

**PERMIT APPLICATION REVIEW
Temporary Covered Source Permit (CSP) No. 0545-01-CT
Application No. 0545-01**

Applicant: Jas. W. Glover, Ltd.
Facility: 300 TPH Portable Asphalt Plant
SIC Code: 2951 (asphalt paving mixtures & blocks)
Initial Location: Honokohau Quarry, Kona, Island of Hawaii
UTM Coordinates: 813,425 m E - 2,179,215 m N (NAD 83 - pg 2 of Form S-1)
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I. Background

Jas. W. Glover, Ltd. proposes to construct a new 300 TPH portable drum mix asphalt plant at an existing quarry site in Honokohau, on the island of Hawaii. A temporary CSP application (dated September 2003), along with a check for the \$1,000 application fee, were received by the Department of Health (Department) on September 15, 2003. In response to the Department's request, the following were also provided:

Date	Submittal Description
10/15/03	Revised drum mixer emission calculations to account for used oil combustion and a revised modeling analysis.
10/19/03	HAP emission calculations for asphalt load-out and silo-filling operations.
10/24/03	Revised hot oil heater HAP emission calculations.
11/18/03	PM, TOC, and CO emission calculations for asphalt load-out and silo-filling operations.
12/5/03	RAP crusher calculations.

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The application requests that the following be permitted:

- \$ 300 TPH asphalt drum mixer with a maximum fuel feed rate of 714 gph fired on Fuel Oil No. 2 (FO2), spec used oil, or any combination of the two fuels. Fuel usage limited to 2,142,000 gpy (3,000 hr/yr operation).
- \$ Baghouse to control emissions from drum mixer.
- \$ 1085 BHP diesel engine generator (DEG) with a maximum fuel feed rate of 53 gph to power the asphalt drum mixer and plant. DEG to be fired on FO2 with fuel usage limited to 159,000 gpy (3,000 hr/yr operation).
- \$ Temporary replacement of a similar or smaller-sized DEG to be allowed in the event that the DEG becomes inoperable and in need of repair.
- \$ Hot oil heater with a maximum fuel feed rate of 20 gph to be fired on FO2 with fuel usage limited to 60,000 gpy (3,000 hr/yr operation).
- \$ 4 x 10 foot scalping screen.

The plant will generally operate 8 -10 hours/day, 5 days/wk, 52 wk/yr (2080 - 2600 hr/yr).

Process Description

Raw materials used in producing asphalt concrete are aggregate, reclaimed asphalt paving (RAP), and liquid asphalt cement. Course and fine aggregate are processed through a scalping screen to remove oversized and foreign objects, then weighed, and fed into the counterflow drum mixer. A portable recycle bin encompassing conveyers and a size breaker crushes RAP which is also fed into the drum mixer. The drum mixer is powered by a 1085 BHP DEG and exhausts to a baghouse. Asphalt cement, stored in tanks heated by a hot oil heater, is pumped to the drum mixer to coat the aggregate and RAP. The resulting hot mix asphalt is conveyed to a silo for storage and then loaded into trucks.

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II. Equipment Description

Description	Power Source or Fuel	Max. Fuel Feed (gph)	Manufacturer	Model No.	Serial No.	Capacity	Manuf. Date
drum mixer	DEG	N/A	CMI Corp.	PTD-300		300 TPH	2003
burner	FO2, used oil	714 gph	Hauck Manu. Co.	Eco-Star II			2003
baghouse	DEG	N/A	CMI Corp.	Roto-Aire RA-318P/648		53,400 acfm 11,664 sf cloth	2003
DEG	FO2	53 gph	Cummins	Eng: QST30G2		1085 bhp	2003
hot oil heater	FO2	20 gph	CEI Enterprises, Inc.	CEI-2000		2.82/2.45 (I/O) MMBTUH	2003
4 x 10 scalping screen	N/A	N/A	CMI Corp.				2003
portable 10' x 14' aggregate bin	N/A	N/A	CMI Corp.	PAB series		32 tons	2003
portable 14' x 8' recycle bin w/ 18" x 24" rollers	DEG	N/A	CMI Corp.	PRB-120		20 tons, 300 TPH	2003

Note: Serial nos. to be provided once equipment arrives on island.

III. Air Pollution Controls

Emission Source	Control Measures	% Control Efficiency
Asphalt drum mixer	baghouse	99
Aggregate processing	water spray	70
Unpaved roads	water	70

References:

- AP-42 11.19.1 Sand and Gravel Processing (1/95): Sect. 11.19.1.2 Emissions and Controls, paragraph 3 indicates that spray systems at transfer points and on material handling operations have been estimated to reduce emissions 70 - 95%.
- AP-42 Appendix B.2 Generalized Particle Size Distributions (1/95): Table B.2-3, Typical Collection Efficiencies of Various Particulate Control Devices, indicates that fabric filters have a control efficiency of 99 - 99.5%.

