

**PERMIT APPLICATION REVIEW  
 TEMPORARY COVERED SOURCE PERMIT No. 0726-01-CT  
 Initial Application No. 0726-01**

**Company:** Road and Highway Builders, LLC

**Mailing Address:** 500 Nevada Boulevard  
 Lovelock, Nevada 89419

**Facility:** 400 TPH Portable Drum Mix Asphalt Plant

**Location:** Various Temporary Sites, State of Hawaii

**Initial Location:** U.S. Army Pohakuloa Training Area (PTA) Quarry, Waimea, Hawaii 96743

**SIC Code:** 2951 (Asphalt Paving Mixtures and Blocks)

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**Equipment:** The 400 TPH Drum Mix Asphalt Plant encompasses the following equipment and associated appurtenances.

<b>Facility Equipment</b>				
<b>Equipment</b>	<b>Manufacturer</b>	<b>Model No.</b>	<b>Serial No.</b>	<b>Manuf. Date</b>
400 TPH drum mixer/dryer	Boeing	MS-400-MK	533	
Baghouse	Caterpillar	APM 810	APM810-110	
2.115 MMBtu/hr hot oil heater	CEI	CEI-1800	C07 006	
350 TPH scalping screen	Kolberg	1D488	1527-48-8-79	
1467 bhp diesel engine generator	Caterpillar	3508	4GM00362	1998
65 bhp diesel engine (insignificant)	Isuzu	BB-4JG1T		<2005
(2) Portable asphalt storage tanks	CEI			

**BACKGROUND**

Road and Highway Builders, LLC has submitted an application for an initial temporary covered source permit to operate a 400 TPH portable drum mix asphalt plant. The total operating hours of the facility will be limited to 1,750 hours in any rolling 12-month period, as represented by the 1467 bhp diesel engine generator and drum mixer/dryer. The drum mixer/dryer, hot oil heater, and diesel engine generators will be fired on fuel oil no. 2 with a maximum sulfur content of 0.5% by weight. A baghouse servicing the drum mixer/dryer will be used to control emissions. The facility will operate a 65 bhp diesel engine generator (insignificant activity) during off-hours when the plant is not in operation.

Process

Aggregate is conveyed from the bins to the scalping screen to remove oversized and foreign objects. Aggregate is then conveyed to the pug mill where lime is added. Resulting aggregate is conveyed to the drum mixer/dryer to be heated and dried by the heat released from combustion of fuel in the burner. The aggregate is then mixed with asphalt cement. The hot mix asphalt is conveyed and stored in the silo to await truck load out.

**APPLICABLE REQUIREMENTS**

Hawaii Administrative Rules (HAR)

Title 11 Chapter 59, Ambient Air Quality Standards

Title 11 Chapter 60.1, Air Pollution Control

Subchapter 1, General Requirements

Subchapter 2, General Prohibitions

11-60.1-31, Applicability

11-60.1-32, Visible Emissions

11-60.1-33, Fugitive Dust

11-60.1-37, Process Industries

11-60.1-38, Sulfur Oxides from Fuel Combustion

Subchapter 5, Covered Sources

Subchapter 6, Fees for Covered Sources, Noncovered Sources, and Agricultural Burning

11-60.1-111, Definitions

11-60.1-112, General Fee Provisions for Covered sources

11-60.1-113, Application Fees for Covered sources

11-60.1-114, Annual Fees for Covered sources

11-60.1-115, Basis of Annual Fees for Covered Sources

Subchapter 8, Standards of Performance for Stationary Sources

11-60.1-161, New Source Performance Standards

Subchapter 9, Hazardous Air Pollutant Sources

Subchapter 10, Field Citations

Standard of Performance for New Stationary Sources (NSPS), 40 CFR Part 60

1. Subpart I - Standards of Performance for Hot Mix Asphalt Facilities is applicable to the 400 TPH HMA facility because the facility commenced construction or modification after June 11, 1973.

