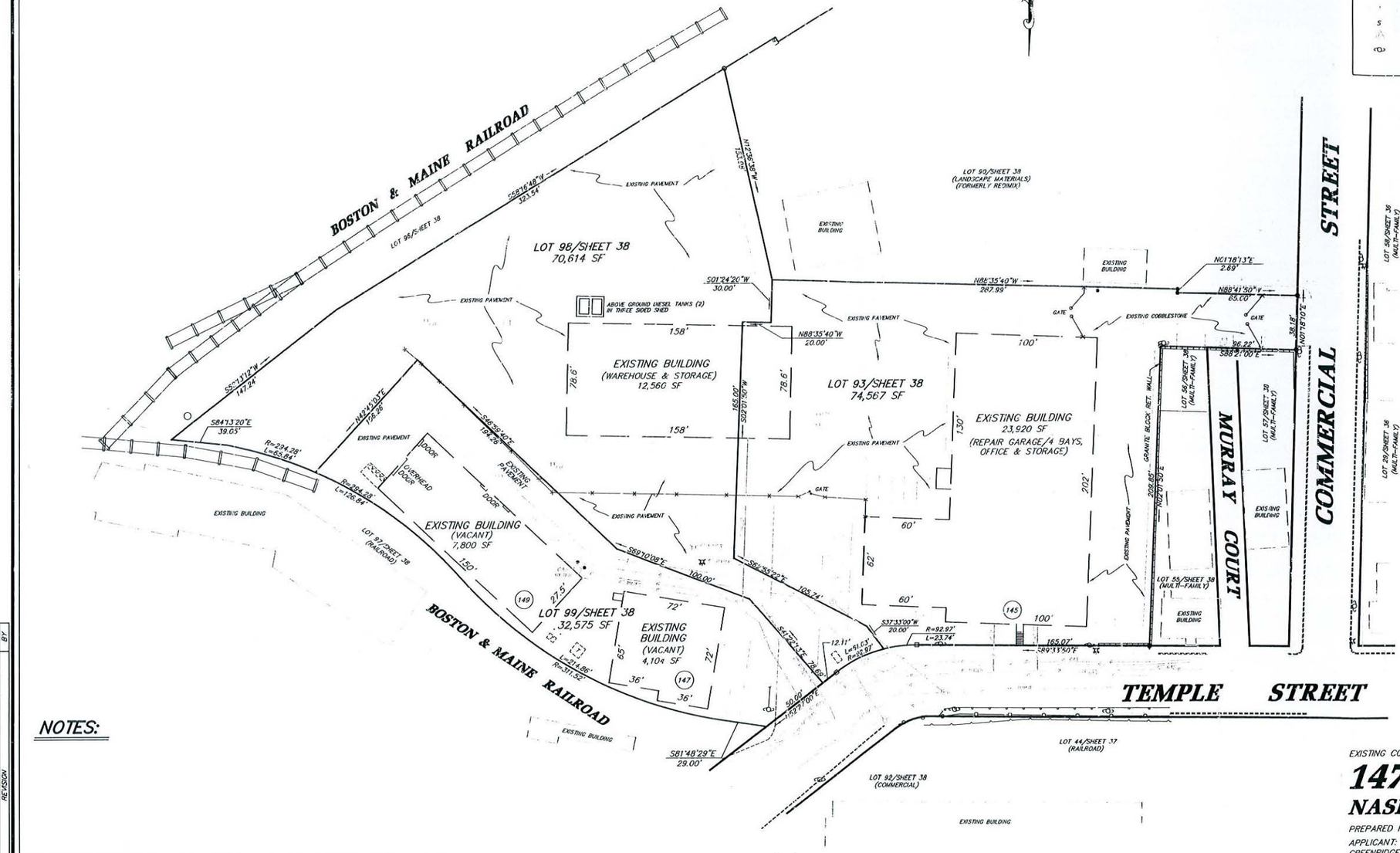
Maynard & Paquette Engineering Associates, LLC
Consulting Engineers and Land Surveyors
31 Quincy Street, Nashua, N.H. 03060
Phone: (603)883-8433 Fax: (603)883-7227

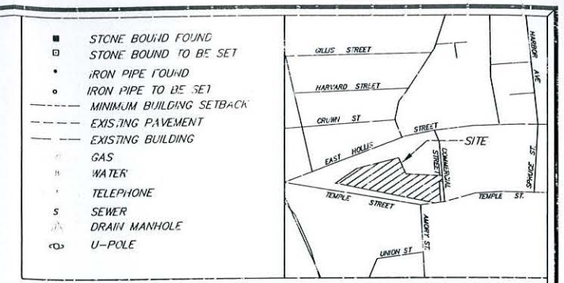
DESIGNED	DRAFTED	CHECKED	APPROVED	BOOK & PAGE	REVISION	SIZE	JOB NUMBER
KPM	APB					D	12725

DWG. NO. 1 OF 2

PLAN REFERENCES

1. SITE PLAN, 145 TEMPLE STREET, NASHUA, NH; FOR: G.V. MOORE LUMBER CO. & EMILE CHAGNON; BY: MAYNARD & PAQUETTE ENG. ASSOC., LLC; SCALE: 1"=40' DATED: NOVEMBER 16, 2000, PLAN IS ON FILE AT THE CITY OF NASHUA PLANNING DEPT.





LEGEND VICINITY

NOTES:

NO.	DATE	REVISION	BY
3	5-4-2022	NO CHANGES TO THIS SHEET	APB
2	4-4-2022	NO CHANGES TO THIS SHEET	APB
1	2-15-2022	REVISIONS PER PLANNING BOARD COMMENTS (1-18-2022)	APB

APPROVED BY THE CITY OF NASHUA
PLANNING BOARD

SECRETARY DATE

CHAIRMAN DATE

I CERTIFY THAT THIS PLAN WAS PREPARED FROM BOUNDARY INFORMATION SHOWN ON PLAN REFERENCES 1 & 2 AND A FIELD SURVEY MADE ON THE GROUND IN NOVEMBER 2021 HAVING A MAXIMUM ERROR OF CLOSURE OF 1:10,000.

EXISTING CONDITIONS PLAN LOT 98/SHEET 38

147 TEMPLE STREET
NASHUA, NEW HAMPSHIRE

PREPARED FOR:

APPLICANT:
GREENRIDGE LLC
145 TEMPLE STREET
NASHUA, NH 03060

OWNER:
145 TEMPLE STREET, LLC
145 TEMPLE STREET
NASHUA, NH 03060

80 40 20 0 40 80

SCALE: 1" = 40' DATE: DECEMBER 13, 2021

Maynard & Paquette Engineering Associates, LLC
Consulting Engineers and Land Surveyors
31 Quincy Street, Nashua, N.H. 03060
Phone: (603)883-8433 Fax: (603)883-7227

DESIGNED	DRAFTED	CHECKED	APPROVED	BOOK & PAGE	REVISION	SIZE	JOB NUMBER
KPM	APB					D	12725

DWG. NO. 2 OF 2

EQUIPMENT DESCRIPTION

CMI ROADBUILDING INC.

Newport Construction Corporation
145 Temple Street
Nashua, NH 03060

15th November 2022

Proposal no P222628

EQUIPMENT PROPOSAL

MAGNUM 300 STATIONARY 300 TPH COUNTERFLOW DRUM-MIX

SUMMARY DESCRIPTION

Item 1	Stationary five (5) compartment 532 aggregate feed unit
Item 2	Stationary aggregate weigh feed conveyor & scalping screen
Item 3	Stationary Magnum 300 counterflow drum-mix & burner
Item 4	Stationary RA220S Roto-Aire baghouse
Item 5	Stationary AC storage system
Item 6	Stationary 420 ton mixed material storage system
Item 7	Truck scale
Item 8	Stationary two (2) compartment 232 RAP feed unit
Item 9	Stationary RAP weigh feed conveyor & scalping screen
Item 10	Stationary control house/ motor control center & Impulse III
Item 11	Wiring
Item 12	Assistance to install and commission

TOTAL NET PRICE FCA POINT OF ORIGIN **$ 0,000,000.00**

CMI ROADBUILDING INC.
SUITE 225 THE PARKWAY
1300 S MERIDIAN AVE
OKLAHOMA CITY
OK 73108, U.S.A.
T: 1-800-994-1736
E: sales@cmi-roadbuilding.com

MOTOR POWER LIST

See attached

EXCLUSIONS

See appendix 1 attached

All prices quoted do not include any applicable taxes

PAYMENT TERMS

20% non-refundable down payment due with signed order required to activate the order.

Balance due when equipment is ready to ship

VALIDITY

Prices firm for 30 days from date of this quotation

TERMS OF SALE

See attached

MAGNUM 300

TECHNICAL DESCRIPTION

300 TPH STATIONARY COUNTERFLOW DRUM-MIX

PLANT CAPACITY

300 tons per hour based on a temperature of 300° F from drum-mix discharge. **Capable of up to 35% RAP.** Average moisture content of 5% and including 5% bitumen in the mix.

Assuming the following conditions: -

1) 100% Plant utilisation
2) Ambient temperature 70°F
3) Altitude at sea level
4) Average moisture content is for surface moisture only
5) Free-flowing filler, density 70 lb/ft³
6) Single sized aggregate with max. lump 1½ in, density 100 lb/ft³
7) Mix recipe with no excessive proportion of one size
8) Feed to contain a maximum of 20% minus #8 Sieve (0-0.093")
9) Fuel oil calorific value of 138,000 Btu/gallon
10) Gas calorific value of 1,040 Btu/ft³
11) Liquid propane calorific value of 91,044 Btu/gallon
12) Capacities include filler and bitumen
13) Aggregate is non-porous and not excessively flaky

1 STATIONARY FIVE (5) COMPARTMENT 532 AGGREGATE FEED UNIT

1.1 HOPPERS

Hoppers	-	**Five (5)** compartment steep sided hopper unit
Thickness	-	1/4"
Capacity	-	**45** ton heaped
Loading width	-	14'
Vibrators	-	Two (2) 0.75 hp fitted to bins #2 &#3
Guards	-	Removable guards installed on non-feed side and each end of hopper structure

1.2 BELT FEEDERS

Feeders	-	**Five (5)** variable speed
Capacity	-	300 tph (each)
Size	-	30" wide x 10' 2" centres
Gate	-	For manual adjustment and calibration
Belt	-	30" wide 3 ply with vulcanised joint
Idlers	-	20° troughed, bolted to steel section support frame
Head drum	-	Steel construction with rubber lagged face
Tail drum	-	Steel construction, self-cleaning
Drive	-	5 hp with AC variable frequency inverter to vary feeder output
Belt tensioning	-	Via tension bolts fitted to tail drum slide bearings
Starvation switches	-	Fitted to each feeder with indication on Impulse III control system in the event of no-flow

1.3 GATHERING CONVEYOR

Gathering conveyor	-	Mounted under feeders with curved head section to weigh feed conveyor scalping screen
Belt	-	36" wide 3 ply with vulcanised joint
Idlers	-	40 troughed bolted to steel section support frame

Head drum	-	Steel construction with rubber lagged face
Tail drum	-	Steel construction, self-cleaning
Drive	-	15 hp
Belt scraper	-	Belt scraper fitted at head drum
Belt tensioning	-	Via tension bolts fitted to tail drum slide bearings
Guards	-	To 7' above grade
Emergency grab wire	-	Fitted full length one side to 7' above grade

1.4 HOPPER DIVIDERS

Dividers	-	**Three (3) 2' steel extension dividers fitted between storage hoppers to prevent/ minimise contamination between aggregate hoppers**

1.5 BULKHEAD

Ramp bulkhead	-	**Full height steel bulkhead fitted on one side of feed unit to retain customer constructed loader ramp**
Ramp wings	-	**Used in conjunction with bulkhead assembly to retain loader ramp at each end**

1.6 SUPPORT STRUCTURE

Structure	-	Fully welded rolled steel construction, suitably braced including steel support legs with steel base plates to distribute load evenly across foundations

2 STATIONARY WEIGH FEED CONVEYOR & SCALPING SCREEN

7

2.1 SCALPING SCREEN

Size	-	4' wide x 10' long single deck
Screen mesh	-	The screen is supplied with a set of standard woven wire 2" screen meshes
Drive	-	5 hp

Screen under hopper	-	Mounted below screen to direct material onto the weigh feed conveyor

2.2 SUPPORT STRUCTURE

Structure	-	Fully welded rolled steel structure, suitably braced to support the scalping screen with steel base plates to distribute load evenly across foundations

2.3 AGGREGATE WEIGH FEED CONVEYOR

Weigh feed conveyor	-	Feeding sized aggregate material from scalping screen discharge to drum-mix slinger conveyor
Belt	-	36" wide 3 ply with vulcanised joint
Idlers	-	40° troughed bolted to steel section support frame
Weigh idler	-	Single idler belt scale to record material feed rate via Impulse III control system
Wind covers	-	Galvanised wind covers provided over belt weigh idler section for weather protection
Calibration	-	**Air actuated pre-load test weight mechanism mounted on weigh idler section to provide instant calibration of belt scale with readout displayed on Impulse III control system**
Head drum	-	Steel construction with rubber lagged face
Tail drum-	-	Steel construction, self-cleaning
Drive	-	15 hp
Belt scraper	-	Belt scraper fitted at head drum
Belt tensioning	-	Gravity take-up type
Receiving hopper	-	Conveyor fitted with feed hopper to receive material from scalping screen
Guards	-	To 7' above grade
Emergency grab wire	-	Fitted full length both sides to 7' above grade

2.4 SUPPORT STRUCTURE

Structure	-	Fully welded rolled steel construction, suitably braced support trestles with steel base plates to distribute load evenly across foundations

3 STATIONARY MAGNUM 300 COUNTERFLOW DRUM-MIX & BURNER

3.1 SLINGER CONVEYOR

Slinger conveyor	-	Mounted on chassis
Calibration	-	Slinger conveyor is reversible to facilitate calibration of the aggregate weigh feed conveyor belt scale
Belt	-	24" wide heat resistant belt with vulcanised joint
Idlers	-	20° troughed bolted to steel section support frame
Head drum	-	Steel construction with recessed flange bearings
Tail drum	-	Steel construction, self-cleaning
Drive	-	5 hp
Belt scraper	-	Belt scraper fitted at head drum
Belt scraper shield	-	Protective belt scraper shield fitted to front of scraper to provide an air gap to protect scraper from drum heat
Belt tensioning	-	Via tension bolts fitted to tail drum slide bearings
Access platform	-	Slinger access platform mounted on one side of the slinger conveyor with handrailing, kick strip and vertical access ladder

3.2 COUNTERFLOW DRUM-MIX

Magnum	-	Two zone; drying/mixing
Diameter	-	7' 4"
Overall Length	-	44'
Shell construction	-	3/8" A572 grade 50 alloy steel throughout
Liners	-	Liners fitted in critical wear areas

Lifter flights	-	Bolt-in replaceable 1/4" steel plate
Mixing flights	-	Bolt-in replaceable 1/4" A514B T-1A folded alloy steel plate
Exhaust breaching	-	Fabricated in 3/16" A36 plate suitably braced with access hatch and feed opening for slinger conveyor
Discharge breaching	-	Fabricated in 3/16" and 1/4" A36 plate suitably braced with burner inlet and discharge chute
RAP Inlet chute	-	Top entry RAP collar inlet chute located at the beginning of the RAP zone with 1/4" A514B T-1A alloy steel liner plate.
RAP by-pass	-	RAP collar inlet chute has pneumatically operated by-pass facility for calibration of the RAP feed material
Seals	-	High temperature flexible seals running on bands installed on shell contact surfaces for RAP collar and breach housing
Tires	-	Forged steel and machined on all faces supported on mounting blocks
Trunnion rollers	-	Four (4) machined steel 18" dia x 10" wide, running on shafts mounted in Pillow block bearings supported on the drum-mix chassis
Thrust rollers	-	12" dia x 2 thick mounted in pillow block bearings bolted to chassis
Insulation	-	**2" high-density mineral wool with steel cladding**
Drive	-	Four (4) 30 hp direct drive through each independent trunnion roller

3.3 DRUM MIX THERMOCOUPLE

Thermocouple	-	Shielded thermocouple mounted in drum discharge chute to record mix discharge temperature and display via Impulse III control system

3.4 DRUM-MIX INFRARED SENSOR

Infrared sensor	-	Mounted to drum-mix discharge chute (non-contact type) to measure and record mix discharge temperature via Impulse III control system

