

**PERMIT APPLICATION REVIEW
 TEMPORARY COVERED SOURCE PERMIT NO. 0726-01-CT
 Application for Significant Modification No. 0726-02**

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: UTM: Zone 4, 595,079 m E, 2,355,688 m N (NAD 83)
 Kitty Hawk Road, Kapolei, Oahu

SIC Code: 2951 (Asphalt Paving Mixtures and Blocks)

Responsible Official: Mr. Rick Thompson
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Equipment:

Equipment	Manufacturer	Model No.	Serial No.	Manuf. Date
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			
50 TPH RAP crusher	Cedarapids	30		
325 hp diesel engine	Caterpillar	3406	90U02410	
50 hp diesel engine generator (insignificant)	MQ	DCA70SSJ	734472	
Various conveyors				

BACKGROUND

Road and Highway Builders, LLC has submitted an application for significant modification to install and operate a 50 TPH RAP crusher with 325 hp diesel engine at its existing facility. A 50 hp diesel engine generator powers the conveyors. The total operating hours of the crusher will be limited to 3,000 hours in any rolling 12-month period. The diesel engine will be fired on fuel oil no. 2 with a maximum sulfur content of 0.5% by weight.

Process

Material is dropped on the RAP crusher feeder by a front end loader and fed to the crusher. The crushed material is conveyed to a stockpile. When the material is needed, it will be dropped on a second feeder by a loader and conveyed to the drum mixer/dryer.

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 Code of Federal Regulations (CFR) Part 60

Subpart 000 - Standards of Performance for Nonmetallic Mineral Processing Plants is not applicable to the portable RAP crusher because the maximum capacity of the crusher is less than 150 tons/hour.

Subpart IIII – Standards of Performance for Stationary Compression Ignition Internal Combustion Engines is not applicable to the 1,467 bhp diesel engine generator and 325 hp diesel engine because the engines will be operated as nonroad engines. Subpart IIII applies to stationary internal combustion engines that are not nonroad engines.

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

This source is not subject to NESHAP as there are no standards in 40 CFR Part 61 applicable to this facility.

National Emission Standards for Hazardous Air Pollutants for Source Categories (NESHAP) (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 1,467 bhp diesel engine generator and 325 hp diesel engine because the engines will be operated as nonroad engines. Subpart ZZZZ applies to stationary internal combustion engines that are not nonroad engines.

Prevention of Significant Deterioration (PSD), 40 CFR Part 52, §52.21

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 because 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 CFR 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), 40 CFR Part 51, Subpart A

CERR is not applicable because emissions from the facility do not exceed CERR thresholds.

DOH In-house Annual Emissions Reporting

The Clean Air Branch requests annual emissions reporting from those facilities that have facility wide emissions exceeding in-house reporting levels and for all covered sources. Annual emissions reporting will be required because this facility is a covered source.

Best Available Control Technology (BACT)

This source is not subject to BACT analysis because potential emissions of the proposed RAP crusher with diesel engine are below significant levels. BACT analysis is required for new sources or modifications to sources that have the potential to emit or increase emissions above significant levels considering any limitations as defined in HAR, §11-60.1-1.

BACT		
Pollutant	Potential Emissions (TPY)	Significant Levels (TPY)
CO	3.0	100
NO _x	14.1	40
SO ₂	1.6	40
PM	4.4	25
PM-10	2.5	15
VOC	1.2	40

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 CO, NO_x, and PM emissions exceed major source thresholds when the facility is operated without limitations for 8,760 hours/year.

Greenhouse Gas (GHG) Tailoring Rule

Title V permitting for GHG emissions is not applicable because the potential to emit of CO₂ equivalent (CO₂e) emissions are less than 100,000 tons per year. Total GHG emissions on a CO₂e basis using the global warming potential (GWP) of the GHG are shown in the table below.

GHG	GWP	GHG Mass-Based Emissions (TPY)	CO ₂ e Based Emissions (TPY)
Carbon Dioxide (CO ₂)	1	15021.6	15021.6
Methane (CH ₄)	21	4.32	90.7
Nitrous Oxide (N ₂ O)	310	0.02	5.3
Total Emissions:			15117.6

INSIGNIFICANT ACTIVITIES / EXEMPTIONS

Diesel Engines

The following diesel engine generators are exempt in accordance with HAR §11-60.1-62(d)(4) because their heat input capacities are less than one (1) MMBtu/hr.