2. Subpart IIII - Standards of Performance for Stationary Compression Ignition Internal Combustion Engines is not applicable to the diesel engine generator (manufactured 1998) because the engine was manufactured before April 1, 2006.

National Emission Standards for Hazardous Air Pollutants (NESHAPS), 40 CFR Part 61

This source is not subject to NESHAPS as no hazardous air pollutants are emitted at significant levels and there are no NESHAPS requirements in 40 CFR Part 61.

National Emission Standards for Hazardous Air Pollutants for Source Categories (Maximum Achievable Control Technology (MACT)), 40 CFR Part 63

Subpart ZZZZ - National Emissions Standards for Hazardous Air Pollutants for Stationary Reciprocating Internal Combustion Engines (RICE) is not applicable to the diesel engine generator because it is classified as an existing source (constructed or reconstructed before June 12, 2006). An existing compression ignition (CI) stationary RICE does not have to meet the requirements of this subpart and of subpart A of this part.

Prevention of Significant Deterioration (PSD)

This source is not subject to PSD requirements because it is not a major stationary source as defined in 40 CFR 52.21 and HAR Title 11, Chapter 60.1, Subchapter 7.

Compliance Assurance Monitoring (CAM), 40 CFR 64

This source is not subject to CAM since the facility is not a major source. The purpose of CAM is to provide a reasonable assurance that compliance is being achieved with large emissions units that rely on air pollution control device equipment to meet an emissions limit or standard. Pursuant to 40 Code of Federal Regulations, Part 64, for CAM to be applicable, the emissions unit must: (1) be located at a major source; (2) be subject to an emissions limit or standard; (3) use a control device to achieve compliance; (4) have potential pre-control emissions that are 100% of the major source level; and (5) not otherwise be exempt from CAM.

Consolidated Emissions Reporting Rule (CERR)

This source is not subject to CERR since 40 CFR Part 51, Subpart A - Emissions Inventory Reporting Requirements, determines CERR based on facility wide emissions of each air pollutant at the CERR triggering levels. The emissions do not exceed respective CERR threshold levels. As such, emissions data will not be required to be inputted into the National Emissions Inventory (NEI) database.

DOH Annual Emissions Reporting

The Clean Air Branch requests annual emissions reporting from those facilities that have facility wide emissions exceeding the DOH reporting level(s) and for all covered sources. Internal annual emissions reporting will be required because this is a covered source.

Best Available Control Technology (BACT)

This source is not subject to BACT analysis because the potential to emit emissions (excluding unpaved roads) are below significant levels. BACT analysis is required for new sources or significant modifications to sources that have the potential to emit or increase emissions above significant levels considering any limitations as defined in HAR, Section 11-60.1-1.

Synthetic Minor Source

A synthetic minor source is a facility that is potentially major as defined in HAR 11-60.1-1, but is made non-major through federally enforceable permit conditions. This facility is a synthetic

minor source because potential emissions exceed major source thresholds when the facility is operated at its maximum capacity continuously for 8,760 hours per year.

**INSIGNIFICANT ACTIVITIES / EXEMPTIONS**

65 bhp Diesel Engine Generator

The 65 bhp diesel engine generator is considered insignificant in accordance with HAR 11-60.1-82(f)(2) because the heat input capacity is less than 1 MMBtu/hr.

fuel consumption: 2.6 gal/hr

fuel oil no. 2 heating value: 0.14 MMBtu/gal

heat input capacity = 2.6 gal/hr x 0.14 MMBtu/gal = 0.364 MMBtu/hr

Storage Tanks

The following storage tanks are less than 40,000 gallons and is considered insignificant in accordance with HAR 11-60.1-82(f)(1):

1. 10,000 gallon fuel oil no. 2 storage tank.
2. Two 30,000 gallon CEI portable asphalt cement tanks.

