

# Appendix A

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## Air Quality Methodology and Calculations



**RECORD OF NON-APPLICABILITY (RONA)  
FOR CLEAN AIR ACT CONFORMITY  
DEVELOPMENT OF THE P205 ALERT FORCE COMPLEX AT TRAVIS AIR FORCE BASE**

The Proposed Action falls under the Record of Non-Applicability (RONA) category pursuant to 40 Code of Federal Regulations (CFR) Parts 52 and 93, and the basis for exemption from conformity requirements is documented with this RONA.

The United States (US) Environmental Protection Agency (USEPA) published *Determining Conformity of General Federal Actions to State or Federal Implementation Plans; Final Rule*, in the Federal Register (40 CFR Parts 6, 51, and 93) on November 30, 1993. The U.S. Navy published *Clean Air Act General Conformity Guidance in Chief of Naval Operations Instruction (OPNAVINST) 5090.1C CH-1* (18 July 2011). These publications provide guidance to document Clean Air Act Conformity requirements.

Federal regulations state that no department, agency, or instrumentality of the federal government shall engage in, support in any way, or provide financial assistance for, license or permit, or approve any activity that does not conform to an applicable implementation plan. The federal agency that is the action proponent is responsible for determining whether a federal action conforms to the applicable implementation plan before the Proposed Action is taken (40 CFR Part 1, Section 51.850[a]).

Federal actions may be exempt from conformity determinations if they do not exceed designated *de minimis* levels for criteria pollutants as set forth in 40 CFR § 93.153(c) (Table 1). These standards are reflected in Appendix F of OPNAVINST 5090.1C CH-1.

The Proposed Action would be implemented in Solano County, California, under the jurisdiction of the California Air Resources Board (ARB), the Bay Area Air Quality Management District, and EPA Region 9. Solano County is designated nonattainment for state ozone (O<sub>3</sub>) standards, particulate matter less than 10 micrometers in aerodynamic diameter (PM<sub>10</sub>) and particulate matter less than 2.5 micrometers in aerodynamic diameter (PM<sub>2.5</sub>) (CARB, 2018). For federal standards, Solano County is designated nonattainment for 8-hour O<sub>3</sub> and PM<sub>2.5</sub> and is in maintenance for carbon monoxide (CO). All other criteria pollutants are designated attainment or are unclassified.

The EPA Final Conformity Rule requires that total direct and indirect emissions of nonattainment and maintenance criteria pollutants, including O<sub>3</sub> precursors (volatile organic compounds [VOC] and nitrogen oxides [NO<sub>x</sub>]), be considered in determining conformity. The rule does not apply to actions where total direct and indirect emissions of nonattainment and maintenance criteria pollutants do not exceed the thresholds established in 40 CFR 93.153(b). *De minimis* levels (in tons/year) for the air basin potentially affected by the Proposed Action are listed in **Table 1**.

**Table 1. *De minimis* Levels for Criteria Pollutants for the Proposed Action**

Criteria Pollutant	<i>De minimis</i> Level (tons/year)	Exceedance (Yes or No)
VOC	100	No
NO <sub>x</sub>	100	No
CO	N/A	N/A
PM <sub>10</sub>	N/A	N/A
PM <sub>2.5</sub>	100	No

**Note:** If a federal action meets *de minimis* requirements, detailed conformity analyses are not required, pursuant to 40 CFR 93.153(c).

**PROPOSED ACTION**

**Action Proponent:** U.S. Navy

**Location:** Travis Air Force Base, Fairfield, California

**Proposed Action Name:** P205 Alert Force Complex

**Proposed Action and Emissions Summary:** The Proposed Action would involve the construction of a new Alert Force Complex on an approximately 8.4-acre parcel, north of the Travis AFB runways. The new Complex would include the construction of utility infrastructure to support the Complex, and site preparation would include site clearing, excavation, and preparation for construction. Additional site preparation features include excavation of undocumented fill. Paving and site improvements include grading, parking, roadways, curbs, sidewalks, landscaping and pedestrian features.

With the exception of the spares storage and maintenance facilities outside the compound (buildings 1164, 1177, and 1179), fourteen existing facilities near the southern boundary of Travis AFB would be demolished, and the remaining three buildings would be returned to the Air Force for their reuse. Existing utility infrastructure would either be abandoned in place or remain in place where appropriate.

The proposed site location would allow for two access routes to the new aircraft parking, north of the flight line, while meeting the Navy’s time requirements. The proposed Complex site would utilize existing Travis AFB aircraft parking spaces for at least two E-6B Mercury aircrafts to be parked near the new facility at all times. If a third aircraft is located at Travis AFB, it may be parked anywhere on base. However, no new construction is required for the aircraft parking.

**Air Emissions Summary:** The Proposed Action would result in air emissions from construction and demolition activities. Implementation of the Proposed Action would require the demolition of fourteen facilities within the existing Alert Force Complex, construction of the proposed Alert Force Complex north of the Travis AFB runways, site preparation activities, and paving. Emissions associated with these activities are calculated based on assumptions regarding the amount of demolition required, estimated timeframe for construction, and estimated equipment and workforce requirements. Because mission operations would be unchanged, operational emissions from project implementation would be zero.

Based on the air quality analysis for the Proposed Action, the maximum estimated emissions would be below conformity *de minimis* levels (**Table 2**).