IV. Applicable Requirements

1. Hawaii Administrative Rules (HAR), Title 11

Chapter 59, Ambient Air Quality Standards

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

11-60.1-38 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 10 - Field Citations

2. PSD Requirements

PSD requirements do not apply because the facility is not a major stationary source and is not proposing any modifications to trigger a major modification as defined in 40 CFR 52.21 and HAR Title 11, Chapter 60.1, Subchapter 7.

3. NSPS Requirements

40 CFR 60 - Standards of Performance for New Stationary Sources:

Subpart A - General Provisions

Subpart I - Standards of Performance for Hot Mix Asphalt Facilities

Subpart OOO - Standards of Performance for Nonmetallic Mineral Processing Plants

Subparts A and I apply to the asphalt plant because the facility will commence construction after June 11, 1973. Subpart OOO applies to the portable recycle bin because it encompasses a 300 TPH portable RAP crusher which exceeds the 150 TPH portable crusher limit.

4. NESHAP Requirements

These requirements do not apply because no standard covering the facility's operation or equipment has been promulgated under 40 CFR 61.

5. MACT Requirements

These requirements do not apply because the facility is not a major source of hazardous air pollutants and the facility does not belong to a source category or subcategory for which a standard has been promulgated under 40 CFR 63.

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6. BACT Requirements

A BACT review is required for new or modified sources resulting in a significant net emissions increase as defined in HAR '11-60.1-1. Since NO_x, PM, and PM-10 emissions exceed significant levels, a BACT analysis is required.

Emissions and Triggering Levels				
Pollutant	Potential Emissions (tpy)	Significant Level (tpy)	CER Reporting Type "B" Level (tpy)	DOH Reporting Level (tpy)
CO	61.22	100	1000	250
NO _x	47.96	40	100	25
PM	47.88	25	N/A	25
PM ₁₀	20.50	15	100	25
SO ₂	33.85	40	100	25
VOC	22.30	40	100	25
Pb	0.01	0.600	5	5

BACT Analysis		
Pollutant	Source	BACT
NO _x	DEG	Turbo charging and aftercooling along with proper maintenance and operation.
	drum mixer, hot oil heater	Proper maintenance and operation.
PM & PM-10	drum mixer	Baghouse, proper maintenance and operation.
	DEG, hot oil heater	Low sulfur diesel fuel with low ash content, proper maintenance and operation.
Ref: Glover temporary CSP application, 9/03, Form S-4, page 3.		

7. CAM Requirements (40 CFR 64)

The purpose of Compliance Assurance Monitoring (CAM) is to provide reasonable assurance that compliance is being achieved with large emission units that rely on air pollution controls to meet an emissions limit or standard. CAM applies if the emissions unit:

1. is located at a major source;
2. is subject to an emissions limit or standard;
3. uses a control device to achieve compliance;
4. has potential pre-control emissions that are 100% of the major source level; AND
5. is not otherwise exempt from CAM.

Since the facility is not a major source, CAM does not apply.

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8. CDS Requirements (40 CFR 51, Subpart Q)

Compliance Data System is an inventory system for covered sources subject to annual inspections. CDS requirements apply to this facility because it is a covered source.

9. CER/DOH Requirements

Consolidated Emissions Reporting Requirements (CERR) apply if emissions from the facility equal or exceed levels specified in 40 CFR 51, Subpart A, Appendix A shown in the previous table. CERR do not apply because facility emissions are below the CERR levels.

Although CERR do not apply, the Department requests annual emissions reporting if total facility-wide emissions of a particular pollutant exceed reporting levels indicated above. These reports are used internally and are not inputted into the CER database. Emissions reporting is required because facility-wide emissions of NO_x, PM, and SO₂, exceed DOH levels.

10. Synthetic Minor & Major Source Applicability

A synthetic minor 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. The facility is a synthetic minor of CO, NO_x and PM because without operational limits, emissions of each of these pollutants would equal or exceed 100 tpy. This facility is also a non-major source because potential emissions of each pollutant, considering controls and operational limits, are below major source levels.

V. Insignificant Activities

No.	Description	HAR Reference
1	8,000 gallon tank holding diesel fuel for the drum mixer	11-60.1-82(f)(1) Any storage tank, reservoir, or other container of capacity equal to or less than 40,000 gallons storing volatile organic compounds, except those storage tanks, reservoirs, or other containers subject to any standard or other requirement pursuant to Sections 111 and 112 of the Act.
1	8,000 gallon tank holding used oil for the drum mixer	
1	8,000 gallon tank holding diesel fuel for the DEG	

VI. Alternative Operating Scenarios

In the event that the permitted DEG becomes temporarily inoperable, the applicant requests that installation and operation of a DEG of equal or smaller size, be allowed until the permitted DEG is repaired and operational.