1. 65 hp generator: 2.6 gal/hr x 0.14 MMBtu/gal = 0.36 MMBtu/hr.
2. 50 hp generator (powering RAP conveyors): 86 hp x 7,000 Btu/hp-hr = 0.60 MMBtu/hr.

Storage Tanks

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

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

ALTERNATIVE OPERATING SCENARIOS

Diesel Engine and Diesel Engine Generator

The permittee may replace each diesel engine or 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 or 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

PROJECT EMISSIONS

Operating hours for the RAP crusher will be limited to 3,000 hours in any rolling twelve-month (12-month) period.

50 TPH RAP Crusher

The maximum capacity of the RAP crusher was used to calculate emissions. Emissions were based on emission factors from AP-42 Section 11.19.2 (8/04) – Crushed Stone Processing and Pulverized Mineral Processing. Storage pile emissions were based on emission factors from AP-42 Section 13.2.4 (11/06) – Aggregate Handling and Storage Piles.

50 TPH RAP Crusher				
Pollutant	RAP Crusher Emissions (TPY)		Storage Piles Emissions (TPY)	
	3,000 hr/yr	8,760 hr/yr	3,000 hr/yr	8,760 hr/yr
PM	1.3	3.9	2.1	6.2
PM-10	0.5	1.5	1.0	2.9
PM-2.5	0.2	0.6	0.2	0.4

325 hp Caterpillar Diesel Engine

The 325 hp diesel engine generator is fired on fuel oil no. 2 with a maximum sulfur content of 0.5% by weight. Emissions were based on emission factors from AP-42 Section 3.3 (10/96) – Gasoline and Diesel Industrial Engines. The mass balance method was used to determine SO₂ emissions.

325 hp Caterpillar Diesel Engine			
Pollutant	Emissions (lb/hr)	Emissions (TPY) [3,000 hr/yr]	Emissions (TPY) [8,760 hr/yr]
CO	2.03	3.05	8.90
NO _x	9.43	14.14	41.29
SO ₂	1.08	1.62	4.74
PM	0.66	0.99	2.90
PM-10	0.66	0.99	2.90
PM-2.5	0.66	0.99	2.90
VOC	0.77	1.15	3.37
HAPs	0.008	0.012	0.035

Existing Equipment

Total facility emissions of the existing pieces of equipment are summarized below, referenced from review no. 0726-01.

Existing Equipment		
Pollutant	Emissions (TPY) [3,500 hr/yr]	Emissions (TPY) [8,760 hr/yr]
CO	48.2	240.2
NO _x	35.8	174.1
SO ₂	13.0	46.6
PM	31.9	159.1
PM-10	12.5	62.4
PM-2.5	3.8	18.6
VOC	17.5	87.6
HAPs	3.2	16.0

Total Emissions

Total facility emissions are summarized in the table below.

Total Facility Emissions and Trigger Levels (TPY)					
Pollutant	Emissions (With Limits)	Emissions (No Limits)	BACT Significant Level	CERR Threshold	DOH Level
CO	51.2	249.1	100	1000	250
NO _x	49.9	215.4	40	100	25
SO ₂	14.6	51.3	40	100	25
PM	36.3	172.1	25	-	25
PM-10	15.0	69.8	15	100	25
PM-2.5	5.1	22.5	-	100	-
VOC	18.7	91.0	40	100	25
HAPs	3.2	16.0	-	-	5

AIR QUALITY ASSESSMENT

An ambient air quality impact analysis (AAQIA) was conducted for the proposed 325 hp Caterpillar diesel engine to demonstrate compliance with State and National ambient air quality standards. The AERMOD modeling system using Lakes Environmental AERMOD View, Version 7.6.1, was used for the modeling analysis.

Terrain

USGS 7.5 min digital elevation model (DEM) with 10 meter spacing from the Ewa, Oahu, quadrangle.

Meteorological data

Meteorological data from Honolulu International Airport (2005 – 2009) was used for the analysis.

Receptor Grid

Receptor grid spacing was set at 30 meters.

Dispersion Coefficient

Rural dispersion coefficient was selected.

Building Downwash

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

Ozone Limiting Method

The ozone limiting method was used for the NO_x to NO₂ conversion. The in-stack NO₂/NO_x ratio of 20% for diesel engines was used for the model. The hourly ozone background concentrations obtained from the Sand Island, Oahu air monitoring station for the years 2005 through 2009.

Emission Rates and Stack Parameters

The short term emission rates and stack parameters used in the analysis are shown in the table below.