**Table 2. Estimated Emissions (Tons) at Travis AFB and Comparison to General Conformity under Proposed Action**

Year	Pollutant				
	VOC	NO <sub>x</sub>	CO	PM <sub>10</sub>	PM <sub>2.5</sub>
2020	0.204	1.333	1.270	7.185	0.060
2021	0.316	1.981	1.959	0.096	0.094
2022	0.633	1.457	1.443	0.072	0.071
General Conformity <i>De minimis</i> Thresholds (Tons per year)	100	100	N/A	N/A	100
Exceed Threshold?	No	No	No	No	No

## EMISSIONS EVALUATION AND CONCLUSION

Total combined direct and indirect emissions associated with the action were estimated through the Air Force's Air Conformity Applicability Model on a calendar-year basis for the "worst-case" and "steady state" (net gain/loss upon action fully implemented) emissions. Operational emissions from the Proposed Action would be zero as there is no change in mission or personnel. General Conformity under the Clean Air Act, Section 1.76 has been evaluated for the action described above according to the requirements of 40 CFR 93, Subpart B.

Based on the analysis, the requirements of this rule are:

\_\_\_\_\_ applicable

X  not applicable

The Navy concludes that *de minimis* thresholds for applicable criteria pollutants would not be exceeded nor would the projected emissions be regionally significant (i.e., greater than 10 percent of the air basin's emission budgets) as a result of implementation of the Proposed Action. The emissions data supporting that conclusion is shown in Table 2 above, which is a summary of the calculations, methodology, data, and references included in the attachment to the RONA. The Navy concludes that further formal Conformity Determination procedures are not required, resulting in this Record of Non-Applicability.

## RONA APPROVAL

Date:  9 - 26 - 2019

Signature:     
Victor Ortiz, Senior Air Quality Specialist

# AIR CONFORMITY APPLICABILITY MODEL REPORT RECORD OF CONFORMITY ANALYSIS (ROCA)

**1. General Information:** The Air Force’s Air Conformity Applicability Model (ACAM) was used to perform an analysis to assess the potential air quality impact/s associated with the action in accordance with the Air Force Instruction 32-7040, Air Quality Compliance And Resource Management; the Environmental Impact Analysis Process (EIAP, 32 CFR 989); and the General Conformity Rule (GCR, 40 CFR 93 Subpart B). This report provides a summary of the ACAM analysis.

**a. Action Location:**

**Base:** TRAVIS AFB  
**County(s):** Solano  
**Regulatory Area(s):** San Francisco Bay Area, CA; San Francisco-Oakland-San Jose, CA

**b. Action Title:** ALERT FORCE COMPLEX PROJECT

**c. Project Number/s (if applicable):** P205

**d. Projected Action Start Date:** 6 / 2020

**e. Action Description:**

The Proposed Action would include the construction of a new Alert Force Complex (Complex) for the Navy’s Fleet Air Reconnaissance Squadron Three Detachment Travis (VQ-3 Det Travis) outside the runway safety clear zone at Travis AFB. The new Complex would occupy approximately 8.4 acres north of the Travis AFB runways. The Proposed Action includes the demolition of most facilities within the existing Complex along the southern boundary of Travis AFB. Buildings 1164, 1177, and 1179 would not be demolished as part of the Proposed Action and would be returned to the Air Force for their reuse.

**f. Point of Contact:**

**Name:** Victor Ortiz  
**Title:** Senior Air Quality Specialist  
**Organization:** HELIX Environmental Planning Inc.  
**Email:** VictorO@helixepi.com  
**Phone Number:** 619.462.1515

**2. Analysis:** Total combined direct and indirect emissions associated with the action were estimated through ACAM on a calendar-year basis for the “worst-case” and “steady state” (net gain/loss upon action fully implemented) emissions. General Conformity under the Clean Air Act, Section 1.76 has been evaluated for the action described above according to the requirements of 40 CFR 93, Subpart B.

Based on the analysis, the requirements of this rule are: \_\_\_\_\_ applicable  
 \_\_\_X\_\_\_ not applicable

**Conformity Analysis Summary:**

**2020**

Pollutant	Action Emissions (ton/yr)	GENERAL CONFORMITY	
		Threshold (ton/yr)	Exceedance (Yes or No)
San Francisco Bay Area, CA			
VOC	0.230	100	No
NOx	1.461	100	No
CO	1.404		
SOx	0.003	100	No
PM 10	7.036		
PM 2.5	0.066	100	No

## AIR CONFORMITY APPLICABILITY MODEL REPORT RECORD OF CONFORMITY ANALYSIS (ROCA)

<b>Pb</b>	0.000		
<b>NH3</b>	0.001	100	No
<b>CO2e</b>	327.4		
San Francisco-Oakland-San Jose, CA			
<b>VOC</b>	0.230		
<b>NOx</b>	1.461		
<b>CO</b>	1.404	100	No
<b>SOx</b>	0.003		
<b>PM 10</b>	7.036		
<b>PM 2.5</b>	0.066		
<b>Pb</b>	0.000		
<b>NH3</b>	0.001		
<b>CO2e</b>	327.4		