**ALTERNATIVE OPERATING SCENERIOS**

Diesel Engine Generator

The permittee may replace the diesel engine generator with a temporary replacement unit of similar size with equal or lesser emissions if any repair reasonably warrants the removal of the diesel engine generator from its site (i.e., equipment failure, engine overhaul, or any major equipment problems requiring maintenance for efficient operation).

**AIR POLLUTION CONTROLS**

Baghouse

The drum mixer/dryer is equipped with a baghouse to control PM emissions.

Unpaved Roads

Water suppression will be used to control fugitive emissions from unpaved roads.

**PROJECT EMISSIONS**

Emission calculations are attached to this review. The operating hours of the asphalt plant, as represented by the diesel engine generator and drum mixer/dryer, will be limited to 1,750 hours in any rolling 12-month period.

400 TPH Drum Mixer/Dryer

Emissions were based on the maximum capacity of the drum mixer/dryer, which is equipped with a baghouse to control PM emissions. The drum mixer/dryer will be fired on fuel oil No. 2 with a maximum sulfur content of 0.5% by weight. Emission factors, except for PM, were taken

## PROPOSED

from AP-42 Section 11.1 (3/04) - Hot Mix Asphalt Plants. PM emissions were obtained from stack tests on an identical drum mixer/dryer.

<b>400 TPH Drum Mixer/Dryer</b>			
Pollutant	Emissions (lb/hr)	Emissions (TPY) [1,750 hr/yr]	Emissions (TPY) [8,760 hr/yr]
CO	52.00	45.50	227.76
NO <sub>x</sub>	22.00	19.25	96.36
SO <sub>2</sub>	4.40	3.85	19.27
PM	0.92	0.81	4.03
PM-10	0.92	0.81	4.03
PM-2.5	0.92	0.81	4.03
VOC	12.80	11.20	56.06
HAPs	3.52	3.08	15.42

### HMA Silo Filling and Truck Load-Out Operations

Emissions for HMA silo filling and truck load-out operations were based on emission factors from AP-42 Section 11.1 (3/04) - Hot Mix Asphalt Plants.

<b>HMA Silo Filling Operation</b>		
Pollutant	Emissions (TPY) [1,750 hr/yr]	Emissions (TPY) [8,760 hr/yr]
CO	0.41	2.07
PM	0.21	1.03
PM-10	0.21	1.03
PM-2.5	0.21	1.03
VOC	4.27	21.35
HAPs	0.066	0.328

<b>HMA Truck Load-Out Operation</b>		
Pollutant	Emissions (TPY) [1,750 hr/yr]	Emissions (TPY) [8,760 hr/yr]
CO	0.47	2.36
PM	0.18	0.91
PM-10	0.18	0.91
PM-2.5	0.18	0.91
VOC	1.37	6.85
HAPs	0.030	0.152

### Hot Oil Heater

The hot oil heater is fired on fuel oil No. 2 with a maximum sulfur content of 0.5% by weight. The maximum fuel consumption is 15 gallons/hour. Emissions were based on emission factors from AP-42 Section 1.3 (9/98), Errata (4/00) - Fuel Oil Combustion. There will be no operating hour limits.

<b>Hot Oil Heater</b>		
Pollutant	Emissions (lb/hr)	Emissions (TPY) [8,760 hr/yr]
CO	0.08	0.33
NO <sub>x</sub>	0.30	1.31
SO <sub>2</sub>	1.07	4.66
PM	0.03	0.13
PM-10	0.02	0.07
PM-2.5	0.01	0.05
TOC	0.01	0.04
HAPs	0.001	0.005

Fugitive Emissions

Emissions due to aggregate handling and processing, storage piles, and vehicle travel on unpaved roads are summarized in the tables below. Aggregate processing includes the scalping screen. A 70% control efficiency was assumed for water suppression for vehicle travel on unpaved roads. Emissions were based on emission factors from the following:

- AP-42 Section 11.19.2 (8/04) - Crushed Stone Processing and Pulverized Mineral Processing
- AP-42 Section 13.2.4 (11/06) - Aggregate Handling and Storage Piles
- AP-42 Section 13.2.2 (11/06) - Unpaved Roads