Source	Emission Rates (g/s)					Stack Parameters			
	CO	NO _x	PM-10	PM-2.5	SO ₂	Height (m)	Diameter (m)	Flow Rate (m ³ /s)	Temp (°K)
325 hp Engine	0.2559	1.1879	0.0835	0.0835	0.1364	6.10	0.127	0.91	734

Results

The annual concentrations assume an annual hourly limit of 3,000 hours/year for the diesel engine. The table below shows the predicted ambient air quality impacts from the diesel engine should comply with State and National ambient air quality standards.

Predicted Ambient Air Quality Impacts							
Air Pollutant	Averaging Time	Impact (µg/m ³)	Background ¹ (µg/m ³)	Total Impact (µg/m ³)	SAAQS (µg/m ³)	NAAQS (µg/m ³)	Compared to SAAQS
CO	1-hr	63.8	1374	1437.8	10000	40000	14.4%
	8-hr	52.2	1145	1197.2	5000	10000	23.9%
NO ₂	1-hr	133.8	45	178.8	-	188	95.1%
	Annual	10.2	5.6	15.8	70	100	22.6%
PM-10	24-hr	12.7	51	63.7	150	150	42.5%
	Annual	1.4	16.3	17.7	50	-	35.4%
PM-2.5	24-hr	12.7	12	24.7	-	35	70.7%
	Annual	1.4	5	6.4	-	15	42.7%
SO ₂	1-hr	33.5	49.6	83.1	-	196	42.4%
	3-hr	32.2	33.9	66.1	1300	1300	5.1%
	24-hr	20.8	7.8	28.6	365	365	7.8%
	Annual	2.3	5.2	7.5	80	80	9.4%

1. Background concentrations (2011 Hawaii Air Quality Data) from Kapolei. NO₂ (1-hr) and PM-2.5 (24-hr) are the 98th percentile averaged over 3 years. PM-2.5 (annual) is the annual mean averaged over three (3) years.

SIGNIFICANT PERMIT CONDITIONS

1. Operating Hour Limits

- a. The total operating hours of the drum mixer/dryer shall not exceed 1,750 hours in any rolling twelve-month (12-month) period.
- b. The total operating hours of the 1,467 bhp diesel engine generator shall not exceed 1,750 hours in any rolling twelve-month (12-month) period.
- c. The total operating hours of the 325 hp diesel engine shall not exceed 3,000 hours in any rolling twelve-month (12-month) period.

Reason: Limit CO, NO_x, and PM emissions below the major source thresholds.

2. Fuel Limits

The drum mixer/dryer, 1,467 bhp diesel engine generator, 325 hp diesel engine, 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.

Reason: Fuel type proposed by the applicant.

3. Baghouse

- a. The baghouse servicing the drum mixer/dryer shall be operated at all times during operation of the drum mixer/dryer. The permittee shall not operate the drum mixer/dryer if a problem affecting baghouse control efficiency is observed at any time. The permittee shall investigate and correct the problem before resuming drum mixer/dryer operation.
- b. The baghouse pressure differential shall be maintained within the range of two (2) to six (6) inches of water.
- c. The permittee shall follow a regular maintenance schedule as recommended by the manufacturer to ensure the following items of the baghouse are operating properly:
 - i. The filter bags are checked for any tears, holes, abrasions and scuffs, and are replaced as needed;
 - ii. The cleaning system is maintained and operated, as needed, to minimize particulate buildup or caking on the filter bags;
 - iii. The hopper is discharged in a timely manner to prevent excessive particulate buildup which could cause compaction, overflow, or plugging; and
 - iv. Other miscellaneous items/equipment essential for effective baghouse operation are maintained.

Reason: Ensure baghouse is properly operated and maintain

4. Incorporate 40 CFR 60, Subpart I, provisions for the drum mix asphalt plant.

The permittee shall not discharge or cause the discharge into the atmosphere from the baghouse servicing the drum mixer/dryer, particulate matter in excess of 90 mg/dscm (0.04 gr/dscf).

Reason: The drum mix asphalt plant is subject to 40 CFR 60, Subpart I.

CONCLUSION

Road and Highway Builders, LLC has submitted an application for significant modification to install and operate a 50 TPH RAP crusher with 325 hp diesel engine at its existing facility. There are no other proposed changes in this permit modification. The ambient air quality impact assessment of the 325 hp diesel engine demonstrates compliance with State and National Ambient Air Quality Standards. Recommend issuance of the 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
March 18, 2013