### 2021

Pollutant	Action Emissions (ton/yr)	GENERAL CONFORMITY	
		Threshold (ton/yr)	Exceedance (Yes or No)
San Francisco Bay Area, CA			
<b>VOC</b>	0.316	100	No
<b>NOx</b>	1.981	100	No
<b>CO</b>	1.959		
<b>SOx</b>	0.005	100	No
<b>PM 10</b>	0.096		
<b>PM 2.5</b>	0.094	100	No
<b>Pb</b>	0.000		
<b>NH3</b>	0.002	100	No
<b>CO2e</b>	428.0		
San Francisco-Oakland-San Jose, CA			
<b>VOC</b>	0.316		
<b>NOx</b>	1.981		
<b>CO</b>	1.959	100	No
<b>SOx</b>	0.005		
<b>PM 10</b>	0.096		
<b>PM 2.5</b>	0.094		
<b>Pb</b>	0.000		
<b>NH3</b>	0.002		
<b>CO2e</b>	428.0		

### 2022

Pollutant	Action Emissions (ton/yr)	GENERAL CONFORMITY	
		Threshold (ton/yr)	Exceedance (Yes or No)
San Francisco Bay Area, CA			
<b>VOC</b>	0.604	100	No
<b>NOx</b>	1.304	100	No
<b>CO</b>	1.307		
<b>SOx</b>	0.003	100	No
<b>PM 10</b>	0.220		
<b>PM 2.5</b>	0.062	100	No
<b>Pb</b>	0.000		
<b>NH3</b>	0.001	100	No
<b>CO2e</b>	285.8		
San Francisco-Oakland-San Jose, CA			
<b>VOC</b>	0.604		

## AIR CONFORMITY APPLICABILITY MODEL REPORT RECORD OF CONFORMITY ANALYSIS (ROCA)

NOx	1.304		
CO	1.307	100	No
SOx	0.003		
PM 10	0.220		
PM 2.5	0.062		
Pb	0.000		
NH3	0.001		
CO2e	285.8		

### 2023 - (Steady State)

Pollutant	Action Emissions (ton/yr)	GENERAL CONFORMITY	
		Threshold (ton/yr)	Exceedance (Yes or No)
San Francisco Bay Area, CA			
VOC	0.000	100	No
NOx	0.000	100	No
CO	0.000		
SOx	0.000	100	No
PM 10	0.000		
PM 2.5	0.000	100	No
Pb	0.000		
NH3	0.000	100	No
CO2e	0.0		
San Francisco-Oakland-San Jose, CA			
VOC	0.000		
NOx	0.000		
CO	0.000	100	No
SOx	0.000		
PM 10	0.000		
PM 2.5	0.000		
Pb	0.000		
NH3	0.000		
CO2e	0.0		

None of estimated emissions associated with this action are above the conformity threshold values established at 40 CFR 93.153 (b); Therefore, the requirements of the General Conformity Rule are not applicable.



Victor Ortiz, Senior Air Quality Specialist

9-26-2019

DATE



# DETAIL AIR CONFORMITY APPLICABILITY MODEL REPORT

## 1. General Information

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### - Action Location

**Base:** TRAVIS AFB

**County(s):** Solano

**Regulatory Area(s):** San Francisco Bay Area, CA; San Francisco-Oakland-San Jose, CA

**- Action Title:** ALERT FORCE COMPLEX PROJECT

**- Project Number/s (if applicable):** P205

**- Projected Action Start Date:** 6 / 2020

### - Action Purpose and Need:

The Purpose of the Proposed Action is to provide adequate and efficiently configured facilities to provide a secure Alert Force Complex (Complex) for the Fleet Air Reconnaissance Squadron Three Detachment Travis (VQ-3 Det Travis). The project is needed because the facilities within the existing Complex have reached the end of their serviceable life and the current facilities have physical security concerns. Constructing a new Complex north of the flight line and outside of the runway clear zone corrects critical capacity, condition, and configuration issues that degrade mission capability and threaten the ability to maintain continuity of communication capabilities.

### - Action Description:

The Proposed Action would include the construction of a new Complex for the Navy's VQ-3 Det Travis outside the runway safety clear zone at Travis AFB. The new Complex would occupy approximately 8.4 acres north of the Travis AFB runways. The Proposed Action includes the demolition of most existing facilities along the southern boundary of Travis AFB. Buildings 1164, 1177, and 1179 would not be demolished as part of the Proposed Action and would be returned to the Air Force for their reuse.

### - Point of Contact

**Name:** Victor Ortiz

**Title:** Senior Air Quality Specialist

**Organization:** HELIX Environmental Planning Inc.

**Email:** VictorO@helixepi.com

**Phone Number:** 619.462.1515

### - Activity List:

	Activity Type	Activity Title
2.	Construction / Demolition	Construction

## 2. Construction / Demolition

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### 2.1 General Information & Timeline Assumptions

#### - Activity Location

**County:** Solano

**Regulatory Area(s):** San Francisco Bay Area, CA; San Francisco-Oakland-San Jose, CA

**- Activity Title:** Construction

#### - Activity Description:

Construction of a new Complex. Demolition of facilities within existing Complex.