VII. Project Emissions

Facility-wide emissions are shown in the following table. Calculations are shown in Enclosure 1.

Facility-Wide Emissions																					
Pol.	Point Source Emissions						Fugitive Emissions												Facility-Wide Emissions		
	Drum Mixer		DEG		Hot oil heater		Load-Out		Silo Fill & Stor.		RAP Proc.		Agg. Proc.		Agg. Handling		Unpaved Rds		Emissions		
	8760	3000	8760	3000	8760	3000	8760	3000	8760	3000	8760	3000	8760	3000	8760	3000	8760	3000	8760	3000	
	hr/yr	hr/yr	hr/yr	hr/yr	hr/yr	hr/yr	hr/yr	hr/yr	hr/yr	hr/yr	hr/yr	hr/yr	hr/yr	hr/yr	hr/yr	hr/yr	hr/yr	hr/yr	hr/yr	hr/yr	
CO	170.82	58.50	4.19	1.44	0.44	0.15	1.77	0.61	1.55	0.53									178.77	61.22	
NOx	72.27	24.75	66.01	22.61	1.75	0.60													140.03	47.96	
PM	43.36	14.85	1.04	0.36	0.18	0.06	0.69	0.23	0.77	0.26	2.58	0.88	21.58	7.39	3.05	1.04	66.61	22.81	139.85	47.88	
PM10	30.22	10.35	1.04	0.36	0.09	0.03	0.69	0.23	0.77	0.26	1.39	0.48	10.33	3.54	1.44	0.49	13.90	4.76	59.87	20.50	
SO2	76.21	26.10	16.41	5.62	6.22	2.13													98.84	33.85	
VOC	42.05	14.40	1.56	0.53	0.05	0.02	5.46	1.87	16.01	5.48									65.13	22.30	
Pb	0.02	0.007																	0.02	0.01	
HAPs	0.26	0.09	0.14	0.05	2.37	0.81	0.11	0.04	0.25	0.08									3.13	1.07	

VIII. Air Quality Assessment

An Ambient Air Quality Impact Assessment is generally done for new or modified sources. A refined modeling analysis for the new facility was performed using the ISCST3 program. Results indicate compliance with federal and state air quality standards as shown below. The following assumptions were used:

- \$ Rural area.
- \$ Keahole DEM terrain file converted to NAD 83 and incorporated into modeling file by Glover consultant.
- \$ Receptors spaced 30 meters apart. 34 receptors in the East-West and North-South direction resulting in a total of 1156 receptors, spanning an area 980,100 square meters.
- \$ Keahole meteorological data (keahol10.ASC file).
- \$ Potential building downwash sources from facility structures shown on plant layout (layout follows Form S-1 in the application).
- \$ Kona monitoring station background data used when available. West Beach station data used when Kona data unavailable. West Beach is considered representative of the quarry area because it is a non-urban area.
- \$ Three point sources with the following parameters:

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Source Emission Rates & Stack Parameters								
Source	Emission Rates (g/sec)				Stack Parameters			
	CO	NOx	PM-10	SO2	Ht (m)	Dia (m)	Vel (m/s)	Exit Temp (K)
Baghouse	4.914	2.079	0.869	2.192	12.6	1.421	15.9	422.0
DEG	0.121	1.899	0.030	0.473	7.0	0.254	55.7	760.9
Hot oil heater	0.013	0.050	0.003	0.179	5.5	0.273	7.0	449.8

Ambient Air Quality Assessment Results										
Pollutant	Aver. Time	Predicted Conc. (ug/m3)	Annual Oper Limit Factor	Adjusted Conc. (ug/m3)	Bkgrnd. Conc. (ug/m3)	Background Concentration Location & Yr.	Total Impact (ug/m3)	SAAQs	NAAQS	%SAAQs Standard
CO	1 hr	222.60	1.00	222.6	1947	West Beach, 2002	2170.0	10000	40000	22
CO	8 hr	92.30	1.00	92.3	401	West Beach, 2002	493.0	5000	10000	10
NO2	annual	21.10	0.34	7.2	8	West Beach, 2002	29.0	70	100	41
PM10	24 hr	8.75	1.00	8.8	37	West Beach, 2002	46.0	150	150	31
PM10	annual	1.23	0.34	0.4	13	West Beach, 2002	14.0	50	50	28
SO2	3 hr	792.50	1.00	792.5	50	Kona, 2002	843.0	1300	-	65
SO2	24 hr	250.20	1.00	250.2	19	Kona, 2002	269.0	365	365	74
SO2	annual	39.00	0.34	13.3	8	Kona, 2002	47.0	80	80	59

Notes:

1. The annual concentration was adjusted by a factor of 0.34 to account for the 3000 hr/yr operational limit ($3000/8760 = 0.34$).
2. NO₂ concentration based on Ambient Ratio Method, Tier 1 which assumes 100% NO_x to NO₂ conversion.