<b>Aggregate Processing</b>		
Pollutant	Emissions (TPY) [1,750 hr/yr]	Emissions (TPY) [8,760 hr/yr]
PM	8.32	41.67
PM-10	2.93	14.66
PM-2.5	1.21	6.04

<b>Storage Piles</b>		
Pollutant	Emissions (TPY) [1,750 hr/yr]	Emissions (TPY) [8,760 hr/yr]
PM	8.68	43.47
PM-10	4.11	20.56
PM-2.5	0.62	3.11

<b>Vehicle Travel on Unpaved Roads</b>		
Pollutant	Emissions (TPY) [1,750 hr/yr]	Emissions (TPY) [8,760 hr/yr]
PM	13.23	66.21
PM-10	3.90	19.54
PM-2.5	0.39	1.95

1,467 bhp Diesel Engine Generator

The diesel engine generator is fired on fuel oil No. 2 with a maximum sulfur content of 0.5% by weight. The maximum fuel consumption is 73.25 gallons/hour. CO, NO<sub>x</sub>, PM, and TOC

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emissions were based on manufacturer's data. SO<sub>2</sub> and HAP emissions were based on emission factors from AP-42 Section 3.4 (10/96) - Large Stationary Diesel and All Stationary Dual-fuel Engines.

<b>1,467 bhp Diesel Engine Generator</b>			
Pollutant	Emissions (lb/hr)	Emissions (TPY) [1,750 hr/yr]	Emissions (TPY) [8,760 hr/yr]
CO	1.75	1.53	7.67
NO <sub>x</sub>	17.44	15.26	76.39
SO <sub>2</sub>	5.18	4.53	22.68
PM	0.38	0.33	1.66
PM-10	0.36	0.32	1.60
PM-2.5	0.34	0.30	1.50
TOC	0.76	0.67	3.33
HAPs	0.015	0.013	0.067

### Total Emissions

Total facility emissions are summarized in the table below.

<b>Total Facility Emissions and Trigger Levels (TPY)</b>					
Pollutant	Emissions (Limited)	Emissions (No Limits 8,760 hr/yr)	BACT Significant Level	CERR Triggering Level (Type A sources / Type B sources)	DOH Level
CO	48.2	240.2	100	2,500 / 1000	250
NO <sub>x</sub>	35.8	174.1	40	2,500 / 100	25
SO <sub>2</sub>	13.0	46.6	40	2,500 / 100	25
PM	31.9	159.1	25	-	25
PM-10	12.5	62.4	15	250 / 100	25
PM-2.5	3.8	18.6	-	250 / 100	-
VOC	17.5	87.6	40	250 / 100	25
HAPs	3.2	16.0	-	-	5

## AIR QUALITY ASSESSMENT

An ambient air quality impact assessment (AAQIA) was conducted for the baghouse servicing the drum mixer/dryer, diesel engine generator, and hot oil heater to demonstrate compliance with State and National ambient air quality standards. An ISC-PRIME model was used for the analysis to determine maximum pollutant impacts. Lakes Environmental AERMOD View, Version 6.2.1, was used for the ISC-PRIME modeling analysis.

### Terrain

A USGS 7.5 min digital elevation model (DEM) with 30 meter spacing from the Ahumoa, Hawaii and Puu Koli, Hawaii quadrangles were used to model the elevated terrain heights.

### Meteorological data

Default SCREEN3 meteorological data.

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## Receptor Grid

Receptor grid spacing was set at 30 meters.

## Dispersion Coefficient

Rural dispersion coefficient was selected.

## Building Downwash

The EPA's Building Profile Input Program (BPIP) was used to evaluate downwash effects of nearby structures.

## Emission Rates and Stack Parameters

The short term emission rates and stack parameters used in the analysis are shown in the table below. The emission rates for the drum mixer/dryer and diesel engine generator were adjusted to account for the 1,750 hour/year limit when modeling annual impacts.