# DETAIL AIR CONFORMITY APPLICABILITY MODEL REPORT

**- Activity Start Date**

**Start Month:** 6  
**Start Year:** 2020

**- Activity End Date**

**Indefinite:** False  
**End Month:** 11  
**End Year:** 2022

**- Activity Emissions:**

Pollutant	Total Emissions (TONs)
VOC	1.149866
SO <sub>x</sub>	0.010955
NO <sub>x</sub>	4.746257
CO	4.669174
PM 10	7.351976

Pollutant	Total Emissions (TONs)
PM 2.5	0.222614
Pb	0.000000
NH <sub>3</sub>	0.003541
CO <sub>2e</sub>	1041.3

## 2.1 Demolition Phase

### 2.1.1 Demolition Phase Timeline Assumptions

**- Phase Start Date**

**Start Month:** 10  
**Start Quarter:** 1  
**Start Year:** 2022

**- Phase Duration**

**Number of Month:** 2  
**Number of Days:** 0

### 2.1.2 Demolition Phase Assumptions

**- General Demolition Information**

**Area of Building to be demolished (ft<sup>2</sup>):** 37138  
**Height of Building to be demolished (ft):** 20

**- Default Settings Used:** Yes

**- Average Day(s) worked per week:** 5 (default)

**- Construction Exhaust (default)**

Equipment Name	Number Of Equipment	Hours Per Day
Concrete/Industrial Saws Composite	1	8
Rubber Tired Dozers Composite	1	1
Tractors/Loaders/Backhoes Composite	2	6

**- Vehicle Exhaust**

**Average Hauling Truck Capacity (yd<sup>3</sup>):** 20 (default)  
**Average Hauling Truck Round Trip Commute (mile):** 20 (default)

**- Vehicle Exhaust Vehicle Mixture (%)**

	LDGV	LDGT	HdGV	LDDV	LDDT	HDDV	MC
POVs	0	0	0	0	0	100.00	0

# DETAIL AIR CONFORMITY APPLICABILITY MODEL REPORT

**- Worker Trips**

Average Worker Round Trip Commute (mile): 20 (default)

**- Worker Trips Vehicle Mixture (%)**

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	50.00	50.00	0	0	0	0	0

### 2.1.3 Demolition Phase Emission Factor(s)

**- Construction Exhaust Emission Factors (lb/hour) (default)**

Concrete/Industrial Saws Composite								
	VOC	SO <sub>x</sub>	NO <sub>x</sub>	CO	PM 10	PM 2.5	CH <sub>4</sub>	CO <sub>2e</sub>
Emission Factors	0.0410	0.0006	0.2961	0.3743	0.0148	0.0148	0.0037	58.556
Rubber Tired Dozers Composite								
	VOC	SO <sub>x</sub>	NO <sub>x</sub>	CO	PM 10	PM 2.5	CH <sub>4</sub>	CO <sub>2e</sub>
Emission Factors	0.1919	0.0024	1.3611	0.7352	0.0536	0.0536	0.0173	239.51
Tractors/Loaders/Backhoes Composite								
	VOC	SO <sub>x</sub>	NO <sub>x</sub>	CO	PM 10	PM 2.5	CH <sub>4</sub>	CO <sub>2e</sub>
Emission Factors	0.0383	0.0007	0.2301	0.3598	0.0095	0.0095	0.0034	66.884

**- Vehicle Exhaust & Worker Trips Emission Factors (grams/mile)**

	VOC	SO <sub>x</sub>	NO <sub>x</sub>	CO	PM 10	PM 2.5	Pb	NH <sub>3</sub>	CO <sub>2e</sub>
LDGV	000.114	000.003	000.084	000.992	000.047	000.020		000.023	00298.845
LDGT	000.288	000.004	000.178	001.871	000.048	000.021		000.024	00379.038
HDGV	000.600	000.011	001.339	008.875	000.183	000.078		000.045	01128.468
LDDV	000.026	000.003	000.125	000.281	000.060	000.032		000.008	00271.718
LDDT	000.094	000.003	000.533	000.594	000.112	000.082		000.008	00364.857
HDDV	000.194	000.014	004.796	001.133	000.211	000.117		000.028	01514.699
MC	004.452	000.002	001.252	023.791	000.019	000.009		000.054	00187.891

### 2.1.4 Demolition Phase Formula(s)

**- Fugitive Dust Emissions per Phase**

$$PM_{10FD} = (0.00042 * BA * BH) / 2000$$

PM<sub>10FD</sub>: Fugitive Dust PM 10 Emissions (TONs)

0.00042: Emission Factor (lb/ft<sup>3</sup>)

BA: Area of Building to be demolished (ft<sup>2</sup>)

BH: Height of Building to be demolished (ft)

2000: Conversion Factor pounds to tons

**- Construction Exhaust Emissions per Phase**

$$CEE_{POL} = (NE * WD * H * EF_{POL}) / 2000$$

CEE<sub>POL</sub>: Construction Exhaust Emissions (TONs)

NE: Number of Equipment

WD: Number of Total Work Days (days)

H: Hours Worked per Day (hours)

EF<sub>POL</sub>: Emission Factor for Pollutant (lb/hour)

2000: Conversion Factor pounds to tons

**- Vehicle Exhaust Emissions per Phase**

$$VMT_{VE} = BA * BH * (1 / 27) * 0.25 * (1 / HC) * HT$$

VMT<sub>VE</sub>: Vehicle Exhaust Vehicle Miles Travel (miles)