3.5 FINES INJECT AUGER

Inject auger	-	Installed through discharge breeching end of drum to return fines from bag house or mineral filler to drum mixing zone
Drive	-	5 hp

3.6 AC INJECTION

AC injection	-	Via fixed 3" A/C line adjacent to fines inject auger

3.7 BURNER

Type	-	WISPER JET-WJLE75 allows for the burning of gaseous fuels
Capacity	-	82.5 MMbtu/hr
Primary fuel	-	Natural gas
Turbo blower	-	75 hp
Sound attenuation	-	Combustion air blower silencer
Burner control	-	Via Impulse III control system which monitors drum material discharge temperature and regulates burner air/ fuel ratios to achieve preset discharge temperatures automatically
Ignition	-	Spark ignition electrode
Sub-freezing option	-	fitted to fuel train

3.8 BURNER ACCESS PLATFORM

Access platform	-	Burner access platform mounted on one side of the burner with handrailing, kick strip and vertical access ladder

3.9 COLD AIR BLEED DOOR

Bleed door	-	**Positioned in the drum exhaust breeching to allow quenching of exhaust gas temperature when producing open graded mixes via an electrically actuated bleed door**

3.10 SUPPORT STRUCTURE

Structure	-	Fully welded rolled steel construction, suitably braced with drum tapered steel wedge supports to facilitate correct drum angle on customer's supplied concrete plinths

4 STATIONARY RA220S ROTO-AIRE BAGHOUSE

4.1 PRIMARY DUST

First stage	-	Inertial dust collector
Discharge chute	-	Collected heavy fines from inertial dust collector are fed via horizontal auger and discharge chute to the primary return auger

4.2 PRIMARY RETURN AUGER

Auger	-	14" dia high lift auger transfers heavy fines from inertial collector discharge to the drum-mix RAP collar inlet chute
Drive	-	10 hp
Rotation sensor	-	Fitted to primary return auger for the monitoring of auger rotation sequenced with Impulse III control system
Support	-	Auger support stand

4.3 SECONDARY DUST

CAPACITY - 57,348 ACFM

4.4 SECOND STAGE

Second stage	-	Roto-Aire reverse air cleaning type bag filter
Filter medium	-	Aramid 14 oz/sq yd (720 bags)
Filter area	-	12,744 sq ft
Air to cloth ratio	-	4.5 : 1
Temperature	-	Maximum operating temperature 375°F
Particulate emission	-	Less than 0.04 gr/dscf provided the filter is maintained in accordance with our operating instructions

4.5 FILTER CABINET

Filter cabinet	-	Fabricated from 3/16" steel plate mounted on a trough hopper
Plenum plate	-	3/16" steel plate
Cabinet top access	-	Via vertical caged ladder with handrailing and kick strip mounted around top of filter cabinet

4.6 CLEANING

Cleaning mechanism	-	Roto Step reverse induced air mechanism. During cleaning sequence, the mechanism opens a small number of bags to atmosphere for a short duration, to allow the exhaust fan to induce a reverse flow of air for bag cleaning.
Drive	-	One (1) 0.75 hp

4.7 TROUGH HOPPER

Trough hopper	-	Fabricated in 3/16" steel plate
Hopper auger	-	12" dia auger delivers fines to first fines return auger
Drive	-	10 hp
Level indicator	-	High-level indicator with high-level alarm signal on Impulse III control system
Rotation sensor	-	Fitted to hopper auger for the monitoring of auger rotation sequenced with Impulse III control system

4.8 FAN UNIT

Fan unit	-	Backward inclined centrifugal
Drive	-	Two (2) 100 hp motors via v-belts
Exhaust stack	-	Fabricated in 3/16" steel plate with test sockets and height of 37'

4.9 DUCTING

Ducting	-	All interconnecting ducting included
Drum to knock out box	-	From drum exhaust breeching to knockout box inlet
Knock out box to filter	-	From knockout box outlet to baghouse inlet
Filter to exhaust fan	-	Transition to fan housing
Test point access	-	Via vertical caged ladder from filter cabinet top to exhaust stack platform with handrailing and kick strip to access stack test points

4.10 AIR VOLUME CONTROL

Inverter/ VFD	-	**200 hp inverter automatically varies air volume through plant via a transducer monitoring drum pressure**
Indication	-	**Inverter speed and drum pressure controlled via impulse III control system**

4.11 BAG PROTECTION

Bag protection	-	Two (2) temperature probes fitted in the ducting prior to the baghouse to protect bags from high gas temperatures
Indication	-	Vacuum gauge provided to indicate pressure drop across the bag filter and control the filter cleaning system

4.12 SLAM DAMPER

Damper assembly	-	Pneumatically operated damper assembly positioned in main ducting prior to the primary dust inlet
High temperature	-	Isolation damper blades automatically close when activated by temperature (probe 1) with high temperature alarm on Impulse III control system
Burner shut-off	-	Temperature (probe 2) acts as a back-up to (probe 1) and in the event that high temperature is still recorded, will shut off the burner automatically sequenced with the Impulse III control system

4.13 SUPPORT STRUCTURE

Structure	-	Fully welded rolled steel construction suitably braced to support the filter and exhaust fan unit with steel base plates to distribute load evenly across foundations

4.14 FIRST FINES RETURN AUGER

Return auger	-	14" dia auger transfers fines from baghouse auger outlet to second fines return auger
Drive	-	10 hp

Rotation sensor	-	Fitted to first fines return auger for the monitoring of auger rotation sequenced with Impulse III control system
Support	-	Auger support stand

4.15 SECOND FINES RETURN AUGER

Return auger	-	14" dia auger transfers fines from second fines return auger discharge to drum-mix fines inject auger
Drive	-	10 hp
Rotation sensor	-	Fitted to second fines return auger for the monitoring of auger rotation sequenced with Impulse III control system
Support	-	Auger support stand

5 STATIONARY VERTICAL AC STORAGE SYSTEM

5.1 VERTICAL THERMAL OIL HEATED TANKS

Tanks	-	Two (2) vertical
Capacity	-	30,000 gallon
Tank body	-	11' 5" diameter cylindrical section single compartment shell fabricated from 1/4" and 5/16" S275 (A570 Grade 40) plate, all welded construction
Fill inlet	-	3" flanged
Supply outlet	-	3" flanged
Return inlet	-	3" flanged
Drain outlet	-	4" flanged
Top vent	-	4" flanged
Vent/overflow	-	4" vent/overflow pipe mounted inside the tank
Heating tubes	-	2" Internal thermal oil heating heat coil with hot oil supply from an external heat exchange unit

Temperature control	-	Indicating type temperature control with drywell socket wired to thermal oil solenoid
Visual contents gauge	-	Mechanical contents gauge mounted on vertical tank side for visual identification of tank contents and level
Limit switch	-	High limit switch operated via the mechanical contents gauge
Contents gauge	-	Pressure transmitter with digital display
High level switch	-	Sends warning signal to local alarm
Manholes	-	Two (2) 24" dia bolted manholes
Tank roof access	-	Via vertical caged ladders with intermediate staged platform and spring release safety gate to top of tank
Tank roof	-	Fitted with handrailing and kick strip around circumference to provide safe access on tank roof
Tank base	-	Rolled steel section construction designed to distribute ground load on customer foundation

5.2 INSULATION & CLADDING

Cylinder	-	6" high density mineral wool
Tank roof	-	6" high density mineral wool
Tank base	-	6" high density mineral wool
Cladding	-	Stucco embossed aluminium cladding

5.3 ASPHALT PROPORTIONING

Variable speed pump	-	3" Viking jacketed pump with A/C variable frequency drive, strainer and Micro Motion mass flow meter. Calibration valve, sample valve and positive flow switch are included
Pump capacity	-	200 GPM
Drive	-	15 hp

5.4 AC SUPPLY SYSTEM

Unload pump	-	3" positive displacement pump with thermal oil jacket and pressure relief valve. Pump mounted on chassis frame and connected to 3" fill inlet via jacketed pipework and flex line jumpers
Pump capacity	-	200 GPM
Drive	-	15 hp
Valve	-	3" Three (3) way valve for supply, return and unloading pump

5.5 PIPEWORK & VALVES

Pipework and valves	-	3" jacketed piping between metering pump and drum, along with pump supply and return piping with plug and 3-way valve to connect primary with future AC storage tanks

5.6 HEAT EXCHANGE UNIT

Heat exchanger	-	1,840,050 Btu/hr (464,000 Kcal/hr) heat exchange unit, mono-tubular, efficiency up to 90%
Chamber	-	Insulated heat chamber with galvanised steel cladding
Insulation	-	4" on shell and 6" on ends
Burner	-	Fully automatic gas oil burner, fuel viscosity 200 SSU @ 100 F
Drive	-	1.5 hp
Circulation pump	-	Centrifugal pump with mechanical seal
Pump capacity	-	175 GPM
Drive	-	7.5 hp
Expansion tank	-	150 gallon with level gauge and shutoff
Heat Transfer Fluid	-	145 gallons required

Tank outlet	-	Outlet flange at the lowest point to facilitate cleaning
Exhaust stack	-	Hinged for shipping, including rain cap

5.7 CONTROLS

Control panel	-	Unit mounted, fully enclosed weatherproof control panel, 460v, 60 Hz, 3 phase and neutral. Complete with mains isolator, contactors and overloads
Controls	-	Fully automatic controls incorporating: - Starters for oil pump and burner Flame failure burner control High limit cut-off 7 day timer
Safety control	-	Thermostatically controlled high oil temperature cut-off, pump pressure switch to avoid over heating if circulation fails and pump timer to stop circulation if burner fails

6 STATIONARY 420 TON MIXED MATERIAL STORAGE SYSTEM

6.1 MAIN DRAG SLAT CONVEYOR

Conveyor	-	36" wide x 48" deep x 83' long
Capacity	-	350 tph
Slats	-	Hard surfaced bolt on slats mounted on chain attachments with full welded bolts
Chain	-	Dual, 5" heavy-duty steel roller chains with hardened rollers and pins with heat treated side bars
Head shaft	-	Steel shaft with segmented split hub sprockets.
Tail shaft	-	Steel shaft with split sprockets.

Chain tensioning	-	By two (2) hydraulic cylinders either side of head shaft. Complete with calibration indicator on each side to assist with keeping the head shafts parallel
Drive	-	Chain drive from helical foot mounted reducer unit driven by a 100 hp motor
Idler rollers	-	16" dia drag chain idler rollers mounted in sliding bearing assemblies with shock absorbing adjustable stops
Casing	-	Fabricated in steel plate with 11/16" chrome carbide steel floor plate
Side wear liners	-	Abrasion resistant steel liners fitted to each side of the casing
Tail boot	-	Curved chrome carbide steel self-cleaning tail boot to minimise mixed material build-up
Chop Gate	-	Pneumatically operated chop gate located in conveyor floor with discharge chute for reject material
Covers	-	Hinged top covers for ease of inspection and maintenance
Drag slat heating	-	Via frame mounted thermal oil pipework fitted to the underside of the drag slat floor plate
Rotation sensor	-	Fitted to drag slat conveyor tail shaft for the monitoring of conveyor rotation, sequenced with Impulse III control system
Access walkway	-	Galvanized steel walkway along each side of drag slat conveyor up to the silo top with outer handrailing and kick strip with bottom access stairways
Head access	-	Via galvanized vertical cage ladder from silo top to drag slat head section platform with handrailing and kick strip to access drive components and chain adjustment

6.2 TWO (2) BIN TOP DRAG SLAT CONVEYORS

Conveyor	-	Two (2) 36" wide x 30" deep x 14' long
Capacity	-	Up to 350 tph
Slat	-	Hard surfaced corner bolt on slats mounted on chain attachments with full welded bolts
Chain	-	Dual, 4" heavy-duty steel roller chains with hardened rollers and pins with heat treated side bars
Head shaft	-	Steel shaft with split hub sprockets
Tail shaft	-	Steel shaft with one-piece sprockets
Chain tensioning	-	Via tension bolts fitted to head shaft slide bearing
Drive	-	Chain drive from 30 hp motor on helical foot mounted reducer unit
Idler rollers	-	10 3/4" dia drag chain idler rollers mounted in sliding bearing assemblies with shock absorbing adjustable stops
Casing	-	Fabricated in steel plate with 11/16" chrome carbide steel floor plate
Side wear liners	-	Abrasion resistant wear liners fitted to each side of the casing
Covers	-	Removable top covers for ease of inspection and maintenance
Rotation sensor	-	Fitted to drag slat conveyor tail shaft for the monitoring of conveyor rotation, sequenced with Impulse III control system

6.3 DIVERT FLOP GATE

Flop gate	-	Pneumatically operated chrome carbide flop gate positioned in bin top drag slat tail section to select designated silo batcher
Limit switches	-	Two (2) limit switches to prove position of flop gate, sequenced with Impulse III control system

6.4 THREE (3) MIXED MATERIAL BATCHERS

Batcher assembly	-	Three (3) bolt on batcher design encloses silo top and batcher providing blue smoke control and upper main silo seal.
Cone assembly	-	Cone fabricated from 1/4" T1-A abrasion resistant steel with 1/4" T1-A alloy steel liner
Batch control	-	Preset batch size for automatic mixed material batching into storage silo
Ultimate limit	-	Independent ultimate limit switch sequenced with Impulse III control system
Batcher discharge	-	Direct into storage silo via two (2) pneumatically operated radial doors

6.5 THREE (3) MIXED MATERIAL STORAGE SILOS (140 Ton each silo)

Storage silos	-	Three (3) insulated storage silos fabricated from 3/8", 5/16" & 1/4" steel plate
Diameter	-	11' 11 1/4"
Capacity	-	420 tons based on a density of 120 lbs cu ft
Silo top	-	Manufactured from floor plate to provide access maintenance deck and walkway between storage silo tops, with galvanised handrailing and kick strip
Silo insulation	-	15" high density mineral wool fitted under storage silo top deck and 5" high density mineral wool on silo sides with sheet metal cladding
Silo inlet	-	Via pneumatically operated, insulated sliding silo inlet door
Door limit switch	-	Limit switch fitted to prove open position of silo inlet door, sequenced with Impulse III control system
Door grease seals	-	Silo inlet door is sealed via 360° grease seal system
Silo outlet cone	-	Fabricated from 1/4" A36 steel with 1/4" T1-A alloy steel liner

Cone heating	-	Via thermal oil pipework mounted vertically around the circumference of the cone, thermostatically controlled via solenoid valve
Discharge doors	-	Pneumatically operated, insulated dual clamshell discharge doors
Door heating	-	Discharge doors heated via electrical heating elements thermostatically controlled
Silo level indication	-	Two (2) independent rods mounted in the storage silo to record high and low-level via limit switches mounted on silo top, with high level alarm signal sequenced with Impulse III control system and low-level indication
Silo base structure	-	Manufactured from heavy duty I-beam welded to storage silo with bolted end plates to receive silo support legs

6.6 SILO SUPPORT LEGS

Support legs	-	Manufactured from heavy duty I-beam, suitably braced with bolted end plates to silo base structure with steel base plates to distribute load on customer supplied concrete plinths
Access clearance	-	Support legs provide a vertical clearance of 13' 4" mounted on customer supplied concrete plinths to facilitate surface mounted truck scale with horizontal clearance of 13'

6.7 AUXILIARY THERMAL OIL BOOSTER PUMP

Booster pump	-	Additional thermal oil circulating booster pump to maintain pressure and flow to the main drag slat conveyor and silo cone heating
Drive	-	5 hp

6.8 COMPRESSOR & PNEUMATICS

Compressor	-	25 hp with 120-gallon receiver
Pneumatics	-	Solenoid valves, nylon pipework and fittings
Air receiver	-	Independent air receiver with check valve mounted on silo structure to provide local air reservoir to storage silos

7 TRUCK SCALE

Model	-	Steel deck truck scale
Deck size	-	120' long x 10' wide x 15-3/4" tall
Capacity	-	300,000 lbs design load capacity, dual tandem axle capacity 90,000 lbs
Construction	-	Modular open longitudinal ribbed orthotropic design with maximum deflection rating of 1/1100th of span
Suspension	-	Rocker pin suspension with bumper style checking allowing platform to move freely to accommodate vehicle movements
Load cells	-	66,000 lbs stainless steel rocker column NEMA 6P rated hermetically sealed load cells
Controls and display	-	Flash series instruments with digital technology converts analog loadcell signal to digital; load cells connected to smart sectional controllers which allow each loadcell to be multiplexed individually
	-	IND-2500 indicator
	-	Standard features include full graphic display, alphanumeric LCD, LED backlit display, desktop mounted