IX. Significant Permit Conditions

1. The 300 TPH HMA plant is subject to the requirements of NSPS, Subparts A and I.

Purpose: The above federal standards apply to a hot mix asphalt facility that commences construction or modification after June 11, 1973.

2. The 300 TPH crusher is subject to the requirements of NSPS, Subpart OOO.

Purpose: The above federal standard applies to portable crushers at hot mix asphalt facilities that reduce the size of nonmetallic minerals embedded in recycled asphalt pavement if the portable crusher capacity exceeds 150 TPH and the crusher was constructed after August 31, 1983.

3. Total asphalt concrete production shall not exceed 900,000 tons for any rolling 12-month period.

Purpose: Emission calculations for the drum mixer are based on emission factors given in units of pounds pollutant per ton of product and on this production limit.

4. The drum mixer shall be fired on FO2 with a maximum sulfur content of 0.5% by weight, spec used oil with a maximum sulfur content of 2%, or any combination of the two.

Purpose: Per HAR ' 11-60.1-38(a), no person shall burn any fuel containing an excess of 2% sulfur by weight, except for fuel used in ocean-going vessels.

5. Fuel usage for the drum mixer shall not exceed 2,142,000 gallons per year.

Purpose: Based on the drum mixer-s maximum fuel feed rate, the specified fuel limit is equivalent to an operational limit of 3,000 hours per year, on which emission calculations are based.

6. The baghouse for the HMA plant shall be operated at all times during plant operation and shall be maintained in good operating condition.

Purpose: Control PM, and PM₁₀ emissions.

7. The drum mixer shall only be powered by the 1085 HP DEG or approved temporary replacement.

Purpose: A DEG fuel limit proposed by the applicant is intended to limit operation of the asphalt plant. Therefore power for asphalt plant operation must be restricted to the DEG to which the fuel limit applies.

8. The DEG and hot oil heater shall only be fired on FO2 with sulfur content not to exceed 0.5% by weight.

Purpose: Applicant proposed to limit the sulfur content of fuel to control SO₂ emissions. Per HAR ' 11-60.1-38(a), no person shall burn any fuel containing an excess of 2% sulfur by weight, except for fuel used in ocean-going vessels.

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9. Fuel usage for the DEG and any approved temporary replacement shall not exceed a total of 159,000 gallons per year.

Purpose: Based on the DEG-s maximum fuel feed rate, the specified fuel limit is equivalent to an operational limit of 3,000 hours per year, on which emission calculations are based.

10. Fuel usage for the hot oil heater shall not exceed 60,000 gallons per year.

Purpose: Based on the hot oil heater-s maximum fuel feed rate, the specified fuel limit is equivalent to an operational limit of 3,000 hours per year, on which emission calculations are based.

11. Fuel meters shall be installed, operated, and maintained on the DEG, any approved temporary replacement for the DEG, and the hot oil heater.

Purpose: Meters shall be used to monitor fuel usage and determine compliance with the DEG and hot oil heater fuel limits.

12. Temporary replacement of a similar or smaller-sized DEG will be allowed in the event that the permitted 1085 BHP DEG is inoperable and in need of repair.

Purpose: This provision will allow facility operation to continue if the permitted DEG becomes inoperable and undergoes repair.

13. Reasonable efforts shall be taken to control fugitive emissions from RAP crushing, aggregate processing and handling, and from unpaved roads. This includes the use of water sprays or a water truck, as necessary, to minimize fugitive emissions. It also includes maintaining the water sprays in good operating condition.

Purpose: Control PM and PM₁₀ emissions.

X. Conclusion

Emission calculations for the new temporary asphalt plant are based on the plant operating at maximum capacity of 300 TPH for a maximum of 3000 hr/yr. Actual facility emissions, however, should be less than those calculated in this review for the following reasons:

- \$ Emission calculations are based on the maximum capacity of the asphalt plant. The actual production rate, however, is less than the maximum capacity.
- \$ Although the facility will burn both FO2 and spec used oil in the drum mixer, some emission calculations are based only on waste oil combustion to provide a worst-case analysis.

Issuance of a Covered Source Permit is recommended based on the review of the applicant's information and subject to significant permit conditions, public comments, and EPA review.

April Matsumura
December 5, 2003