# DETAIL AIR CONFORMITY APPLICABILITY MODEL REPORT

BA: Area of Building being demolish (ft<sup>2</sup>)  
BH: Height of Building being demolish (ft)  
(1 / 27): Conversion Factor cubic feet to cubic yards ( 1 yd<sup>3</sup> / 27 ft<sup>3</sup>)  
0.25: Volume reduction factor (material reduced by 75% to account for air space)  
HC: Average Hauling Truck Capacity (yd<sup>3</sup>)  
(1 / HC): Conversion Factor cubic yards to trips (1 trip / HC yd<sup>3</sup>)  
HT: Average Hauling Truck Round Trip Commute (mile/trip)

$$V_{POL} = (VMT_{VE} * 0.002205 * EF_{POL} * VM) / 2000$$

V<sub>POL</sub>: Vehicle Emissions (TONs)  
VMT<sub>VE</sub>: Vehicle Exhaust Vehicle Miles Travel (miles)  
0.002205: Conversion Factor grams to pounds  
EF<sub>POL</sub>: Emission Factor for Pollutant (grams/mile)  
VM: Vehicle Exhaust On Road Vehicle Mixture (%)  
2000: Conversion Factor pounds to tons

## - Worker Trips Emissions per Phase

$$VMT_{WT} = WD * WT * 1.25 * NE$$

VMT<sub>WT</sub>: Worker Trips Vehicle Miles Travel (miles)  
WD: Number of Total Work Days (days)  
WT: Average Worker Round Trip Commute (mile)  
1.25: Conversion Factor Number of Construction Equipment to Number of Works  
NE: Number of Construction Equipment

$$V_{POL} = (VMT_{WT} * 0.002205 * EF_{POL} * VM) / 2000$$

V<sub>POL</sub>: Vehicle Emissions (TONs)  
VMT<sub>WT</sub>: Worker Trips Vehicle Miles Travel (miles)  
0.002205: Conversion Factor grams to pounds  
EF<sub>POL</sub>: Emission Factor for Pollutant (grams/mile)  
VM: Worker Trips On Road Vehicle Mixture (%)  
2000: Conversion Factor pounds to tons

## 2.2 Site Grading Phase

### 2.2.1 Site Grading Phase Timeline Assumptions

#### - Phase Start Date

Start Month: 6  
Start Quarter: 1  
Start Year: 2020

#### - Phase Duration

Number of Month: 2  
Number of Days: 0

### 2.2.2 Site Grading Phase Assumptions

#### - General Site Grading Information

Area of Site to be Graded (ft<sup>2</sup>): 348480  
Amount of Material to be Hauled On-Site (yd<sup>3</sup>): 0  
Amount of Material to be Hauled Off-Site (yd<sup>3</sup>): 0

# DETAIL AIR CONFORMITY APPLICABILITY MODEL REPORT

**- Site Grading Default Settings**

Default Settings Used: Yes  
 Average Day(s) worked per week: 5 (default)

**- Construction Exhaust (default)**

Equipment Name	Number Of Equipment	Hours Per Day
Excavators Composite	1	8
Graders Composite	1	8
Other Construction Equipment Composite	1	8
Rubber Tired Dozers Composite	1	8
Tractors/Loaders/Backhoes Composite	3	8

**- Vehicle Exhaust**

Average Hauling Truck Capacity (yd<sup>3</sup>): 20 (default)  
 Average Hauling Truck Round Trip Commute (mile): 20 (default)

**- Vehicle Exhaust Vehicle Mixture (%)**

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	0	0	0	0	0	100.00	0

**- Worker Trips**

Average Worker Round Trip Commute (mile): 20 (default)

**- Worker Trips Vehicle Mixture (%)**

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	50.00	50.00	0	0	0	0	0

## 2.2.3 Site Grading Phase Emission Factor(s)

**- Construction Exhaust Emission Factors (lb/hour) (default)**

Excavators Composite								
	VOC	SO <sub>x</sub>	NO <sub>x</sub>	CO	PM 10	PM 2.5	CH <sub>4</sub>	CO <sub>2e</sub>
Emission Factors	0.0732	0.0013	0.4042	0.5124	0.0183	0.0183	0.0066	119.74
Graders Composite								
	VOC	SO <sub>x</sub>	NO <sub>x</sub>	CO	PM 10	PM 2.5	CH <sub>4</sub>	CO <sub>2e</sub>
Emission Factors	0.0919	0.0014	0.5823	0.5765	0.0280	0.0280	0.0082	132.95
Other Construction Equipment Composite								
	VOC	SO <sub>x</sub>	NO <sub>x</sub>	CO	PM 10	PM 2.5	CH <sub>4</sub>	CO <sub>2e</sub>
Emission Factors	0.0562	0.0012	0.3519	0.3508	0.0138	0.0138	0.0050	122.62
Rubber Tired Dozers Composite								
	VOC	SO <sub>x</sub>	NO <sub>x</sub>	CO	PM 10	PM 2.5	CH <sub>4</sub>	CO <sub>2e</sub>
Emission Factors	0.2117	0.0024	1.5772	0.8005	0.0630	0.0630	0.0191	239.56
Tractors/Loaders/Backhoes Composite								
	VOC	SO <sub>x</sub>	NO <sub>x</sub>	CO	PM 10	PM 2.5	CH <sub>4</sub>	CO <sub>2e</sub>
Emission Factors	0.0436	0.0007	0.2744	0.3616	0.0134	0.0134	0.0039	66.897

**- Vehicle Exhaust & Worker Trips Emission Factors (grams/mile)**

	VOC	SO <sub>x</sub>	NO <sub>x</sub>	CO	PM 10	PM 2.5	Pb	NH <sub>3</sub>	CO <sub>2e</sub>
LDGV	000.114	000.003	000.084	000.992	000.047	000.020		000.023	00298.845
LDGT	000.288	000.004	000.178	001.871	000.048	000.021		000.024	00379.038
HDGV	000.600	000.011	001.339	008.875	000.183	000.078		000.045	01128.468
LDDV	000.026	000.003	000.125	000.281	000.060	000.032		000.008	00271.718
LDDT	000.094	000.003	000.533	000.594	000.112	000.082		000.008	00364.857