8 STATIONARY TWO (2) COMPARTMENT 232 RAP FEED UNIT

8.1 HOPPERS

Hoppers	-	Two (2) compartment steep sided hopper unit
Thickness	-	1/4"
Capacity	-	32 ton heaped
Loading width	-	14'
Vibrators	-	Two (2) 0.75 hp (one per hopper)
Hopper grids	-	Two (2) (one per hopper) fitted to top openings to prevent oversize material entering the hoppers
Pneumatic cannon	-	Blockage breaking system fitted on hopper with timers and controls
Guards	-	Removable guards installed on non-feed side and each end of hopper structure to 7' above grade

8.2 RAP BELT FEEDERS

Feeders	-	Two (2) variable speed
Capacity	-	300 tph
Size	-	30" wide x 10' 2" centres
Gate	-	For manual adjustment and calibration
Belt	-	30" wide, 3 ply with vulcanised joint
Idlers	-	20° troughed bolted to steel section support frame
Head drum	-	Steel construction with rubber lagged face
Tail drum	-	Steel construction, self-cleaning
Belt tensioning	-	Via tension bolts fitted to tail drum slide bearings
Drive	-	5 hp with AC variable frequency inverter to vary feeder output
Starvation switch	-	Fitted to feeder with indication on Impulse III control system in the event of no-flow

8.3 RAP GATHERING CONVEYOR

Gathering conveyor	-	Mounted under feeders with curved head section to RAP weigh feed conveyor scalping screen
Belt	-	36" wide, 3 ply with vulcanised joint
Idlers	-	40° troughed bolted to steel section support frame
Head drum	-	Steel construction with rubber lagged face
Tail drum	-	Steel construction, self-cleaning
Belt tensioning	-	Via tension bolts fitted to tail drum slide bearings
Drive	-	15 hp
Belt scraper	-	Belt scraper fitted at head drum
Covers	-	Dust/weather shielding forming roof and both sides belt protection, manufactured from galvanised sheeting to facilitate removal of side protection by one operative for maintenance purposes
Guards	-	To 7' above grade
Emergency grab wire	-	Fitted full length on one side

8.4 SUPPORT STRUCTURE

Structure	-	Fully welded rolled steel construction, suitably braced including steel support legs with steel base plates to distribute load evenly across foundations

9 STATIONARY RAP WEIGH FEED CONVEYOR & SCALPING SCREEN

9.1 RAP SCALPING SCREEN

Size	-	4' wide x 10' long single deck
Screen mesh	-	The screen is supplied with a set of standard woven wire 1" screen meshes
Drive	-	5 hp
Screen under hopper	-	Mounted into the support structure below screen to direct material onto the RAP weigh feed conveyor

9.2 SUPPORT STRUCTURE

Structure	-	Fully welded rolled steel construction, suitably braced to support the RAP scalping screen with steel base plates to distribute load evenly across foundations

9.3 RAP WEIGH FEED CONVEYOR

Weigh feed conveyor	-	Feeding sized RAP material from the RAP scalping screen to drum-mix RAP collar inlet chute
Belt	-	36" wide 3 ply with vulcanised joint
Idlers	-	40° troughed bolted to steel section support frame
Weigh idler	-	Single idler belt scale to record material feed rate via Impulse III control system
Wind covers	-	Galvanised wind covers provided over belt weigh idler section for weather protection
Head drum	-	Steel construction with rubber lagged face
Tail drum-	-	Steel construction, self-cleaning
Drive	-	15 hp
Belt scraper	-	Belt scraper fitted at head drum
Belt tensioning	-	Gravity take-up type
Receiving hopper	-	Conveyor fitted with feed hopper to receive material from scalping screen
Guards	-	To 7' above grade
Emergency grab wire	-	Fitted full length on one side

9.4 SUPPORT STRUCTURE

Structure	-	Fully welded rolled steel construction, suitably braced support trestles with steel base plates to distribute load evenly across foundations

10 STATIONARY CONTROL HOUSE/ MCC & IMPULSE III

10.1 CONTROL HOUSE/ MCC

Size	-	32' long x 12' wide
Base frame	-	Constructed from rolled steel section
Construction	-	Steel panels fitted between rolled steel sections with plastic coated exterior finish
Roof	-	Sheet steel construction insulated with 6" encapsulated rockfibre
Floor	-	Wooden floor with steel bracings, covered with heavy-duty rubber floor tiles, insulated with 4" rockfibre slab, foil faced both sides
Walls	-	Clad internally with decorative boarding, insulated with 2" rockfibre slab, foil faced both sides
Room divider	-	Internal partition clad internally with decorative boarding, insulated with 2" rockfibre slab, foil faced both sides with internal door between control section and motor control section
Windows	-	Three sides double-glazed, operators end of control house
Ticket window	-	Double sliding, glazed window on one side to allow manual issuing of tickets
Lighting	-	Overhead LED panel lights fitted per room
Night lighting	-	**Red light fitted in control house for night operation**
HVAC	-	Two (2) zonal heating and air conditioning units, one (1) per room
Power	-	Eight (8) quad socket outlets and five (5) double socket outlets
External doors	-	Via Two (2) steel access doors, one (1) per room
Access	-	Via galvanized stairway and platform with handrailing and kick strip

10.2 MOTOR CONTROLS (Located in MCC room)

Motor panel	-	With main line disconnect, transformer and all switchgear interconnect wiring to control console
Contactors	-	Combination circuit breakers/contactors
Standards	-	UL and CSA approved

10.3 NIGHT GENERATOR CHANGE OVER ISOLATOR SWITCH

Change over switch	-	**Change over isolator switch fitted in motor control panel to allow for the use of an auxiliary night generator for plant heating etc inclusive of a 250A breaker.**

10.4 IMPULSE III CONTROL & MANAGEMENT SYSTEM

Control system - User friendly Plant Control and Management SCADA control system on Windows operating system consisting of the following: -

Industrial Fanless Intel i5 4 core Embedded Computer (minimum spec) running Windows 10 IoT with SATA III SSD. Vibration and temperature tolerant from -4 to 158F (-20 to 70C)
Two (2) high resolution 24" widescreen DisplayPort monitors allow for control functions to be operated by optical mouse and keyboard while simultaneously displaying plant operations on second screen.

Battery back-up for uninterruptible power supply (UPS) to protect the PC from power spikes etc.

Rockwell Compact Logix software and licenses
Impulse III software

Fully integrated Burner control
Rockwell Compact Logix PLC racks with processor and I/O cards
Laser printer
Interconnecting communication cables
Impulse III PLC uses PID (Proportional-Integral-Derivative) process control of the material drives to ensure continual accuracy of the blend during a mix.

Characteristics - Features of Impulse III include

- Step by step calibration of all metering parameters
- Diagnostic trouble shooting screens
- Ethernet communications between PC, PLC and VFD motor controllers
- Automatic proportioning of all materials
- Automatic sequence start up and shut down
- Motor start / stop for manual control of motors
- Safety interlocks
- Automatic burner control
- Automatic bag house cleaning and airflow control
- Automatic mix changes in process
- Automatic divert mix to another silo when changing mixes
- Plant graphics color display with user friendly animation
- Display real time status and values of plant operation
- Pre-configured to match actual plant configuration
- Plant operator virtual training in simulation

- Remote diagnostics and updates via the web
- Spoken Alarms announced in English with comprehensive alarm logging

10.5 JWS LOADOUT SYSTEM

Weigh Loadout - JWS silo load out PC based control system comprising of:

Standard tower PC Windows 7 professional, 3.2 ghz processor, (1) x 22" flat monitor, AC I/O enclosure, input and output couplers, screw type terminal connections and interface with MicroController module.

Cardinal 205 digital weight indicator.

Model 1182 DWI interface module

OKI Microline 320 turbo printer system

Software - A highly configurable design allowing producer to add fields, layout printing of delivery tickets, add or modify reports, create database fields, and simple upgrade.

Open database architecture provides seamless integration with virtually any office application

11 WIRING

SOOW electric cabling provided, suitable for plant layout with terminal connections to motor control center.

Internet connection is required on delivery of plant to site.

Plant control via I/O panels mounted on plant.

JWS initial site set up and annual service contract by customer.

12 ASSISTANCE TO INSTALL AND COMMISSION

We include for the services of a skilled mechanical/electrical engineer to assist with the installation and commissioning for a maximum four (4) weeks stay, including return airfare.

Customer to provide all skilled and unskilled site labour, cranage and hand tools together with accommodation, meals, and local transport for our engineer.

Customer to provide employer liability insurance for labour they supply.

STEELWORK

All welds to be cleaned as necessary, steelwork to be wire brushed and generally cleaned of all mill scale etc before painting.

PAINTING

All external surfaces are painted with one-coat single pack zinc phosphate primer, followed by a high build semi-gloss topcoat enamel finish.

Drum, discharge, and exhaust breaching painted with black, matte finish high-temperature resistant paint.

Plant to be painted **CMI White (Cream to pattern)**

Drag salt to be painted **Black**

All stairways, platforms and handrailing to be **galvanised**

All guards to be **safety yellow**

All plastic coated steel sheeting to be **Goosewing grey**

VOLTAGE

460 Volt, 3 phase, 60 Hz

MANUALS

We include for two complete sets of operators and maintenance instruction manuals and illustrated spare parts manuals.

Magnum 300 Stationary Drum-Mix Plant Motor List

Item	Quantity	Motor		Starter	hp	Total hp
1.	4	Feeder motors		Inverter	5	20
2.	2	Vibrators DOL		0.75	1.5	
3.	1	Gathering conveyor		DOL	15	15
4.	1	Scalping screen		DOL	5	5
5.	1	weigh feed conveyor		DOL	15	15
6.	1	Slinger conveyor		DOL fwd/rev	5	5
7.	4	Drum-mix Soft start		30	120	
8.	1	Fines inject auger		DOL	5	5
9.	1	Burner blower		Inverter	100	100
10.	1	Fuel pump DOL		1.5	1.5	
11.	1	Primary return auger		DOL	10	10
12.	1	Roto-Step DOL		0.75	0.75	
13.	1	Trough hopper auger		DOL	10	10
14.	2	Exhaust fan		Inverter	100	200
15.	2	Fines return augers		DOL	10	20
16.	1	Asphalt proportioning		Inverter	15	15
17.	1	AC unload pump		DOL Fwd/rev	15	15
18.	1	Heat exchanger		DOL	1.5	1.5
19.	1	Circulating pump		DOL	7.5	7.5
20.	1	Drag slat	Fwd/rev	100	100	
21.	2	Bin top drag slat conveyor	DOL	30	60	
22.	1	Auxiliary pump		DOL	5	5
23.	1	Compressor		DOL	25	25
24.	2	RAP vibrators		DOL	0.75	1.5
25.	2	RAP feeders		DOL	5	10
26.	1	RAP conveyor		DOL	15	15
27.	1	RAP scalping screen		DOL	5	5
28.	1	RAP feed conveyor		DOL	15	15

Total 804.25 hp

HEATING/OTHER SUPPLIES

29. 1	Cabin supply	1 ph + N	18	18
30. 2	HVAC 1 ph + N	3	6	
31. 2	Silo door heaters	1 ph + N	2	24

Total 48 kW

APPENDIX 1

REQUIREMENTS TO BE PROVIDED BY THE BUYER
NOT INCLUDED IN THIS PROPOSAL

1. **All state or local engineering approvals, certificates as may be required.**
2. **Any applicable taxes, duties, etc.**
3. **All freight from point of origin.**
4. **Necessary permits for EPA, erection, and all others necessary for the operation of the plant.**
5. **Site preparation, foundation design, footings, anchor bolts and/or necessary blocking to provide support for individual components.**
6. **Foundations, piers and all necessary ground works**
7. **Footings, installation, certification and calibration for truck scale, if required.**
8. **Electrical service and hook up to control center.**
9. **External main electrical disconnect (if required).**
10. **Aggregate hopper grids**
11. **AC tank agitators and liquid additive system**
12. **Mineral filler storage system**
13. **Fuel storage tank and piping (unless otherwise stated in this proposal).**
14. **Gas supply for burner pilot.**
15. **JWS site set up and service contract**
16. **All air piping from air compressor(s).**
17. **All lubricants, heat transfer oil and hydraulic oil as required.**
18. **All water pump piping - suction and pressure.**
19. **Asphalt piping as required, (unless otherwise stated in this proposal).**
20. **All equipment and labor necessary for the proper erection of the plant. Proper sizing of lifting equipment is purchaser's responsibility.**
21. **Mechanical and electrical installation and commissioning.**
22. **Additional requirements necessary to make the equipment operable and not specifically stated in this proposal are the responsibility of the buyer.**

NOTE: THE PERFORMANCE OF THE EQUIPMENT COVERED IN THIS PROPOSAL CANNOT BE EXACTLY PREDICTED FOR EVERY OPERATING CONDITION. IN CONSEQUENCE, ANY PREDICTED PERFORMANCE DATA SUBMITTED ARE INTENDED TO SHOW PROBABLE OPERATING RESULTS WHICH MAY BE CLOSELY APPROXIMATED, BUT WHICH CANNOT BE GUARANTEED

ABUTTERS:

LOT 93/SHEET 38
145 TEMPLE STREET, LLC
145 TEMPLE STREET
NASHUA, NH 03060
BK. 9139/PG. 2121
ACCT. NO. 6,500

LOT 90/SHEET 38
16 COMMERCIAL ST. REALTY, LLC
15 1/2 MAIN STREET
NASHUA, NH 03060
BK. 9059/PG. 130
ACCT. NO. 26,272

LOTS 55 & 56/SHEET 38
LEO M. LORRAINE J. LAVOIE
193 EAST HOLLIS STREET
NASHUA, NH 03060
BK. 8406/PG. 827
ACCT. NO. 19,720

LOT 57/SHEET 38
82 WEST HOLLIS STREET, LLC
31 BRIDGE STREET
NASHUA, NH 03060
BK. 6018/PG. 412
ACCT. NO. 19,648

LOT 96/SHEET 38
CITY OF NASHUA
229 MAIN STREET
NASHUA, NH 03060
BK. 5942/PG. 1804
ACCT. NO. 15,956

LOT 29/SHEET 36
JAMES & CATHERINE DECOLA
NICHOLAS & CYNTHIA QUARATIELLO
P.O. BOX 401
NORTH READING, MA. 01864-1951
BK. 5955/PG. 549
ACCT. NO. 23,674

LOT 85/SHEET 38
PUBLIC SERVICE OF NH
ATTN. SOUTHERN DIVISION MGR.
P.O. BOX 330
MANCHESTER, NH 03105
BK. 1228/PG. 345
ACCT. NO. 40,036