Source	Emission Rates (g/s)					Stack Parameters			
	CO	NO <sub>x</sub>	PM-10	PM-2.5	SO <sub>2</sub>	Height (m)	Diameter (m)	Flow Rate (m <sup>3</sup> /s)	Temp (°K)
Drum Mixer/Dryer	6.5520	2.7720	0.1159	0.1159	0.5544	10.36	1.42	24.8	386
Diesel Engine Generator	0.2205	2.1974	0.0460	0.0431	0.6525	4.57	0.203	3.68	679
Hot Oil Heater	0.0095	0.0378	0.0020	0.0016	0.1342	3.35	0.264	0.36	505

## Results

The annual concentrations assume an annual hour limit of 1,750 hours/year for the drum mixer/dryer and diesel engine generator. The table below shows the predicted ambient air quality impacts from the baghouse servicing the drum mixer/dryer, diesel engine generator, and hot oil heater should comply with State and National ambient air quality standards

Predicted Ambient Air Quality Impacts							
Air Pollutant	Averaging Time	Impact (µg/m <sup>3</sup> )	Background (µg/m <sup>3</sup> )	Total Impact (µg/m <sup>3</sup> )	SAAQS (µg/m <sup>3</sup> )	NAAQS (µg/m <sup>3</sup> )	Compared to SAAQS
CO	1-hr	568.9	2508	3076.9	10000	40000	30.8%
	8-hr	398.2	798	1196.2	5000	10000	23.9%
NO <sub>2</sub>	Annual	21.4	8	29.4	70	100	42.0%
PM-10	24-hr	4.4	61	65.4	150	150	43.6%
	Annual	0.5	18	18.5	50	-	37.0%
PM-2.5	24-hr	4.2	12	16.2	-	35	46.2%
	Annual	0.4	5	5.4	-	15	36.3%
SO <sub>2</sub>	3-hr	145.5	325	470.5	1300	1300	36.2%
	24-hr	64.7	142	206.7	365	365	56.6%
	Annual	32.3	23	55.3	80	80	69.2%

notes:

1. EPA scaling factors of 0.9, 0.7, and 0.4 for the 3-hour, 8-hour, and 24-hour concentrations are used, respectively. State of Hawaii scaling factor of 0.2 is used for annual concentrations.

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2. Background concentrations from 2008 Hawaii Air Quality Data. Maximum background concentrations for CO, NO<sub>2</sub>, and PM taken from Kapolei, Oahu, and SO<sub>2</sub> from Kona, Hawaii. The PM-2.5 3-year average of the 98<sup>th</sup> percentile 24-hour background concentration was used.

### SIGNIFICANT PERMIT CONDITIONS

1. The 400 TPH Portable Drum Mix Asphalt Plant is subject to the provisions of 40 CFR Part 60, Subpart A and Subpart I.
2. The total operating hours of the diesel engine generator shall not exceed 1,750 hours in any rolling twelve-month (12-month) period.
3. The total operating hours of the drum mixer/dryer shall not exceed 1,750 hours in any rolling twelve-month (12-month) period.
4. The drum mixer/dryer, diesel engine generator, and hot oil heater shall be fired only on fuel oil no. 2 with a maximum sulfur content not to exceed 0.5% by weight.

### CONCLUSION

Actual emissions should be less than those estimated. Emission calculations were based on the maximum capacities of the equipment. The ambient air quality assessment demonstrates compliance with State and National Ambient Air Quality Standards.

Based on the information submitted by Road and Highway Builders, LLC, it is the determination of the Department of Health that the proposed project will be in compliance with the Hawaii Administrative Rules, Chapter 11-60.1, and State and National ambient air quality standards. Recommend issuance of the temporary covered source permit subject to the incorporation of the significant permit conditions, 30-day public comment period, and 45-day Environmental Protection Agency review period.

Mark Saewong  
January 13, 2010