# DETAIL AIR CONFORMITY APPLICABILITY MODEL REPORT

HDDV	000.194	000.014	004.796	001.133	000.211	000.117		000.028	01514.699
MC	004.452	000.002	001.252	023.791	000.019	000.009		000.054	00187.891

## 2.2.4 Site Grading Phase Formula(s)

### - Fugitive Dust Emissions per Phase

$$PM10_{FD} = (20 * ACRE * WD) / 2000$$

PM10<sub>FD</sub>: Fugitive Dust PM 10 Emissions (TONs)  
 20: Conversion Factor Acre Day to pounds (20 lb / 1 Acre Day)  
 ACRE: Total acres (acres)  
 WD: Number of Total Work Days (days)  
 2000: Conversion Factor pounds to tons

### - Construction Exhaust Emissions per Phase

$$CEE_{POL} = (NE * WD * H * EF_{POL}) / 2000$$

CEE<sub>POL</sub>: Construction Exhaust Emissions (TONs)  
 NE: Number of Equipment  
 WD: Number of Total Work Days (days)  
 H: Hours Worked per Day (hours)  
 EF<sub>POL</sub>: Emission Factor for Pollutant (lb/hour)  
 2000: Conversion Factor pounds to tons

### - Vehicle Exhaust Emissions per Phase

$$VMT_{VE} = (HA_{OnSite} + HA_{OffSite}) * (1 / HC) * HT$$

VMT<sub>VE</sub>: Vehicle Exhaust Vehicle Miles Travel (miles)  
 HA<sub>OnSite</sub>: Amount of Material to be Hauled On-Site (yd<sup>3</sup>)  
 HA<sub>OffSite</sub>: Amount of Material to be Hauled Off-Site (yd<sup>3</sup>)  
 HC: Average Hauling Truck Capacity (yd<sup>3</sup>)  
 (1 / HC): Conversion Factor cubic yards to trips (1 trip / HC yd<sup>3</sup>)  
 HT: Average Hauling Truck Round Trip Commute (mile/trip)

$$V_{POL} = (VMT_{VE} * 0.002205 * EF_{POL} * VM) / 2000$$

V<sub>POL</sub>: Vehicle Emissions (TONs)  
 VMT<sub>VE</sub>: Vehicle Exhaust Vehicle Miles Travel (miles)  
 0.002205: Conversion Factor grams to pounds  
 EF<sub>POL</sub>: Emission Factor for Pollutant (grams/mile)  
 VM: Vehicle Exhaust On Road Vehicle Mixture (%)  
 2000: Conversion Factor pounds to tons

### - Worker Trips Emissions per Phase

$$VMT_{WT} = WD * WT * 1.25 * NE$$

VMT<sub>WT</sub>: Worker Trips Vehicle Miles Travel (miles)  
 WD: Number of Total Work Days (days)  
 WT: Average Worker Round Trip Commute (mile)  
 1.25: Conversion Factor Number of Construction Equipment to Number of Works  
 NE: Number of Construction Equipment

$$V_{POL} = (VMT_{WT} * 0.002205 * EF_{POL} * VM) / 2000$$

V<sub>POL</sub>: Vehicle Emissions (TONs)

# DETAIL AIR CONFORMITY APPLICABILITY MODEL REPORT

VMT<sub>WT</sub>: Worker Trips Vehicle Miles Travel (miles)  
 0.002205: Conversion Factor grams to pounds  
 EF<sub>POL</sub>: Emission Factor for Pollutant (grams/mile)  
 VM: Worker Trips On Road Vehicle Mixture (%)  
 2000: Conversion Factor pounds to tons

## 2.3 Trenching/Excavating Phase

### 2.3.1 Trenching / Excavating Phase Timeline Assumptions

**- Phase Start Date**

Start Month: 8  
 Start Quarter: 1  
 Start Year: 2020

**- Phase Duration**

Number of Month: 1  
 Number of Days: 0

### 2.3.2 Trenching / Excavating Phase Assumptions

**- General Trenching/Excavating Information**

Area of Site to be Trenched/Excavated (ft<sup>2</sup>): 3485  
 Amount of Material to be Hauled On-Site (yd<sup>3</sup>): 0  
 Amount of Material to be Hauled Off-Site (yd<sup>3</sup>): 0

**- Trenching Default Settings**

Default Settings Used: Yes  
 Average Day(s) worked per week: 5 (default)

**- Construction Exhaust (default)**

Equipment Name	Number Of Equipment	Hours Per Day
Excavators Composite	2	8
Other General Industrial Equipmen Composite	1	8
Tractors/Loaders/Backhoes Composite	1	8

**- Vehicle Exhaust**

Average Hauling Truck Capacity (yd<sup>3</sup>): 20 (default)  
 Average Hauling Truck Round Trip Commute (mile): 20 (default)

**- Vehicle Exhaust Vehicle Mixture (%)**

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	0	0	0	0	0	100.00	0

**- Worker Trips**

Average Worker Round Trip Commute (mile): 20 (default)