LOT 58/SHEET 36
2-4 SHEDDS AVENUE REALTY, LLC
339 MAIN STREET
NASHUA, NH 03060
BK. 9437/PG. 2472
ACCT. NO. 37,264

LOT 89/SHEET 38
RICHARD A. DEFELICE
151 TEMPLE STREET
NASHUA, NH 03060
BK. 8632/PG. 2599
ACCT. NO. 2,396

LOT 33/SHEET 39
ZUEV PROPERTIES, LLC
300 GAY STREET
MANCHESTER, NH 03103
BK. 9134/PG. 920
ACCT. NO. 7,842

LOT 92/SHEET 38
CAPITOL SUPPLY ASSOCIATES
6 STORRS STREET
CONCORD, NH 03301-4837
BK. 2381/PG. 226
ACCT. NO. 5,878

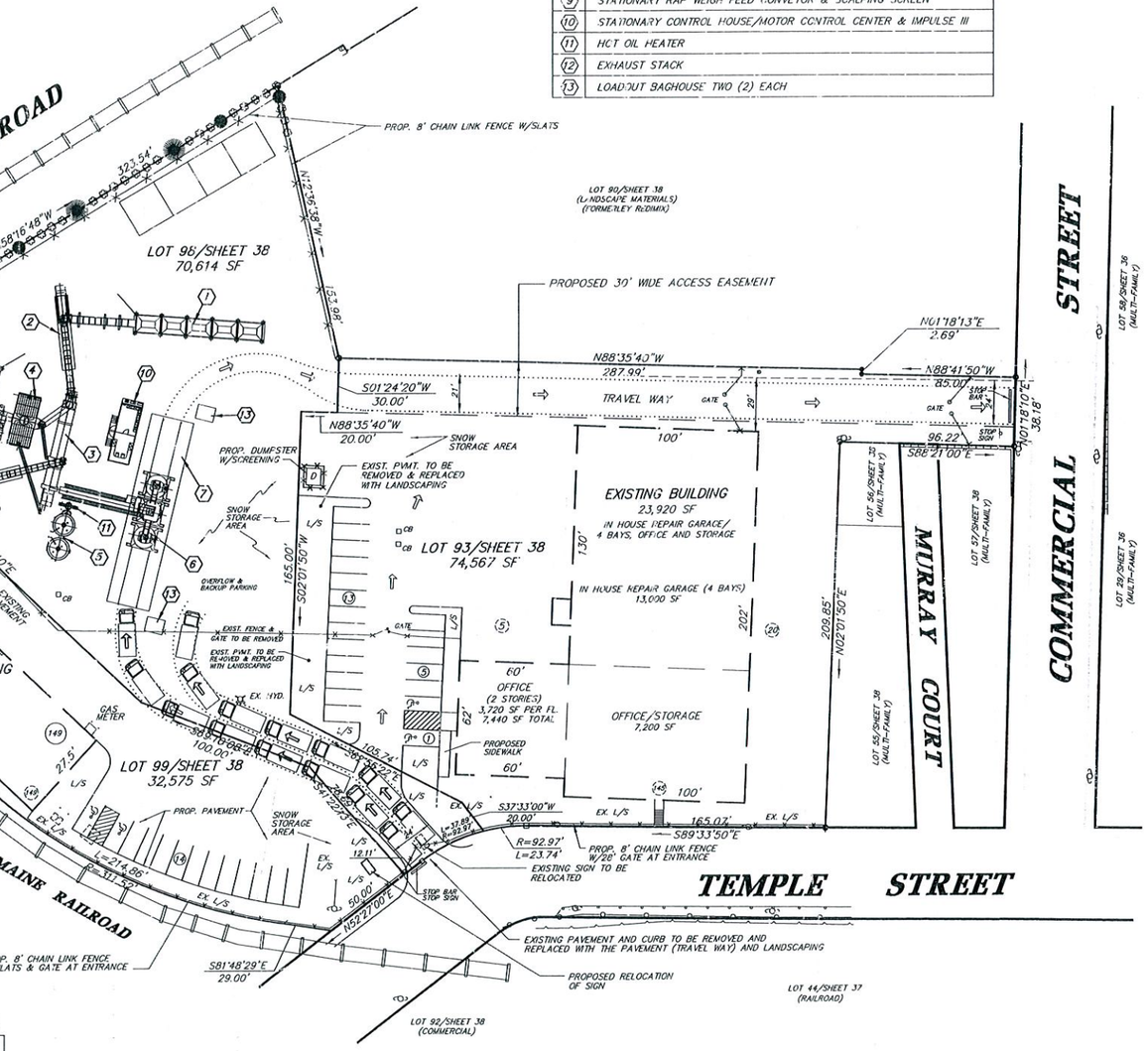
LOT 97/SHEET 38
LOT 14/SHEET 37
BOSTON & MAINE RAILROAD
C/O GUILFORD TRANSPORTATION
IRON HORSE ROAD
NORTH BILLERICA, MA. 01862
ACCT. NO. 50809

MAYNARD & PAQUETTE ENGINEERING
ASSOCIATES, LLC
31 QUINCY STREET
NASHUA, NH 03060

PLANT LIST

- (AR) ARBORVITAL – EMERALD GREEN, 5'-6'
- (RP) PJM RHODODENRON – 5'-6'
- (DW) DOGWOOD/ORNAMENTAL SHADE TREES – 2" C
- (WS) WHITE SPRUCE – PLANTING SIZE 4'-6'

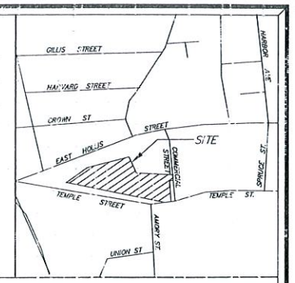
NO.	DESCRIPTION
1	STATIONARY FIVE (5) COMPARTMENT 532 AGGREGATE FEED UNIT
2	STATIONARY AGGREGATE WEIGH FEED CONVEYOR & SCALPING SCREEN
3	STATIONARY MAGNUM 300 COUNTERFLOW DRUM-MIX & BURNER
4	STATIONARY RA220S ROTO-AIRE BAGHOUSE
5	STATIONARY AC STORAGE SYSTEM
6	STATIONARY 420TON MIXED MATERIAL STORAGE SYSTEM
7	TRUCK SCALE
8	STATIONARY TWO (2) COMPARTMENT 232 RAP FEED UNIT
9	STATIONARY RAP WEIGH FEED CONVEYOR & SCALPING SCREEN
10	STATIONARY CONTROL HOUSE/MOTOR CONTROL CENTER & IMPULSE III
11	HOT OIL HEATER
12	EXHAUST STACK
13	LOADOUT BAGHOUSE TWO (2) EACH



LEGEND

- STONE BOUND FOUND
- STONE BOUND TO BE SET
- IRON PIPE FOUND
- IRON PIPE TO BE SET
- EXISTING STONE WALL
- DRILL HOLE (LABELLED)
- LIMIT OF BROOK
- LIMIT OF WETLANDS
- MINIMUM BUILDING SETBACK
- EXISTING PAVEMENT
- EXISTING BUILDING
- DRAINAGE / BROOK FLOW DIRECTION

VICINITY



NOTES:

1. PRESENT ZONING: "GI" / TOD
2. TOTAL LOT AREA: 70,614 SF
3. EXISTING USE: STORAGE AND FUTURE OFFICE
4. PROPOSED USE: ASPHALT MANUFACTURING
5. THE PURPOSE OF THIS PLAN IS TO AMEND PLAN NR15:11 TO INDICATE THE PROPOSED USES FOR THE SITE AND TO SHOW THE PROPOSED ASPHALT MANUFACTURING STRUCTURES.
6. DIMENSIONAL REQUIREMENTS:

GENERAL INDUSTRIAL – "GI"	TRANSIT ORIENTED DEV. – "TOD"
MINIMUM LOT AREA – 5,000 SF	MINIMUM LOT AREA – 5,000 SF
FRONT YARD SETBACK – 10 FEET	FRONT YARD SETBACK – 0 FEET
SIDE YARD SETBACK – 10 FEET	SIDE YARD SETBACK – 10 FEET
REAR YARD SETBACK – 15 FEET	REAR YARD SETBACK – 15 FEET
MIN. OPEN SPACE – 10% MIN. (PROP. 15%)	MIN. OPEN SPACE – 10% MIN. (PROP. 15%)
MIN. LOT WIDTH – 50 FEET	MIN. LOT WIDTH – 50 FEET
MIN. LOT DEPTH – 75 FEET	MIN. LOT DEPTH – 75 FEET
MIN. LOT FRONTAGE – 50 FEET	MIN. LOT FRONTAGE – 50 FEET

7. PARKING REQUIREMENTS: NO PARKING PROPOSED FOR THIS SITE
   ASPHALT MANUFACTURING: 6,000+/– SF @ 1/1,500 SF = 4 SPACES
   PROPOSED PARKING: SEE PROPOSED & EXISTING PARKING (CROSS PARKING EASEMENT) ON ABUTTING SITE PLANS FOR 145 TEMPLE STREET AND 149 TEMPLE STREET.
8. LOT IS SERVICED BY MUNICIPAL SEWER AND PENNICHUCK WATER WORKS.
9. PLAN COMPLIES WITH MINIMUM REQUIREMENTS.
10. FUTURE BUILDING CONSTRUCTION SHALL INCORPORATE FOUNDATION DRAINAGE SYSTEMS EXCEPT WHERE AN INVESTIGATION ESTABLISHES THAT SPECIFIC BUILDING SITES ARE LOCATED IN WELL DRAINED SOILS AND THAT SUCH SYSTEMS ARE NOT REQUIRED. (NO FOUNDATION DRAINS)
11. THE CONTRACTOR SHALL BE RESPONSIBLE FOR VERIFYING AND DETERMINING THE LOCATION, SIZE AND ELEVATIONS OF ALL EXISTING UTILITIES SHOWN OR NOT SHOWN ON THIS PLAN PRIOR TO THE START OF ANY CONSTRUCTION. THE ENGINEER SHALL BE NOTIFIED IN WRITING OF ANY UTILITIES FOUND INTERFERING WITH THE PROPOSED CONSTRUCTION. APPROPRIATE REMEDIAL ACTON SHALL BE TAKEN PRIOR TO PROCEEDING WITH THE WORK.
12. THE SITE IS LOCATED WITHIN ZONE X, OUTSIDE OF THE 0.2% ANNUAL CHANCE FLOOD PLAIN, PER F.I.R.M. COMMUNITY MAP NUMBER 33011C0514E, EFFECTIVE DATE: 4/18/2011.
13. FOR EXISTING AND PROPOSED ON-SITE/OFF-SITE FEATURES, SEE EXISTING CONDITIONS PLAN, SHEET 2.
14. UTILITIES INCLUDING ALL ELECTRIC, TELEPHONE, CABLE TELEVISION, AND OTHER COMMUNICATION LINES, BOTH MAIN AND SERVICE CONNECTIONS, SERVICING NEW DEVELOPMENTS SHALL BE PROVIDED BY OVERHARD WIRING, PER WAIVER REQUEST.
15. STREET RESTORATION SHALL BE IN ACCORDANCE WITH CHAPTER 285 DIVISION 13 ARTICLE II OF THE CITY OF NASHUA ORDINANCES. ALL WORK WITHIN THE PUBLIC RIGHT-OF-WAY SHALL BE COMPLETED TO THE SATISFACTION OF THE DIVISION OF PUBLIC WORKS (NO NEW PUBLIC R.O.W.'S PROPOSED).
16. THERE ARE NO WETLANDS ON THE SITE.
17. PROPOSED CROSS ACCESS EASEMENTS AND CROSS PARKING EASEMENTS WILL BE RECORDED FOR THE PROPOSED CROSS AND EXISTING PARKING ON THIS LOT (LOT 98) AND LOT 93 AND LOT 99. NO PARKING PROPOSED ON THIS SITE.
18. ALL LANDSCAPING SHALL BE AS SHOWN ON THE PLAN AND CONFORM TO THE APPLICABLE CITY OF NASHUA ZONING REGULATIONS.
19. ALL SITE LIGHTING SHALL BE SHOWN ON THE PLAN, DIRECTED ONTO SITE AND CONFORM TO THE APPLICABLE CITY OF NASHUA ZONING REGULATIONS. NO NEW LIGHTING IS PROPOSED.
20. ALL SIGNAGE SHALL CONFORM TO APPLICABLE CITY OF NASHUA ZONING REGULATIONS WITH ALL PERMITS SECURED PRIOR TO INSTALLATION.
21. SITE IMPROVEMENTS DEPICTED ON THE PLAN SHALL CONFORM TO TITLE III OF THE AMERICANS WITH DISIBILITIES ACT WITH REGARD TO DIMENSIONS AND GRADE AND STIPULATIONS.
22. IT SHALL BE UNLAWFUL TO MODIFY, CHANGE, OR ALTER ANY STRUCTURE SHOWN ON THIS PLAN AN ANY WAY WHATSOEVER, OR CONVERT OR ALTER AND STRUCTURE SHOWN ON THIS SITE PLAN, OR CHANGE THE ABOVE USE INDICATED ON THE PLAN WITHOUT RECEIVING APPROVAL FROM THE CITY.
23. PRIOR TO ANY WORK BEING CONDUCTED A PRE-CONSTRUCTION CONFERENCE SHALL BE HELD WITH THE PLANNING STAFF AND OTHER CITY DEPARTMENTS AS NECESSARY TO REVIEW THE WORK PROPOSED.
24. HOURS OF OPERATION: 6AM TO 6PM, MONDAY – SATURDAY
25. THIS PORTION OF TEMPLE STREET IS IN THE STREET CUTTING MORITORIUM UNTIL SEPT. 8, 2023 UNLESS GRANTED PRIOR APPROVAL BY THE BOARD OF PUBLIC WORKS AND PER NRO 285-13 (C).
26. STREET OPENING PERMIT REQUIRED PRIOR TO ANY WORK IN RIGHT-OF-WAY.
27. PRIOR TO HOLDING A PRE-CONSTRUCTION MEETING, A FINANCIAL GUARANTEE WILL BE POSTED FOR ANY WORK IN THE RIGHT-OF-WAY.

PLAN REFERENCES

1. SITE PLAN, 145 TEMPLE STREET, NASHUA, NH; FOR: G.V. MOORE LUMBER CO. & EMILE CHAGNON; BY: MAYNARD & PAQUETTE ENG. ASSOC., LLC; SCALE: 1"=40' DATED: NOVEMBER, 16, 2000, PLAN IS ON FILE AT THE CITY OF NASHUA PLANNING DEPT.

APPROVED BY THE CITY OF NASHUA
PLANNING BOARD

SECRETARY _____ DATE _____

CHAIRMAN _____ DATE _____

I, THE UNDERSIGNED, DO HEREBY AGREE TO PERFORM ALL THE SITE IMPROVEMENTS SHOWN ON THIS PLAN AND AS CONDITIONED OR STIPULATED BY THE CITY OF NASHUA PLANNING DEPARTMENT.

GREENRIDGE LLC _____ 12-22-2021 DATE

I CERTIFY THAT THIS PLAN WAS PREPARED FROM BOUNDARY INFORMATION SHOWN ON PLAN REFERENCES 1 & 2 AND A FIELD SURVEY MADE ON THE GROUND IN NOVEMBER 2021 HAVING A MAXIMUM ERROR OF CLOSURE OF 1:10,000.

NO.	DATE	REVISION	BY
6	1-26-2023	REVISED – ADDED DUBLE STACKING, LABELED STRUCTURES AND ADDED KEY	APB
5	12-15-2022	REVISED TO DRUM MIXER LAYOUT AND ADDED PARKING SPACES	APB
4	9-21-2022	ADDED THIRD SILO	APB
3	5-4-2022	REVISIONS PER ENGINEERING DEPT. MEMO DATED APRIL 29, 2022	APB
2	4-4-2022	REVISED FENCE LOCATION AND ADDED LANDSCAPING ALONG REAR PROPERTY LINE	APB
1	2-10-2022	REVISIONS PER PLANNING DEPT. COMMENTS (1-18-2022)	APB

SITE PLAN — LOT 98/SHEET 38

147 TEMPLE STREET

NASHUA, NEW HAMPSHIRE

PREPARED FOR:

APPLICANT:
GREENRIDGE LLC
145 TEMPLE STREET
NASHUA, NH 03060
PHONE NO.: 617-459-9775

OWNER:
145 TEMPLE STREET, LLC
145 TEMPLE STREET
NASHUA, NH 03060
PHONE NO.: 617-459-9775

80 40 20 0 40 80

SCALE: 1" = 40' DATE: DECEMBER 13, 2021

Maynard & Paquette Engineering Associates, LLC
Consulting Engineers and Land Surveyors
31 Quincy Street, Nashua, N.H. 03060
Phone: (603)883-8433 Fax: (603)883-7227

DESIGNED	DRAFTED	CHECKED	APPROVED	BOOK & PAGE	REVISION	SIZE	JOB NUMBER
KPM	APB					D	12725

DWG. NO. 1 OF 2

UNRESTRICTED/UNCONTROLLED POTENTIAL EMISSION CALCULATIONS

Emission factors for NOx, CO, VOC,PM10, SO2, and HAPs were taken from the latest version of AP-42, Section 11.1 Hot Mix Asphalt Plants (3/04).
Based on unrestricted operation of 24 hours/day or operation for 365 days/year (8760 hours/year).