**- Worker Trips Vehicle Mixture (%)**

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	50.00	50.00	0	0	0	0	0

### 2.3.3 Trenching / Excavating Phase Emission Factor(s)

**- Construction Exhaust Emission Factors (lb/hour) (default)**

# DETAIL AIR CONFORMITY APPLICABILITY MODEL REPORT

Excavators Composite								
	VOC	SO <sub>x</sub>	NO <sub>x</sub>	CO	PM 10	PM 2.5	CH <sub>4</sub>	CO <sub>2e</sub>
Emission Factors	0.0732	0.0013	0.4042	0.5124	0.0183	0.0183	0.0066	119.74
Graders Composite								
	VOC	SO <sub>x</sub>	NO <sub>x</sub>	CO	PM 10	PM 2.5	CH <sub>4</sub>	CO <sub>2e</sub>
Emission Factors	0.0919	0.0014	0.5823	0.5765	0.0280	0.0280	0.0082	132.95
Other Construction Equipment Composite								
	VOC	SO <sub>x</sub>	NO <sub>x</sub>	CO	PM 10	PM 2.5	CH <sub>4</sub>	CO <sub>2e</sub>
Emission Factors	0.0562	0.0012	0.3519	0.3508	0.0138	0.0138	0.0050	122.62
Rubber Tired Dozers Composite								
	VOC	SO <sub>x</sub>	NO <sub>x</sub>	CO	PM 10	PM 2.5	CH <sub>4</sub>	CO <sub>2e</sub>
Emission Factors	0.2117	0.0024	1.5772	0.8005	0.0630	0.0630	0.0191	239.56
Tractors/Loaders/Backhoes Composite								
	VOC	SO <sub>x</sub>	NO <sub>x</sub>	CO	PM 10	PM 2.5	CH <sub>4</sub>	CO <sub>2e</sub>
Emission Factors	0.0436	0.0007	0.2744	0.3616	0.0134	0.0134	0.0039	66.897

## - Vehicle Exhaust & Worker Trips Emission Factors (grams/mile)

	VOC	SO <sub>x</sub>	NO <sub>x</sub>	CO	PM 10	PM 2.5	Pb	NH <sub>3</sub>	CO <sub>2e</sub>
LDGV	000.114	000.003	000.084	000.992	000.047	000.020		000.023	00298.845
LDGT	000.288	000.004	000.178	001.871	000.048	000.021		000.024	00379.038
HDGV	000.600	000.011	001.339	008.875	000.183	000.078		000.045	01128.468
LDDV	000.026	000.003	000.125	000.281	000.060	000.032		000.008	00271.718
LDDT	000.094	000.003	000.533	000.594	000.112	000.082		000.008	00364.857
HDDV	000.194	000.014	004.796	001.133	000.211	000.117		000.028	01514.699
MC	004.452	000.002	001.252	023.791	000.019	000.009		000.054	00187.891

## 2.3.4 Trenching / Excavating Phase Formula(s)

### - Fugitive Dust Emissions per Phase

$$PM10_{FD} = (20 * ACRE * WD) / 2000$$

PM10<sub>FD</sub>: Fugitive Dust PM 10 Emissions (TONs)

20: Conversion Factor Acre Day to pounds (20 lb / 1 Acre Day)

ACRE: Total acres (acres)

WD: Number of Total Work Days (days)

2000: Conversion Factor pounds to tons

### - Construction Exhaust Emissions per Phase

$$CEE_{POL} = (NE * WD * H * EF_{POL}) / 2000$$

CEE<sub>POL</sub>: Construction Exhaust Emissions (TONs)

NE: Number of Equipment

WD: Number of Total Work Days (days)

H: Hours Worked per Day (hours)

EF<sub>POL</sub>: Emission Factor for Pollutant (lb/hour)

2000: Conversion Factor pounds to tons

### - Vehicle Exhaust Emissions per Phase

$$VMT_{VE} = (HA_{OnSite} + HA_{OffSite}) * (1 / HC) * HT$$

VMT<sub>VE</sub>: Vehicle Exhaust Vehicle Miles Travel (miles)

HA<sub>OnSite</sub>: Amount of Material to be Hauled On-Site (yd<sup>3</sup>)

HA<sub>OffSite</sub>: Amount of Material to be Hauled Off-Site (yd<sup>3</sup>)

HC: Average Hauling Truck Capacity (yd<sup>3</sup>)

(1 / HC): Conversion Factor cubic yards to trips (1 trip / HC yd<sup>3</sup>)



# DETAIL AIR CONFORMITY APPLICABILITY MODEL REPORT

HT: Average Hauling Truck Round Trip Commute (mile/trip)

$$V_{POL} = (VMT_{VE} * 0.002205 * EF_{POL} * VM) / 2000$$

$V_{POL}$ : Vehicle Emissions (TONs)  
 $VMT_{VE}$ : Vehicle Exhaust Vehicle Miles Travel (miles)  
0.002205: Conversion Factor grams to pounds  
 $EF_{POL}$ : Emission Factor for Pollutant (grams/mile)  
VM: Vehicle Exhaust On Road Vehicle Mixture (%)  
2000: Conversion Factor pounds to tons