UNIT NO. 1 - DRUM MIX PLANT	Primary Fuel	Back-up fuel	Maximum
Fuel	Natural gas	No. 2 oil	
Sulfur Content	nil	0.0015 %	
Burner Rating	82.5 MMBTU/hour	82.5 MMBTU/hour	
Maximum Fuel Firing Rate	80,882 cuft/hr	589 Gal/Hr	
Higher Heating Value	1,020 BTU/scf	140,000 BTU/gallon	
Production (Tons/Hour)	300 TPH	300 TPH	
Annual Production (Tons/Year)	2,628,000 TPY	2,628,000 TPY	2,628,000
Nitrogen Oxides (NO_x)			
Emission Factor	0.026 Lbs/ton	0.055 Lbs/ton	
x Hourly production rate =	7.8 lbs/hour	16.5 lbs/hour	16.50
x Annual Production/2000 =	34.16 TPY	72.27 TPY	72.27
Sulfur Dioxide (SO_2)			
Emission Factor	0.0034 Lbs/ton	0.011 Lbs/ton	
x Hourly production rate =	1.0 lbs/hour	3.3 lbs/hour	3.30
x Annual Production/2000 =	4.47 TPY	14.45 TPY	14.45
Carbon Monoxide (CO)			
Emission Factor	0.13 Lbs/ton	0.13 Lbs/ton	
x Hourly production rate =	39.0 lbs/hour	39.0 lbs/hour	39.00
x Annual Production/2000 =	170.8 TPY	170.8 TPY	170.82
Volatile Organic Compounds (VOC)			
Emission Factor	0.032 Lbs/ton	0.032 Lbs/ton	
x Hourly production rate =	9.6 lbs/hour	9.6 lbs/hour	9.60
x Annual Production/2000 =	42.05 TPY	42.05 TPY	42.05
Particulate Matter (PM10)			
Emission Factor	0.023 Lbs/ton	0.023 Lbs/ton	
x Hourly production rate =	6.9 lbs/hour	6.9 lbs/hour	6.90
x Annual Production/2000 =	30.22 TPY	30.22 TPY	30.22
Asphalt fumes			
Emission Factor	0.012 Lbs/ton	0.012 Lbs/ton	
x Hourly production rate =	3.6 lbs/hour	3.6 lbs/hour	3.60
x Annual Production/2000 =	15.77 TPY	15.77 TPY	15.77
HAPs			
Non-PAH HAPs			
Benzene (E.F.)	3.90E-04 lbs/ton	3.90E-04 lbs/ton	
x Hourly production rate =	1.17E-01 lbs/hour	1.17E-01 lbs/hour	1.17E-01
x Annual Production / 2000 =	5.12E-01 TPY	5.12E-01 TPY	5.12E-01
Ethylbenzene (E.F.)	2.40E-04 lbs/ton	2.40E-04 lbs/ton	
x Hourly production rate =	7.20E-02 lbs/hour	7.20E-02 lbs/hour	7.20E-02
x Annual Production / 2000 =	3.15E-01 TPY	3.15E-01 TPY	3.15E-01
Formaldehyde (E.F.)	3.10E-03 lbs/ton	3.10E-03 lbs/ton	
x Hourly production rate =	9.30E-01 lbs/hour	9.30E-01 lbs/hour	9.30E-01
x Annual Production / 2000 =	4.07E+00 TPY	4.07E+00 TPY	4.07E+00
Hexane (E.F.)	9.20E-04 lbs/ton	9.20E-04 lbs/ton	
x Hourly production rate =	2.76E-01 lbs/hour	2.76E-01 lbs/hour	2.76E-01
x Annual Production / 2000 =	1.21E+00 TPY	1.21E+00 TPY	1.21E+00
Isooctane (2,2,4-trimethylpentane) (E.F.)	4.00E-05 lbs/ton	4.00E-05 lbs/ton	
x Hourly production rate =	1.20E-02 lbs/hour	1.20E-02 lbs/hour	1.20E-02
x Annual Production / 2000 =	5.26E-02 TPY	5.26E-02 TPY	5.26E-02
Methyl chloroform (E.F.)	4.80E-05 lbs/ton	4.80E-05 lbs/ton	
x Hourly production rate =	1.44E-02 lbs/hour	1.44E-02 lbs/hour	1.44E-02
x Annual Production / 2000 =	6.31E-02 TPY	6.31E-02 TPY	6.31E-02
Toluene (E.F.)	1.50E-04 lbs/ton	2.90E-03 lbs/ton	
x Hourly production rate =	4.50E-02 lbs/hour	8.70E-01 lbs/hour	8.70E-01
x Annual Production / 2000 =	1.97E-01 TPY	3.81E+00 TPY	3.81E+00

Xylene (E.F.)	2.00E-04	lbs/ton	2.00E-04	lbs/ton	
x Hourly production rate =	6.00E-02	lbs/hour	6.00E-02	lbs/hour	6.00E-02
x Annual Production / 2000 =	2.63E-01	TPY	2.63E-01	TPY	2.63E-01
PAH HAPs					
2-Methylnaphthalene (E.F.)	7.40E-05	lbs/ton	1.70E-04	lbs/ton	
x Hourly production rate =	2.22E-02	lbs/hour	5.10E-02	lbs/hour	5.10E-02
x Annual Production / 2000 =	9.72E-02	TPY	2.23E-01	TPY	2.23E-01
Acenaphthene (E.F.)	1.40E-06	lbs/ton	1.40E-06	lbs/ton	
x Hourly production rate =	4.20E-04	lbs/hour	4.20E-04	lbs/hour	4.20E-04
x Annual Production / 2000 =	1.84E-03	TPY	1.84E-03	TPY	1.84E-03
Acenaphthylene (E.F.)	8.60E-06	lbs/ton	2.20E-05	lbs/ton	
x Hourly production rate =	2.58E-03	lbs/hour	6.60E-03	lbs/hour	6.60E-03
x Annual Production / 2000 =	1.13E-02	TPY	2.89E-02	TPY	2.89E-02
Anthracene (E.F.)	2.20E-07	lbs/ton	3.10E-06	lbs/ton	
x Hourly production rate =	6.60E-05	lbs/hour	9.30E-04	lbs/hour	9.30E-04
x Annual Production / 2000 =	2.89E-04	TPY	4.07E-03	TPY	4.07E-03
Benzo(a)anthracene (E.F.)	2.10E-07	lbs/ton	2.10E-07	lbs/ton	
x Hourly production rate =	6.30E-05	lbs/hour	6.30E-05	lbs/hour	6.30E-05
x Annual Production / 2000 =	2.76E-04	TPY	2.76E-04	TPY	2.76E-04
Benzo(a)pyrene (E.F.)	9.80E-09	lbs/ton	9.80E-09	lbs/ton	
x Hourly production rate =	2.94E-06	lbs/hour	2.94E-06	lbs/hour	2.94E-06
x Annual Production / 2000 =	1.29E-05	TPY	1.29E-05	TPY	1.29E-05
Benzo(b)fluoranthene (E.F.)	1.00E-07	lbs/ton	1.00E-07	lbs/ton	
x Hourly production rate =	3.00E-05	lbs/hour	3.00E-05	lbs/hour	3.00E-05
x Annual Production / 2000 =	1.31E-04	TPY	1.31E-04	TPY	1.31E-04
Benzo(e)pyrene (E.F.)	1.10E-07	lbs/ton	1.10E-07	lbs/ton	
x Hourly production rate =	3.30E-05	lbs/hour	3.30E-05	lbs/hour	3.30E-05
x Annual Production / 2000 =	1.45E-04	TPY	1.45E-04	TPY	1.45E-04
Benzo(g,h,i)perylene (E.F.)	4.00E-08	lbs/ton	4.00E-08	lbs/ton	
x Hourly production rate =	1.20E-05	lbs/hour	1.20E-05	lbs/hour	1.20E-05
x Annual Production / 2000 =	5.26E-05	TPY	5.26E-05	TPY	5.26E-05
Benzo(k)fluoranthene (E.F.)	4.10E-08	lbs/ton	4.10E-08	lbs/ton	
x Hourly production rate =	1.23E-05	lbs/hour	1.23E-05	lbs/hour	1.23E-05
x Annual Production / 2000 =	5.39E-05	TPY	5.39E-05	TPY	5.39E-05
Chrysene (E.F.)	1.80E-07	lbs/ton	1.80E-07	lbs/ton	
x Hourly production rate =	5.40E-05	lbs/hour	5.40E-05	lbs/hour	5.40E-05
x Annual Production / 2000 =	2.37E-04	TPY	2.37E-04	TPY	2.37E-04
Fluoranthene (E.F.)	6.10E-07	lbs/ton	6.10E-07	lbs/ton	
x Hourly production rate =	1.83E-04	lbs/hour	1.83E-04	lbs/hour	1.83E-04
x Annual Production / 2000 =	8.02E-04	TPY	8.02E-04	TPY	8.02E-04
Fluorene (E.F.)	3.80E-06	lbs/ton	1.10E-05	lbs/ton	
x Hourly production rate =	1.14E-03	lbs/hour	3.30E-03	lbs/hour	3.30E-03
x Annual Production / 2000 =	4.99E-03	TPY	1.45E-02	TPY	1.45E-02
Indeno(1,2,3-cd)pyrene (E.F.)	7.00E-09	lbs/ton	7.00E-09	lbs/ton	
x Hourly production rate =	2.10E-06	lbs/hour	2.10E-06	lbs/hour	2.10E-06
x Annual Production / 2000 =	9.20E-06	TPY	9.20E-06	TPY	9.20E-06
Naphthalene (E.F.)	9.00E-05	lbs/ton	6.50E-04	lbs/ton	
x Hourly production rate =	2.70E-02	lbs/hour	1.95E-01	lbs/hour	1.95E-01
x Annual Production / 2000 =	1.18E-01	TPY	8.54E-01	TPY	8.54E-01
Perylene (E.F.)	8.80E-09	lbs/ton	8.80E-09	lbs/ton	
x Hourly production rate =	2.64E-06	lbs/hour	2.64E-06	lbs/hour	2.64E-06
x Annual Production / 2000 =	1.16E-05	TPY	1.16E-05	TPY	1.16E-05
Phenanthrene (E.F.)	7.60E-06	lbs/ton	2.30E-05	lbs/ton	
x Hourly production rate =	2.28E-03	lbs/hour	6.90E-03	lbs/hour	6.90E-03
x Annual Production / 2000 =	9.99E-03	TPY	3.02E-02	TPY	3.02E-02

Pyrene (E.F.)	5.40E-07	lbs/ton	3.00E-06	lbs/ton	
x Hourly production rate =	1.62E-04	lbs/hour	9.00E-04	lbs/hour	9.00E-04
x Annual Production / 2000 =	7.10E-04	TPY	3.94E-03	TPY	3.94E-03
Dioxins					
Total TCDD (E.F.)	NA		9.30E-13	lbs/ton	
x Hourly production rate =			2.79E-10	lbs/hour	2.79E-10
x Annual Production / 2000 =			1.22E-09	TPY	1.22E-09
Total PeCDD (E.F.)	NA		2.20E-11	lbs/ton	
x Hourly production rate =			6.60E-09	lbs/hour	6.60E-09
x Annual Production / 2000 =			2.89E-08	TPY	2.89E-08
Total HxCDD (E.F.)	NA		1.20E-11	lbs/ton	
x Hourly production rate =			3.60E-09	lbs/hour	3.60E-09
x Annual Production / 2000 =			1.58E-08	TPY	1.58E-08
Total HpCDD (E.F.)	NA		1.90E-11	lbs/ton	
x Hourly production rate =			5.70E-09	lbs/hour	5.70E-09
x Annual Production / 2000 =			2.50E-08	TPY	2.50E-08
Total PCDD (E.F.)	NA		7.90E-11	lbs/ton	
x Hourly production rate =			2.37E-08	lbs/hour	2.37E-08
x Annual Production / 2000 =			1.04E-07	TPY	1.04E-07
Furans	NA				
Total TCDF (E.F.)			3.70E-12	lbs/ton	
x Hourly production rate =			1.11E-09	lbs/hour	1.11E-09
x Annual Production / 2000 =			4.86E-09	TPY	4.86E-09
Total PeCDF (E.F.)	NA		8.40E-11	lbs/ton	
x Hourly production rate =			2.52E-08	lbs/hour	2.52E-08
x Annual Production / 2000 =			1.10E-07	TPY	1.10E-07
Total HxCDF (E.F.)	NA		1.30E-11	lbs/ton	
x Hourly production rate =			3.90E-09	lbs/hour	3.90E-09
x Annual Production / 2000 =			1.71E-08	TPY	1.71E-08
Total HpCDF (E.F.)	NA		1.00E-11	lbs/ton	
x Hourly production rate =			3.00E-09	lbs/hour	3.00E-09
x Annual Production / 2000 =			1.31E-08	TPY	1.31E-08
Total PCDD/PCDF (E.F.)	NA		1.20E-10	lbs/ton	
x Hourly production rate =			3.60E-08	lbs/hour	3.60E-08
x Annual Production / 2000 =			1.58E-07	TPY	1.58E-07
METALS					
Antimony (E.F.)	1.80E-07	lbs/ton	1.80E-07	lbs/ton	
x Hourly production rate =	5.40E-05	lbs/hour	5.40E-05	lbs/hour	5.40E-05
x Annual Production / 2000 =	2.37E-04	TPY	2.37E-04	TPY	2.37E-04
Arsenic (E.F.)	5.60E-07	lbs/ton	5.60E-07	lbs/ton	
x Hourly production rate =	1.68E-04	lbs/hour	1.68E-04	lbs/hour	1.68E-04
x Annual Production / 2000 =	7.36E-04	TPY	7.36E-04	TPY	7.36E-04
Beryllium (E.F.)	0.00E+00	lbs/ton	0.00E+00	lbs/ton	
x Hourly production rate =	0.00E+00	lbs/hour	0.00E+00	lbs/hour	0.00E+00
x Annual Production / 2000 =	0.00E+00	TPY	0.00E+00	TPY	0.00E+00
Cadmium (E.F.)	4.10E-07	lbs/ton	4.10E-07	lbs/ton	
x Hourly production rate =	1.23E-04	lbs/hour	1.23E-04	lbs/hour	1.23E-04
x Annual Production / 2000 =	5.39E-04	TPY	5.39E-04	TPY	5.39E-04
Chromium (E.F.)	5.50E-06	lbs/ton	5.50E-06	lbs/ton	
x Hourly production rate =	1.65E-03	lbs/hour	1.65E-03	lbs/hour	1.65E-03
x Annual Production / 2000 =	7.23E-03	TPY	7.23E-03	TPY	7.23E-03
Cobalt (E.F.)	2.60E-08	lbs/ton	2.60E-08	lbs/ton	
x Hourly production rate =	7.80E-06	lbs/hour	7.80E-06	lbs/hour	7.80E-06
x Annual Production / 2000 =	3.42E-05	TPY	3.42E-05	TPY	3.42E-05
Hexavalent chromium (E.F.)	4.50E-07	lbs/ton	4.50E-07	lbs/ton	
x Hourly production rate =	1.35E-04	lbs/hour	1.35E-04	lbs/hour	1.35E-04
x Annual Production / 2000 =	5.91E-04	TPY	5.91E-04	TPY	5.91E-04

Lead (E.F.)	6.20E-07	lbs/ton	1.50E-05	lbs/ton	
x Hourly production rate =	1.86E-04	lbs/hour	4.50E-03	lbs/hour	4.50E-03
x Annual Production / 2000 =	8.15E-04	TPY	1.97E-02	TPY	1.97E-02
Manganese (E.F.)	7.70E-06	lbs/ton	7.70E-06	lbs/ton	
x Hourly production rate =	2.31E-03	lbs/hour	2.31E-03	lbs/hour	2.31E-03
x Annual Production / 2000 =	1.01E-02	TPY	1.01E-02	TPY	1.01E-02
Mercury (E.F.)	2.40E-07	lbs/ton	2.60E-06	lbs/ton	
x Hourly production rate =	7.20E-05	lbs/hour	7.80E-04	lbs/hour	7.80E-04
x Annual Production / 2000 =	3.15E-04	TPY	3.42E-03	TPY	3.42E-03
Nickel (E.F.)	6.30E-05	lbs/ton	6.30E-05	lbs/ton	
x Hourly production rate =	1.89E-02	lbs/hour	1.89E-02	lbs/hour	1.89E-02
x Annual Production / 2000 =	8.28E-02	TPY	8.28E-02	TPY	8.28E-02
Phosphorus (E.F.)	2.80E-05	lbs/ton	2.80E-05	lbs/ton	
x Hourly production rate =	8.40E-03	lbs/hour	8.40E-03	lbs/hour	8.40E-03
x Annual Production / 2000 =	3.68E-02	TPY	3.68E-02	TPY	3.68E-02
Selenium (E.F.)	3.50E-07	lbs/ton	3.50E-07	lbs/ton	
x Hourly production rate =	1.05E-04	lbs/hour	1.05E-04	lbs/hour	1.05E-04
x Annual Production / 2000 =	4.60E-04	TPY	4.60E-04	TPY	4.60E-04
	0.0054	lbs/ton	0.0088	lbs/ton	
	1.61	lbs/hour	2.65	lbs/hour	2.65
Aggregate sum of all HAPs	7.07	TPY	11.62	TPY	11.62

UNIT 2 - HOT OIL HEATER

Emission factors for the criteria pollutants were obtained from AP-42, Section 11.1 (Table 11.1-13) (3/04)
Emission factors for HAPs while burning natural gas were obtained from AP-42, Section 1.4, Natural Gas Combustion, (Table 1.4-3 and Table 1.4-4) (7/98).
Emission factors for HAPs while burning no. 2 fuel oil were obtained from AP-42, Section 11.1 (Table 11.1-13) (3/04) and AP-42, Section 1.3, Fuel Oil Combustion, (Table 1.3-10) (5/10).
Based on unrestricted operation of 24 hours/day or operation for 365 days/year (8760 hours/year).
Natural gas is based on a heating value of 1020 BTU/scf, ULSD is based on a heating value of 140,000 BTU/gallon.

Fuel	Natural gas		#2 Oil		Maximum
Maximum fuel firing rate	1,840	cuft/hour	13.14	GPH	
Hours of Operation	8,760	Hrs/Year	8,760	Hrs/Year	
Annual Fuel Usage	16.1	MMSCF	115,131	Gallons	
Nitrogen Oxides					
Emission Factor	100	lbs/MMscf	20	lbs/1000 gal	
x Hourly Fuel Usage/2000 =	0.18	lbs/hour	0.26	lbs/hour	0.26
x Annual Fuel Usage/2000 =	0.81	TPY	1.15	TPY	1.15
Sulfur Dioxide					
Emission Factor	0.6	lbs/MMscf	0.213	lbs/1000 gal	
x Hourly Fuel Usage/2000 =	0.00	lbs/hour	0.00	lbs/hour	0.00
x Annual Fuel Usage/2000 =	0.005	TPY	0.01	TPY	0.01
Carbon Monoxide					
Emission Factor	84	Lbs/MMscf	5.0	lbs/1000 gal	
x Hourly Fuel Usage/2000 =	0.15	lbs/hour	0.07	lbs/hour	0.15
x Annual Fuel Usage/2000 =	0.68	TPY	0.29	TPY	0.68
Volatile Organic Compounds					
Emission Factor	5.5	lbs/MMscf	0.34	lbs/1000 gal	
x Hourly Fuel Usage/2000 =	0.01	lbs/hour	0.00	lbs/hour	0.01
x Annual Fuel Usage/2000 =	0.04	TPY	0.02	TPY	0.04
Particulate Matter 10 (PM10)					
Emission Factor	1.9	lbs/MMscf	1.8	lbs/1000 gal	
x Hourly Fuel Usage/2000 =	0.00	lbs/hour	0.02	lbs/hour	0.02
x Annual Fuel Usage/2000 =	0.02	TPY	0.10	TPY	0.10
HAPs					
Acenaphthene					
Emission Factor	1.80E-06	Lbs/MMCuFt	5.30E-07	lbs/gal	
x Hourly Fuel Usage/2000 =	3.31E-09	lbs/hour	6.97E-06	lbs/hour	7.0E-06
x Annual Fuel Usage/2000 =	1.45E-08	TPY	3.05E-08	TPY	3.1E-08

Acenaphthylene					
Emission Factor	1.80E-06	Lbs/MMCuFt	2.00E-07	lbs/gal	
x Hourly Fuel Usage/2000 =	3.31E-09	lbs/hour	2.63E-06	lbs/hour	2.6E-06
x Annual Fuel Usage/2000 =	1.45E-08	TPY	1.15E-08	TPY	1.5E-08
Anthracene					
Emission Factor	2.40E-06	Lbs/MMCuFt	1.80E-07	lbs/gal	
x Hourly Fuel Usage/2000 =	4.42E-09	lbs/hour	2.37E-06	lbs/hour	2.4E-06
x Annual Fuel Usage/2000 =	1.93E-08	TPY	1.04E-08	TPY	1.9E-08
Benz(a)anthracene					
Emission Factor	1.80E-06	Lbs/MMCuFt	NA		
x Hourly Fuel Usage/2000 =	3.31E-09	lbs/hour			3.3E-09
x Annual Fuel Usage/2000 =	1.45E-08	TPY			1.5E-08
Benzene					
Emission Factor	2.10E-03	Lbs/MMCuFt	NA		
x Hourly Fuel Usage/2000 =	3.86E-06	lbs/hour			3.9E-06
x Annual Fuel Usage/2000 =	1.69E-05	TPY			1.7E-05
Benzo(a)pyrene					
Emission Factor	1.20E-06	Lbs/MMCuFt	NA		
x Hourly Fuel Usage/2000 =	2.21E-09	lbs/hour			2.2E-09
x Annual Fuel Usage/2000 =	9.67E-09	TPY			9.7E-09
Benzo(b)fluoranthene					
Emission Factor	1.80E-06	Lbs/MMCuFt	1.00E-07	lbs/gal	
x Hourly Fuel Usage/2000 =	3.31E-09	lbs/hour	1.31E-06	lbs/hour	1.3E-06
x Annual Fuel Usage/2000 =	1.45E-08	TPY	5.76E-09	TPY	1.5E-08
Benzo(g, h, i)perylene					
Emission Factor	1.20E-06	Lbs/MMCuFt	NA		
x Hourly Fuel Usage/2000 =	2.21E-09	lbs/hour			2.2E-09
x Annual Fuel Usage/2000 =	9.67E-09	TPY			9.7E-09
Benzo(k)fluoranthene					
Emission Factor	1.80E-06	Lbs/MMCuFt	NA		
x Hourly Fuel Usage/2000 =	3.31E-09	lbs/hour			3.3E-09
x Annual Fuel Usage/2000 =	1.45E-08	TPY			1.5E-08
Chrysene					
Emission Factor	1.80E-06	Lbs/MMCuFt	NA		
x Hourly Fuel Usage/2000 =	3.31E-09	lbs/hour			3.3E-09
x Annual Fuel Usage/2000 =	1.45E-08	TPY			1.5E-08
Dibenzo(a, h)anthracene					
Emission Factor	1.20E-06	Lbs/MMCuFt	NA		
x Hourly Fuel Usage/2000 =	2.21E-09	lbs/hour			2.2E-09
x Annual Fuel Usage/2000 =	9.67E-09	TPY			9.7E-09
Fluoranthene					
Emission Factor	3.00E-06	Lbs/MMCuFt	4.40E-08	lbs/gal	
x Hourly Fuel Usage/2000 =	5.52E-09	lbs/hour	5.78E-07	lbs/hour	5.8E-07
x Annual Fuel Usage/2000 =	2.42E-08	TPY	2.53E-09	TPY	2.4E-08
Fluorene					
Emission Factor	2.80E-06	Lbs/MMCuFt	3.20E-08	lbs/gal	
x Hourly Fuel Usage/2000 =	5.15E-09	lbs/hour	4.21E-07	lbs/hour	4.2E-07
x Annual Fuel Usage/2000 =	2.26E-08	TPY	1.84E-09	TPY	2.3E-08
Formaldehyde					
Emission Factor	2.60E-02	Lbs/MMCuFt	3.50E-06	lbs/gal	
x Hourly Fuel Usage/2000 =	4.78E-05	lbs/hour	4.60E-05	lbs/hour	4.8E-05
x Annual Fuel Usage/2000 =	2.10E-04	TPY	2.01E-07	TPY	2.1E-04
2-Methylnaphthalene					
Emission Factor	2.40E-05	Lbs/MMCuFt	NA		
x Hourly Fuel Usage/2000 =	4.42E-08	lbs/hour			4.4E-08
x Annual Fuel Usage/2000 =	1.93E-07	TPY			1.9E-07
Naphthalene					
Emission Factor	6.10E-04	Lbs/MMCuFt	1.70E-05	lbs/gal	
x Hourly Fuel Usage/2000 =	1.12E-06	lbs/hour	2.23E-04	lbs/hour	2.2E-04

x Annual Fuel Usage/2000 =	4.92E-06	TPY	9.79E-07	TPY	4.9E-06
Phenanthrene					
Emission Factor	1.70E-05	Lbs/MMCuFt	4.90E-06	lbs/gal	
x Hourly Fuel Usage/2000 =	3.13E-08	lbs/hour	6.44E-05	lbs/hour	6.4E-05
x Annual Fuel Usage/2000 =	1.37E-07	TPY	2.82E-07	TPY	2.8E-07
Pyrene					
Emission Factor	5.00E-06	Lbs/MMCuFt	3.20E-08	lbs/gal	
x Hourly Fuel Usage/2000 =	9.20E-09	lbs/hour	4.21E-07	lbs/hour	4.2E-07
x Annual Fuel Usage/2000 =	4.03E-08	TPY	1.84E-09	TPY	4.0E-08
Toluene					
Emission Factor	3.40E-03	Lbs/MMCuFt	NA		
x Hourly Fuel Usage/2000 =	6.26E-06	lbs/hour			6.3E-06
x Annual Fuel Usage/2000 =	2.74E-05	TPY			2.7E-05
HxCDD					
Emission Factor	NA		6.20E-12	lbs/gal	
x Hourly Fuel Usage/2000 =			8.15E-11	lbs/hour	8.1E-11
x Annual Fuel Usage/2000 =			3.57E-13	TPY	3.6E-13
HpCDD					
Emission Factor	NA		2.00E-11	lbs/gal	
x Hourly Fuel Usage/2000 =			2.63E-10	lbs/hour	2.6E-10
x Annual Fuel Usage/2000 =			1.15E-12	TPY	1.2E-12
OCDD					
Emission Factor	NA		1.60E-10	lbs/gal	
x Hourly Fuel Usage/2000 =			2.10E-09	lbs/hour	2.1E-09
x Annual Fuel Usage/2000 =			9.21E-12	TPY	9.2E-12
TCDF					
Emission Factor	NA		3.30E-12	lbs/gal	
x Hourly Fuel Usage/2000 =			4.34E-11	lbs/hour	4.3E-11
x Annual Fuel Usage/2000 =			1.90E-13	TPY	1.9E-13
PeCDF					
Emission Factor	NA		4.80E-13	lbs/gal	
x Hourly Fuel Usage/2000 =			6.31E-12	lbs/hour	6.3E-12
x Annual Fuel Usage/2000 =			2.76E-14	TPY	2.8E-14
HxCDF					
Emission Factor	NA		2.00E-12	lbs/gal	
x Hourly Fuel Usage/2000 =			2.63E-11	lbs/hour	2.6E-11
x Annual Fuel Usage/2000 =			1.15E-13	TPY	1.2E-13
HpCDF					
Emission Factor	NA		9.70E-12	lbs/gal	
x Hourly Fuel Usage/2000 =			1.27E-10	lbs/hour	1.3E-10
x Annual Fuel Usage/2000 =			5.58E-13	TPY	5.6E-13
1, 2, 3, 4, 6, 7, 8-HpCDF					
Emission Factor	NA		3.50E-02	lbs/gal	
x Hourly Fuel Usage/2000 =			4.60E-01	lbs/hour	4.6E-01
x Annual Fuel Usage/2000 =			2.01E-03	TPY	2.0E-03
OCDF					
Emission Factor	NA		1.20E-11	lbs/gal	
x Hourly Fuel Usage/2000 =			1.58E-10	lbs/hour	1.6E-10
x Annual Fuel Usage/2000 =			6.91E-13	TPY	6.9E-13
Metals					
Arsenic					
Emission Factor	2.00E-04	Lbs/MMCuFt	5.60E-06	lbs/10^6 Btu	
x Hourly Fuel Usage/2000 =	3.68E-07	lbs/hour	7.36E-05	lbs/hour	7.4E-05
x Annual Fuel Usage/2000 =	1.61E-06	TPY	3.22E-07	TPY	1.6E-06
Beryllium					
Emission Factor	1.20E-05	Lbs/MMCuFt	4.20E-07	lbs/1000 gal	
x Hourly Fuel Usage/2000 =	2.21E-08	lbs/hour	5.52E-06	lbs/hour	5.5E-06
x Annual Fuel Usage/2000 =	9.67E-08	TPY	2.42E-08	TPY	9.7E-08
Cadmium					

Emission Factor	1.10E-03	Lbs/MMCuFt	4.20E-07	lbs/1000 gal	
x Hourly Fuel Usage/2000 =	2.02E-06	lbs/hour	5.52E-06	lbs/hour	5.5E-06
x Annual Fuel Usage/2000 =	8.87E-06	TPY	2.42E-08	TPY	8.9E-06
Chromium					
Emission Factor	1.40E-03	Lbs/MMCuFt	4.20E-07	lbs/1000 gal	
x Hourly Fuel Usage/2000 =	2.58E-06	lbs/hour	5.52E-06	lbs/hour	5.5E-06
x Annual Fuel Usage/2000 =	1.13E-05	TPY	2.42E-08	TPY	1.1E-05
Cobalt					
Emission Factor	8.40E-05	Lbs/MMCuFt	1.26E-06	lbs/1000 gal	
x Hourly Fuel Usage/2000 =	1.55E-07	lbs/hour	1.66E-05	lbs/hour	1.7E-05
x Annual Fuel Usage/2000 =	6.77E-07	TPY	7.25E-08	TPY	6.8E-07
Lead					
Emission Factor	0.00E+00	Lbs/MMCuFt	8.40E-07	lbs/1000 gal	
x Hourly Fuel Usage/2000 =	0.00E+00	lbs/hour	1.10E-05	lbs/hour	1.1E-05
x Annual Fuel Usage/2000 =	0.00E+00	TPY	4.84E-08	TPY	4.8E-08
Manganese					
Emission Factor	3.80E-04	Lbs/MMCuFt	4.20E-07	lbs/1000 gal	
x Hourly Fuel Usage/2000 =	6.99E-07	lbs/hour	5.52E-06	lbs/hour	5.5E-06
x Annual Fuel Usage/2000 =	3.06E-06	TPY	2.42E-08	TPY	3.1E-06
Mercury					
Emission Factor	2.60E-04	Lbs/MMCuFt	2.10E-06	lbs/1000 gal	
x Hourly Fuel Usage/2000 =	4.78E-07	lbs/hour	2.76E-05	lbs/hour	2.8E-05
x Annual Fuel Usage/2000 =	2.10E-06	TPY	1.21E-07	TPY	2.1E-06
Nickel					
Emission Factor	2.10E-03	Lbs/MMCuFt	NA		
x Hourly Fuel Usage/2000 =	3.86E-06	lbs/hour			3.9E-06
x Annual Fuel Usage/2000 =	1.69E-05	TPY			1.7E-05
Selenium					
Emission Factor	2.40E-05	Lbs/MMCuFt	NA		
x Hourly Fuel Usage/2000 =	4.42E-08	lbs/hour			4.4E-08
x Annual Fuel Usage/2000 =	1.93E-07	TPY			1.9E-07
	6.94E-05	lbs/hour	4.60E-01	lbs/hour	4.6E-01
Total HAPs	3.04E-04	TPY	2.02E-03	TPY	2.0E-03

Total Facility Wide Emissions (Lbs/Hour)

	NOx	SO2	CO	VOC	PM10	HAPs	Asphalt Fumes
UNIT NO. 1 - DRUM MIX PLANT	16.5	3.3	39.0	9.6	6.9	2.65	3.60
UNIT NO. 2 - HOT OIL HEATER	0.26	0.00	0.15	0.01	0.02	0.46	N/A
TOTAL FACILITY WIDE (LBS/HOUR)	16.76	3.30	39.15	9.61	6.92	3.11	3.60

Total Facility Wide Emissions (TPY)

	NOx	SO2	CO	VOC	PM10	HAPs	Asphalt Fumes
UNIT NO. 1 - DRUM MIX PLANT	72.3	14.5	170.8	42.0	30.2	11.62	15.77
UNIT NO. 2 - HOT OIL HEATER	1.15	0.01	0.68	0.04	0.10	0.002	N/A
TOTAL FACILITY WIDE (TPY)	73.42	14.47	171.50	42.09	30.33	11.63	15.77

PROPOSED POTENTIAL EMISSION CALCULATIONS

Emission factors for NOx, CO, VOC,PM10, SO2, and HAPs were taken from the latest version of AP-42, Section 11.1 Hot Mix Asphalt Plants (3/04).
Restrictions are for a total of 500,000 TPY of product.

UNIT NO. 1 - DRUM MIX PLANT	Primary Fuel	Back-up fuel	Maximum
Fuel	Natural gas	No. 2 oil	
Sulfur Content	nil	0.0015 %	
Burner Rating	82.5 MMBTU/hour	82.5 MMBTU/hour	
Maximum Fuel Firing Rate	80,882 cuft/hr	589 Gal/Hr	
Higher Heating Value	1,020 BTU/scf	140,000 BTU/gallon	
Production (Tons/Hour)	300 TPH	300 TPH	
Annual Production (Tons/Year)	500,000 TPY	500,000 TPY	500,000
Nitrogen Oxides (NO_x)			
Emission Factor	0.026 Lbs/ton	0.055 Lbs/ton	
x Hourly production rate =	7.8 lbs/hour	16.5 lbs/hour	16.50
x Annual Production/2000 =	6.50 TPY	13.75 TPY	13.75
Sulfur Dioxide (SO_2)			
Emission Factor	0.0034 Lbs/ton	0.011 Lbs/ton	
x Hourly production rate =	1.0 lbs/hour	3.3 lbs/hour	3.30
x Annual Production/2000 =	0.85 TPY	2.75 TPY	2.75
Carbon Monoxide (CO)			
Emission Factor	0.13 Lbs/ton	0.13 Lbs/ton	
x Hourly production rate =	39.0 lbs/hour	39.0 lbs/hour	39.00
x Annual Production/2000 =	32.5 TPY	32.5 TPY	32.50
Volatile Organic Compounds (VOC)			
Emission Factor	0.032 Lbs/ton	0.032 Lbs/ton	
x Hourly production rate =	9.6 lbs/hour	9.6 lbs/hour	9.60
x Annual Production/2000 =	8.00 TPY	8.00 TPY	8.00
Particulate Matter (PM10)			
Emission Factor	0.023 Lbs/ton	0.023 Lbs/ton	
x Hourly production rate =	6.9 lbs/hour	6.9 lbs/hour	6.90
x Annual Production/2000 =	5.75 TPY	5.75 TPY	5.75
Asphalt fumes			
Emission Factor	0.012 Lbs/ton	0.012 Lbs/ton	
x Hourly production rate =	3.6 lbs/hour	3.6 lbs/hour	3.60
x Annual Production/2000 =	3.00 TPY	3.00 TPY	3.00
HAPs			
Non-PAH HAPs			
Benzene (E.F.)	3.90E-04 lbs/ton	3.90E-04 lbs/ton	
x Hourly production rate =	1.17E-01 lbs/hour	1.17E-01 lbs/hour	1.17E-01
x Annual Production / 2000 =	9.75E-02 TPY	9.75E-02 TPY	9.75E-02
Ethylbenzene (E.F.)	2.40E-04 lbs/ton	2.40E-04 lbs/ton	
x Hourly production rate =	7.20E-02 lbs/hour	7.20E-02 lbs/hour	7.20E-02
x Annual Production / 2000 =	6.00E-02 TPY	6.00E-02 TPY	6.00E-02
Formaldehyde (E.F.)	3.10E-03 lbs/ton	3.10E-03 lbs/ton	
x Hourly production rate =	9.30E-01 lbs/hour	9.30E-01 lbs/hour	9.30E-01
x Annual Production / 2000 =	7.75E-01 TPY	7.75E-01 TPY	7.75E-01
Hexane (E.F.)	9.20E-04 lbs/ton	9.20E-04 lbs/ton	
x Hourly production rate =	2.76E-01 lbs/hour	2.76E-01 lbs/hour	2.76E-01
x Annual Production / 2000 =	2.30E-01 TPY	2.30E-01 TPY	2.30E-01
Isooctane (2,2,4-trimethylpentane) (E.F.)	4.00E-05 lbs/ton	4.00E-05 lbs/ton	
x Hourly production rate =	1.20E-02 lbs/hour	1.20E-02 lbs/hour	1.20E-02
x Annual Production / 2000 =	1.00E-02 TPY	1.00E-02 TPY	1.00E-02
Methyl chloroform (E.F.)	4.80E-05 lbs/ton	4.80E-05 lbs/ton	
x Hourly production rate =	1.44E-02 lbs/hour	1.44E-02 lbs/hour	1.44E-02
x Annual Production / 2000 =	1.20E-02 TPY	1.20E-02 TPY	1.20E-02
Toluene (E.F.)	1.50E-04 lbs/ton	2.90E-03 lbs/ton	
x Hourly production rate =	4.50E-02 lbs/hour	8.70E-01 lbs/hour	8.70E-01
x Annual Production / 2000 =	3.75E-02 TPY	7.25E-01 TPY	7.25E-01

Xylene (E.F.)	2.00E-04	lbs/ton	2.00E-04	lbs/ton	
x Hourly production rate =	6.00E-02	lbs/hour	6.00E-02	lbs/hour	6.00E-02
x Annual Production / 2000 =	5.00E-02	TPY	5.00E-02	TPY	5.00E-02
PAH HAPs					
2-Methylnaphthalene (E.F.)	7.40E-05	lbs/ton	1.70E-04	lbs/ton	
x Hourly production rate =	2.22E-02	lbs/hour	5.10E-02	lbs/hour	5.10E-02
x Annual Production / 2000 =	1.85E-02	TPY	4.25E-02	TPY	4.25E-02
Acenaphthene (E.F.)	1.40E-06	lbs/ton	1.40E-06	lbs/ton	
x Hourly production rate =	4.20E-04	lbs/hour	4.20E-04	lbs/hour	4.20E-04
x Annual Production / 2000 =	3.50E-04	TPY	3.50E-04	TPY	3.50E-04
Acenaphthylene (E.F.)	8.60E-06	lbs/ton	2.20E-05	lbs/ton	
x Hourly production rate =	2.58E-03	lbs/hour	6.60E-03	lbs/hour	6.60E-03
x Annual Production / 2000 =	2.15E-03	TPY	5.50E-03	TPY	5.50E-03
Anthracene (E.F.)	2.20E-07	lbs/ton	3.10E-06	lbs/ton	
x Hourly production rate =	6.60E-05	lbs/hour	9.30E-04	lbs/hour	9.30E-04
x Annual Production / 2000 =	5.50E-05	TPY	7.75E-04	TPY	7.75E-04
Benzo(a)anthracene (E.F.)	2.10E-07	lbs/ton	2.10E-07	lbs/ton	
x Hourly production rate =	6.30E-05	lbs/hour	6.30E-05	lbs/hour	6.30E-05
x Annual Production / 2000 =	5.25E-05	TPY	5.25E-05	TPY	5.25E-05
Benzo(a)pyrene (E.F.)	9.80E-09	lbs/ton	9.80E-09	lbs/ton	
x Hourly production rate =	2.94E-06	lbs/hour	2.94E-06	lbs/hour	2.94E-06
x Annual Production / 2000 =	2.45E-06	TPY	2.45E-06	TPY	2.45E-06
Benzo(b)fluoranthene (E.F.)	1.00E-07	lbs/ton	1.00E-07	lbs/ton	
x Hourly production rate =	3.00E-05	lbs/hour	3.00E-05	lbs/hour	3.00E-05
x Annual Production / 2000 =	2.50E-05	TPY	2.50E-05	TPY	2.50E-05
Benzo(e)pyrene (E.F.)	1.10E-07	lbs/ton	1.10E-07	lbs/ton	
x Hourly production rate =	3.30E-05	lbs/hour	3.30E-05	lbs/hour	3.30E-05
x Annual Production / 2000 =	2.75E-05	TPY	2.75E-05	TPY	2.75E-05
Benzo(g,h,i)perylene (E.F.)	4.00E-08	lbs/ton	4.00E-08	lbs/ton	
x Hourly production rate =	1.20E-05	lbs/hour	1.20E-05	lbs/hour	1.20E-05
x Annual Production / 2000 =	1.00E-05	TPY	1.00E-05	TPY	1.00E-05
Benzo(k)fluoranthene (E.F.)	4.10E-08	lbs/ton	4.10E-08	lbs/ton	
x Hourly production rate =	1.23E-05	lbs/hour	1.23E-05	lbs/hour	1.23E-05
x Annual Production / 2000 =	1.03E-05	TPY	1.03E-05	TPY	1.03E-05
Chrysene (E.F.)	1.80E-07	lbs/ton	1.80E-07	lbs/ton	
x Hourly production rate =	5.40E-05	lbs/hour	5.40E-05	lbs/hour	5.40E-05
x Annual Production / 2000 =	4.50E-05	TPY	4.50E-05	TPY	4.50E-05
Fluoranthene (E.F.)	6.10E-07	lbs/ton	6.10E-07	lbs/ton	
x Hourly production rate =	1.83E-04	lbs/hour	1.83E-04	lbs/hour	1.83E-04
x Annual Production / 2000 =	1.53E-04	TPY	1.53E-04	TPY	1.53E-04
Fluorene (E.F.)	3.80E-06	lbs/ton	1.10E-05	lbs/ton	
x Hourly production rate =	1.14E-03	lbs/hour	3.30E-03	lbs/hour	3.30E-03
x Annual Production / 2000 =	9.50E-04	TPY	2.75E-03	TPY	2.75E-03
Indeno(1,2,3-cd)pyrene (E.F.)	7.00E-09	lbs/ton	7.00E-09	lbs/ton	
x Hourly production rate =	2.10E-06	lbs/hour	2.10E-06	lbs/hour	2.10E-06
x Annual Production / 2000 =	1.75E-06	TPY	1.75E-06	TPY	1.75E-06
Naphthalene (E.F.)	9.00E-05	lbs/ton	6.50E-04	lbs/ton	
x Hourly production rate =	2.70E-02	lbs/hour	1.95E-01	lbs/hour	1.95E-01
x Annual Production / 2000 =	2.25E-02	TPY	1.63E-01	TPY	1.63E-01
Perylene (E.F.)	8.80E-09	lbs/ton	8.80E-09	lbs/ton	
x Hourly production rate =	2.64E-06	lbs/hour	2.64E-06	lbs/hour	2.64E-06
x Annual Production / 2000 =	2.20E-06	TPY	2.20E-06	TPY	2.20E-06
Phenanthrene (E.F.)	7.60E-06	lbs/ton	2.30E-05	lbs/ton	
x Hourly production rate =	2.28E-03	lbs/hour	6.90E-03	lbs/hour	6.90E-03
x Annual Production / 2000 =	1.90E-03	TPY	5.75E-03	TPY	5.75E-03

Pyrene (E.F.)	5.40E-07	lbs/ton	3.00E-06	lbs/ton	
x Hourly production rate =	1.62E-04	lbs/hour	9.00E-04	lbs/hour	9.00E-04
x Annual Production / 2000 =	1.35E-04	TPY	7.50E-04	TPY	7.50E-04
Dioxins					
Total TCDD (E.F.)	NA		9.30E-13	lbs/ton	
x Hourly production rate =			2.79E-10	lbs/hour	2.79E-10
x Annual Production / 2000 =			2.33E-10	TPY	2.33E-10
Total PeCDD (E.F.)	NA		2.20E-11	lbs/ton	
x Hourly production rate =			6.60E-09	lbs/hour	6.60E-09
x Annual Production / 2000 =			5.50E-09	TPY	5.50E-09
Total HxCDD (E.F.)	NA		1.20E-11	lbs/ton	
x Hourly production rate =			3.60E-09	lbs/hour	3.60E-09
x Annual Production / 2000 =			3.00E-09	TPY	3.00E-09
Total HpCDD (E.F.)	NA		1.90E-11	lbs/ton	
x Hourly production rate =			5.70E-09	lbs/hour	5.70E-09
x Annual Production / 2000 =			4.75E-09	TPY	4.75E-09
Total PCDD (E.F.)	NA		7.90E-11	lbs/ton	
x Hourly production rate =			2.37E-08	lbs/hour	2.37E-08
x Annual Production / 2000 =			1.98E-08	TPY	1.98E-08
Furans	NA				
Total TCDF (E.F.)			3.70E-12	lbs/ton	
x Hourly production rate =			1.11E-09	lbs/hour	1.11E-09
x Annual Production / 2000 =			9.25E-10	TPY	9.25E-10
Total PeCDF (E.F.)	NA		8.40E-11	lbs/ton	
x Hourly production rate =			2.52E-08	lbs/hour	2.52E-08
x Annual Production / 2000 =			2.10E-08	TPY	2.10E-08
Total HxCDF (E.F.)	NA		1.30E-11	lbs/ton	
x Hourly production rate =			3.90E-09	lbs/hour	3.90E-09
x Annual Production / 2000 =			3.25E-09	TPY	3.25E-09
Total HpCDF (E.F.)	NA		1.00E-11	lbs/ton	
x Hourly production rate =			3.00E-09	lbs/hour	3.00E-09
x Annual Production / 2000 =			2.50E-09	TPY	2.50E-09
Total PCDD/PCDF (E.F.)	NA		1.20E-10	lbs/ton	
x Hourly production rate =			3.60E-08	lbs/hour	3.60E-08
x Annual Production / 2000 =			3.00E-08	TPY	3.00E-08
METALS					
Antimony (E.F.)	1.80E-07	lbs/ton	1.80E-07	lbs/ton	
x Hourly production rate =	5.40E-05	lbs/hour	5.40E-05	lbs/hour	5.40E-05
x Annual Production / 2000 =	4.50E-05	TPY	4.50E-05	TPY	4.50E-05
Arsenic (E.F.)	5.60E-07	lbs/ton	5.60E-07	lbs/ton	
x Hourly production rate =	1.68E-04	lbs/hour	1.68E-04	lbs/hour	1.68E-04
x Annual Production / 2000 =	1.40E-04	TPY	1.40E-04	TPY	1.40E-04
Beryllium (E.F.)	0.00E+00	lbs/ton	0.00E+00	lbs/ton	
x Hourly production rate =	0.00E+00	lbs/hour	0.00E+00	lbs/hour	0.00E+00
x Annual Production / 2000 =	0.00E+00	TPY	0.00E+00	TPY	0.00E+00
Cadmium (E.F.)	4.10E-07	lbs/ton	4.10E-07	lbs/ton	
x Hourly production rate =	1.23E-04	lbs/hour	1.23E-04	lbs/hour	1.23E-04
x Annual Production / 2000 =	1.03E-04	TPY	1.03E-04	TPY	1.03E-04
Chromium (E.F.)	5.50E-06	lbs/ton	5.50E-06	lbs/ton	
x Hourly production rate =	1.65E-03	lbs/hour	1.65E-03	lbs/hour	1.65E-03
x Annual Production / 2000 =	1.38E-03	TPY	1.38E-03	TPY	1.38E-03
Cobalt (E.F.)	2.60E-08	lbs/ton	2.60E-08	lbs/ton	
x Hourly production rate =	7.80E-06	lbs/hour	7.80E-06	lbs/hour	7.80E-06
x Annual Production / 2000 =	6.50E-06	TPY	6.50E-06	TPY	6.50E-06
Hexavalent chromium (E.F.)	4.50E-07	lbs/ton	4.50E-07	lbs/ton	
x Hourly production rate =	1.35E-04	lbs/hour	1.35E-04	lbs/hour	1.35E-04
x Annual Production / 2000 =	1.13E-04	TPY	1.13E-04	TPY	1.13E-04

Lead (E.F.)	6.20E-07	lbs/ton	1.50E-05	lbs/ton	
x Hourly production rate =	1.86E-04	lbs/hour	4.50E-03	lbs/hour	4.50E-03
x Annual Production / 2000 =	1.55E-04	TPY	3.75E-03	TPY	3.75E-03
Manganese (E.F.)	7.70E-06	lbs/ton	7.70E-06	lbs/ton	
x Hourly production rate =	2.31E-03	lbs/hour	2.31E-03	lbs/hour	2.31E-03
x Annual Production / 2000 =	1.93E-03	TPY	1.93E-03	TPY	1.93E-03
Mercury (E.F.)	2.40E-07	lbs/ton	2.60E-06	lbs/ton	
x Hourly production rate =	7.20E-05	lbs/hour	7.80E-04	lbs/hour	7.80E-04
x Annual Production / 2000 =	6.00E-05	TPY	6.50E-04	TPY	6.50E-04
Nickel (E.F.)	6.30E-05	lbs/ton	6.30E-05	lbs/ton	
x Hourly production rate =	1.89E-02	lbs/hour	1.89E-02	lbs/hour	1.89E-02
x Annual Production / 2000 =	1.58E-02	TPY	1.58E-02	TPY	1.58E-02
Phosphorus (E.F.)	2.80E-05	lbs/ton	2.80E-05	lbs/ton	
x Hourly production rate =	8.40E-03	lbs/hour	8.40E-03	lbs/hour	8.40E-03
x Annual Production / 2000 =	7.00E-03	TPY	7.00E-03	TPY	7.00E-03
Selenium (E.F.)	3.50E-07	lbs/ton	3.50E-07	lbs/ton	
x Hourly production rate =	1.05E-04	lbs/hour	1.05E-04	lbs/hour	1.05E-04
x Annual Production / 2000 =	8.75E-05	TPY	8.75E-05	TPY	8.75E-05
	1.61	lbs/hour	2.65	lbs/hour	2.65
Aggregate sum of all HAPs	1.35	TPY	2.21	TPY	2.21

UNIT 2 - HOT OIL HEATER

Emission factors for the criteria pollutants were obtained from AP-42, Section 11.1 (Table 11.1-13) (3/04)
Emission factors for HAPs while burning natural gas were obtained from AP-42, Section 1.4, Natural Gas Combustion, (Table 1.4-3 and Table 1.4-4) (7/98).
Emission factors for HAPs while burning no. 2 fuel oil were obtained from AP-42, Section 11.1 (Table 11.1-13) (3/04) and AP-42, Section 1.3, Fuel Oil Combustion, (Table 1.3-10) (5/10).
Based on unrestricted operation of 24 hours/day or operation for 365 days/year (8760 hours/year).
Natural gas is based on a heating value of 1020 BTU/scf, ULSD is based on a heating value of 140,000 BTU/gallon.

					Maximum
Fuel	Natural gas		#2 Oil		
Maximum fuel firing rate	1,840	cuft/hour	13.14	GPH	
Hours of Operation	4,745	Hrs/Year	4,745	Hrs/Year	
Annual Fuel Usage	8.7	MMSCF	62,363	Gallons	
Nitrogen Oxides					
Emission Factor	100	lbs/MMscf	20	lbs/1000 gal	
x Hourly Fuel Usage/2000 =	0.18	lbs/hour	0.26	lbs/hour	0.26
x Annual Fuel Usage/2000 =	0.44	TPY	0.62	TPY	0.62
Sulfur Dioxide					
Emission Factor	0.6	lbs/MMscf	0.213	lbs/1000 gal	
x Hourly Fuel Usage/2000 =	0.00	lbs/hour	0.00	lbs/hour	0.00
x Annual Fuel Usage/2000 =	0.003	TPY	0.01	TPY	0.01
Carbon Monoxide					
Emission Factor	84	Lbs/MMscf	5.0	lbs/1000 gal	
x Hourly Fuel Usage/2000 =	0.15	lbs/hour	0.07	lbs/hour	0.15
x Annual Fuel Usage/2000 =	0.37	TPY	0.16	TPY	0.37
Volatile Organic Compounds					
Emission Factor	5.5	lbs/MMscf	0.34	lbs/1000 gal	
x Hourly Fuel Usage/2000 =	0.01	lbs/hour	0.00	lbs/hour	0.01
x Annual Fuel Usage/2000 =	0.02	TPY	0.01	TPY	0.02
Particulate Matter 10 (PM10)					
Emission Factor	1.9	lbs/MMscf	1.8	lbs/1000 gal	
x Hourly Fuel Usage/2000 =	0.00	lbs/hour	0.02	lbs/hour	0.02
x Annual Fuel Usage/2000 =	0.01	TPY	0.06	TPY	0.06
HAPs					
Acenaphthene					
Emission Factor	1.80E-06	Lbs/MMCuFt	5.30E-07	lbs/gal	
x Hourly Fuel Usage/2000 =	3.31E-09	lbs/hour	6.97E-06	lbs/hour	7.0E-06
x Annual Fuel Usage/2000 =	7.86E-09	TPY	1.65E-08	TPY	1.7E-08

Acenaphthylene					
Emission Factor	1.80E-06	Lbs/MMCuFt	2.00E-07	lbs/gal	
x Hourly Fuel Usage/2000 =	3.31E-09	lbs/hour	2.63E-06	lbs/hour	2.6E-06
x Annual Fuel Usage/2000 =	7.86E-09	TPY	6.24E-09	TPY	7.9E-09
Anthracene					
Emission Factor	2.40E-06	Lbs/MMCuFt	1.80E-07	lbs/gal	
x Hourly Fuel Usage/2000 =	4.42E-09	lbs/hour	2.37E-06	lbs/hour	2.4E-06
x Annual Fuel Usage/2000 =	1.05E-08	TPY	5.61E-09	TPY	1.0E-08
Benz(a)anthracene					
Emission Factor	1.80E-06	Lbs/MMCuFt	NA		
x Hourly Fuel Usage/2000 =	3.31E-09	lbs/hour			3.3E-09
x Annual Fuel Usage/2000 =	7.86E-09	TPY			7.9E-09
Benzene					
Emission Factor	2.10E-03	Lbs/MMCuFt	NA		
x Hourly Fuel Usage/2000 =	3.86E-06	lbs/hour			3.9E-06
x Annual Fuel Usage/2000 =	9.17E-06	TPY			9.2E-06
Benzo(a)pyrene					
Emission Factor	1.20E-06	Lbs/MMCuFt	NA		
x Hourly Fuel Usage/2000 =	2.21E-09	lbs/hour			2.2E-09
x Annual Fuel Usage/2000 =	5.24E-09	TPY			5.2E-09
Benzo(b)fluoranthene					
Emission Factor	1.80E-06	Lbs/MMCuFt	1.00E-07	lbs/gal	
x Hourly Fuel Usage/2000 =	3.31E-09	lbs/hour	1.31E-06	lbs/hour	1.3E-06
x Annual Fuel Usage/2000 =	7.86E-09	TPY	3.12E-09	TPY	7.9E-09
Benzo(g, h, i)perylene					
Emission Factor	1.20E-06	Lbs/MMCuFt	NA		
x Hourly Fuel Usage/2000 =	2.21E-09	lbs/hour			2.2E-09
x Annual Fuel Usage/2000 =	5.24E-09	TPY			5.2E-09
Benzo(k)fluoranthene					
Emission Factor	1.80E-06	Lbs/MMCuFt	NA		
x Hourly Fuel Usage/2000 =	3.31E-09	lbs/hour			3.3E-09
x Annual Fuel Usage/2000 =	7.86E-09	TPY			7.9E-09
Chrysene					
Emission Factor	1.80E-06	Lbs/MMCuFt	NA		
x Hourly Fuel Usage/2000 =	3.31E-09	lbs/hour			3.3E-09
x Annual Fuel Usage/2000 =	7.86E-09	TPY			7.9E-09
Dibenzo(a, h)anthracene					
Emission Factor	1.20E-06	Lbs/MMCuFt	NA		
x Hourly Fuel Usage/2000 =	2.21E-09	lbs/hour			2.2E-09
x Annual Fuel Usage/2000 =	5.24E-09	TPY			5.2E-09
Fluoranthene					
Emission Factor	3.00E-06	Lbs/MMCuFt	4.40E-08	lbs/gal	
x Hourly Fuel Usage/2000 =	5.52E-09	lbs/hour	5.78E-07	lbs/hour	5.8E-07
x Annual Fuel Usage/2000 =	1.31E-08	TPY	1.37E-09	TPY	1.3E-08
Fluorene					
Emission Factor	2.80E-06	Lbs/MMCuFt	3.20E-08	lbs/gal	
x Hourly Fuel Usage/2000 =	5.15E-09	lbs/hour	4.21E-07	lbs/hour	4.2E-07
x Annual Fuel Usage/2000 =	1.22E-08	TPY	9.98E-10	TPY	1.2E-08
Formaldehyde					
Emission Factor	2.60E-02	Lbs/MMCuFt	3.50E-06	lbs/gal	
x Hourly Fuel Usage/2000 =	4.78E-05	lbs/hour	4.60E-05	lbs/hour	4.8E-05
x Annual Fuel Usage/2000 =	1.14E-04	TPY	1.09E-07	TPY	1.1E-04
2-Methylnaphthalene					
Emission Factor	2.40E-05	Lbs/MMCuFt	NA		
x Hourly Fuel Usage/2000 =	4.42E-08	lbs/hour			4.4E-08
x Annual Fuel Usage/2000 =	1.05E-07	TPY			1.0E-07
Naphthalene					
Emission Factor	6.10E-04	Lbs/MMCuFt	1.70E-05	lbs/gal	
x Hourly Fuel Usage/2000 =	1.12E-06	lbs/hour	2.23E-04	lbs/hour	2.2E-04
x Annual Fuel Usage/2000 =	2.66E-06	TPY	5.30E-07	TPY	2.7E-06

Phenanthrene					
Emission Factor	1.70E-05	Lbs/MMCuFt	4.90E-06	lbs/gal	
x Hourly Fuel Usage/2000 =	3.13E-08	lbs/hour	6.44E-05	lbs/hour	6.4E-05
x Annual Fuel Usage/2000 =	7.42E-08	TPY	1.53E-07	TPY	1.5E-07
Pyrene					
Emission Factor	5.00E-06	Lbs/MMCuFt	3.20E-08	lbs/gal	
x Hourly Fuel Usage/2000 =	9.20E-09	lbs/hour	4.21E-07	lbs/hour	4.2E-07
x Annual Fuel Usage/2000 =	2.18E-08	TPY	9.98E-10	TPY	2.2E-08
Toluene					
Emission Factor	3.40E-03	Lbs/MMCuFt	NA		
x Hourly Fuel Usage/2000 =	6.26E-06	lbs/hour			6.3E-06
x Annual Fuel Usage/2000 =	1.48E-05	TPY			1.5E-05
HxCDD					
Emission Factor	NA		6.20E-12	lbs/gal	
x Hourly Fuel Usage/2000 =			8.15E-11	lbs/hour	8.1E-11
x Annual Fuel Usage/2000 =			1.93E-13	TPY	1.9E-13
HpCDD					
Emission Factor	NA		2.00E-11	lbs/gal	
x Hourly Fuel Usage/2000 =			2.63E-10	lbs/hour	2.6E-10
x Annual Fuel Usage/2000 =			6.24E-13	TPY	6.2E-13
OCDD					
Emission Factor	NA		1.60E-10	lbs/gal	
x Hourly Fuel Usage/2000 =			2.10E-09	lbs/hour	2.1E-09
x Annual Fuel Usage/2000 =			4.99E-12	TPY	5.0E-12
TCDF					
Emission Factor	NA		3.30E-12	lbs/gal	
x Hourly Fuel Usage/2000 =			4.34E-11	lbs/hour	4.3E-11
x Annual Fuel Usage/2000 =			1.03E-13	TPY	1.0E-13
PeCDF					
Emission Factor	NA		4.80E-13	lbs/gal	
x Hourly Fuel Usage/2000 =			6.31E-12	lbs/hour	6.3E-12
x Annual Fuel Usage/2000 =			1.50E-14	TPY	1.5E-14
HxCDF					
Emission Factor	NA		2.00E-12	lbs/gal	
x Hourly Fuel Usage/2000 =			2.63E-11	lbs/hour	2.6E-11
x Annual Fuel Usage/2000 =			6.24E-14	TPY	6.2E-14
HpCDF					
Emission Factor	NA		9.70E-12	lbs/gal	
x Hourly Fuel Usage/2000 =			1.27E-10	lbs/hour	1.3E-10
x Annual Fuel Usage/2000 =			3.02E-13	TPY	3.0E-13
1, 2, 3, 4, 6, 7, 8-HpCDF					
Emission Factor	NA		3.50E-02	lbs/gal	
x Hourly Fuel Usage/2000 =			4.60E-01	lbs/hour	4.6E-01
x Annual Fuel Usage/2000 =			1.09E-03	TPY	1.1E-03
OCDF					
Emission Factor	NA		1.20E-11	lbs/gal	
x Hourly Fuel Usage/2000 =			1.58E-10	lbs/hour	1.6E-10
x Annual Fuel Usage/2000 =			3.74E-13	TPY	3.7E-13
Metals					
Arsenic					
Emission Factor	2.00E-04	Lbs/MMCuFt	5.60E-06	lbs/10^6 Btu	
x Hourly Fuel Usage/2000 =	3.68E-07	lbs/hour	7.36E-05	lbs/hour	7.4E-05
x Annual Fuel Usage/2000 =	8.73E-07	TPY	1.75E-07	TPY	8.7E-07
Beryllium					
Emission Factor	1.20E-05	Lbs/MMCuFt	4.20E-07	lbs/1000 gal	
x Hourly Fuel Usage/2000 =	2.21E-08	lbs/hour	5.52E-06	lbs/hour	5.5E-06
x Annual Fuel Usage/2000 =	5.24E-08	TPY	1.31E-08	TPY	5.2E-08
Cadmium					
Emission Factor	1.10E-03	Lbs/MMCuFt	4.20E-07	lbs/1000 gal	

x Hourly Fuel Usage/2000 =	2.02E-06	lbs/hour	5.52E-06	lbs/hour	5.5E-06
x Annual Fuel Usage/2000 =	4.80E-06	TPY	1.31E-08	TPY	4.8E-06
Chromium					
Emission Factor	1.40E-03	Lbs/MMCuFt	4.20E-07	lbs/1000 gal	
x Hourly Fuel Usage/2000 =	2.58E-06	lbs/hour	5.52E-06	lbs/hour	5.5E-06
x Annual Fuel Usage/2000 =	6.11E-06	TPY	1.31E-08	TPY	6.1E-06
Cobalt					
Emission Factor	8.40E-05	Lbs/MMCuFt	1.26E-06	lbs/1000 gal	
x Hourly Fuel Usage/2000 =	1.55E-07	lbs/hour	1.66E-05	lbs/hour	1.7E-05
x Annual Fuel Usage/2000 =	3.67E-07	TPY	3.93E-08	TPY	3.7E-07
Lead					
Emission Factor	0.00E+00	Lbs/MMCuFt	8.40E-07	lbs/1000 gal	
x Hourly Fuel Usage/2000 =	0.00E+00	lbs/hour	1.10E-05	lbs/hour	1.1E-05
x Annual Fuel Usage/2000 =	0.00E+00	TPY	2.62E-08	TPY	2.6E-08
Manganese					
Emission Factor	3.80E-04	Lbs/MMCuFt	4.20E-07	lbs/1000 gal	
x Hourly Fuel Usage/2000 =	6.99E-07	lbs/hour	5.52E-06	lbs/hour	5.5E-06
x Annual Fuel Usage/2000 =	1.66E-06	TPY	1.31E-08	TPY	1.7E-06
Mercury					
Emission Factor	2.60E-04	Lbs/MMCuFt	2.10E-06	lbs/1000 gal	
x Hourly Fuel Usage/2000 =	4.78E-07	lbs/hour	2.76E-05	lbs/hour	2.8E-05
x Annual Fuel Usage/2000 =	1.14E-06	TPY	6.55E-08	TPY	1.1E-06
Nickel					
Emission Factor	2.10E-03	Lbs/MMCuFt	NA		
x Hourly Fuel Usage/2000 =	3.86E-06	lbs/hour			3.9E-06
x Annual Fuel Usage/2000 =	9.17E-06	TPY			9.2E-06
Selenium					
Emission Factor	2.40E-05	Lbs/MMCuFt	NA		
x Hourly Fuel Usage/2000 =	4.42E-08	lbs/hour			4.4E-08
x Annual Fuel Usage/2000 =	1.05E-07	TPY			1.0E-07
	6.94E-05	lbs/hour	4.60E-01	lbs/hour	4.6E-01
Total HAPs	1.65E-04	TPY	1.09E-03	TPY	1.1E-03

Total Facility Wide Emissions (Lbs/Hour)

	NOx	SO2	CO	VOC	PM10	HAPs	Asphalt Fumes
UNIT NO. 1 - DRUM MIX PLANT	16.5	3.3	39.0	9.6	6.9	2.65	3.60
UNIT NO. 2 - HOT OIL HEATER	0.26	0.00	0.15	0.01	0.02	0.46	N/A
TOTAL FACILITY WIDE (LBS/HOUR)	16.76	3.30	39.15	9.61	6.92	3.11	3.60

Total Facility Wide Emissions (TPY)

	NOx	SO2	CO	VOC	PM10	HAPs	Asphalt Fumes
UNIT NO. 1 - DRUM MIX PLANT	13.8	2.8	32.5	8.0	5.8	2.21	3.00
UNIT NO. 2 - HOT OIL HEATER	0.62	0.01	0.37	0.02	0.06	0.001	N/A
TOTAL FACILITY WIDE (TPY)	14.37	2.76	32.87	8.02	5.81	2.21	3.00