## - Worker Trips Emissions per Phase

$$VMT_{WT} = WD * WT * 1.25 * NE$$

$VMT_{WT}$ : Worker Trips Vehicle Miles Travel (miles)  
WD: Number of Total Work Days (days)  
WT: Average Worker Round Trip Commute (mile)  
1.25: Conversion Factor Number of Construction Equipment to Number of Works  
NE: Number of Construction Equipment

$$V_{POL} = (VMT_{WT} * 0.002205 * EF_{POL} * VM) / 2000$$

$V_{POL}$ : Vehicle Emissions (TONs)  
 $VMT_{VE}$ : Worker Trips Vehicle Miles Travel (miles)  
0.002205: Conversion Factor grams to pounds  
 $EF_{POL}$ : Emission Factor for Pollutant (grams/mile)  
VM: Worker Trips On Road Vehicle Mixture (%)  
2000: Conversion Factor pounds to tons

## 2.4 Building Construction Phase

### 2.4.1 Building Construction Phase Timeline Assumptions

#### - Phase Start Date

Start Month: 9  
Start Quarter: 1  
Start Year: 2020

#### - Phase Duration

Number of Month: 22  
Number of Days: 0

### 2.4.2 Building Construction Phase Assumptions

#### - General Building Construction Information

Building Category: Office or Industrial  
Area of Building (ft<sup>2</sup>): 34040  
Height of Building (ft): 20  
Number of Units: N/A

#### - Building Construction Default Settings

Default Settings Used: Yes  
Average Day(s) worked per week: 5 (default)

#### - Construction Exhaust (default)

# DETAIL AIR CONFORMITY APPLICABILITY MODEL REPORT

Equipment Name	Number Of Equipment	Hours Per Day
Cranes Composite	1	6
Forklifts Composite	2	6
Generator Sets Composite	1	8
Tractors/Loaders/Backhoes Composite	1	8
Welders Composite	3	8

**- Vehicle Exhaust**

Average Hauling Truck Round Trip Commute (mile): 20 (default)

**- Vehicle Exhaust Vehicle Mixture (%)**

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	0	0	0	0	0	100.00	0

**- Worker Trips**

Average Worker Round Trip Commute (mile): 20 (default)

**- Worker Trips Vehicle Mixture (%)**

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	50.00	50.00	0	0	0	0	0

**- Vendor Trips**

Average Vendor Round Trip Commute (mile): 40 (default)

**- Vendor Trips Vehicle Mixture (%)**

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	0	0	0	0	0	100.00	0

### 2.4.3 Building Construction Phase Emission Factor(s)

**- Construction Exhaust Emission Factors (lb/hour) (default)**

Cranes Composite								
	VOC	SO <sub>x</sub>	NO <sub>x</sub>	CO	PM 10	PM 2.5	CH <sub>4</sub>	CO <sub>2e</sub>
Emission Factors	0.0898	0.0013	0.6610	0.3917	0.0256	0.0256	0.0081	128.83
Forklifts Composite								
	VOC	SO <sub>x</sub>	NO <sub>x</sub>	CO	PM 10	PM 2.5	CH <sub>4</sub>	CO <sub>2e</sub>
Emission Factors	0.0320	0.0006	0.1690	0.2160	0.0070	0.0070	0.0028	54.467
Generator Sets Composite								
	VOC	SO <sub>x</sub>	NO <sub>x</sub>	CO	PM 10	PM 2.5	CH <sub>4</sub>	CO <sub>2e</sub>
Emission Factors	0.0395	0.0006	0.3232	0.2731	0.0149	0.0149	0.0035	61.081
Tractors/Loaders/Backhoes Composite								
	VOC	SO <sub>x</sub>	NO <sub>x</sub>	CO	PM 10	PM 2.5	CH <sub>4</sub>	CO <sub>2e</sub>
Emission Factors	0.0436	0.0007	0.2744	0.3616	0.0134	0.0134	0.0039	66.897
Welders Composite								
	VOC	SO <sub>x</sub>	NO <sub>x</sub>	CO	PM 10	PM 2.5	CH <sub>4</sub>	CO <sub>2e</sub>
Emission Factors	0.0310	0.0003	0.1734	0.1816	0.0102	0.0102	0.0027	25.672

**- Vehicle Exhaust & Worker Trips Emission Factors (grams/mile)**

	VOC	SO <sub>x</sub>	NO <sub>x</sub>	CO	PM 10	PM 2.5	Pb	NH <sub>3</sub>	CO <sub>2e</sub>
LDGV	000.114	000.003	000.084	000.992	000.047	000.020		000.023	00298.845
LDGT	000.288	000.004	000.178	001.871	000.048	000.021		000.024	00379.038
HDGV	000.600	000.011	001.339	008.875	000.183	000.078		000.045	01128.468
LDDV	000.026	000.003	000.125	000.281	000.060	000.032		000.008	00271.718

# DETAIL AIR CONFORMITY APPLICABILITY MODEL REPORT

LDDT	000.094	000.003	000.533	000.594	000.112	000.082		000.008	00364.857
HDDV	000.194	000.014	004.796	001.133	000.211	000.117		000.028	01514.699
MC	004.452	000.002	001.252	023.791	000.019	000.009		000.054	00187.891

## 2.4.4 Building Construction Phase Formula(s)

### - Construction Exhaust Emissions per Phase

$$CEE_{POL} = (NE * WD * H * EF_{POL}) / 2000$$

CEE<sub>POL</sub>: Construction Exhaust Emissions (TONs)

NE: Number of Equipment

WD: Number of Total Work Days (days)

H: Hours Worked per Day (hours)

EF<sub>POL</sub>: Emission Factor for Pollutant (lb/hour)

2000: Conversion Factor pounds to tons

### - Vehicle Exhaust Emissions per Phase

$$VMT_{VE} = BA * BH * (0.42 / 1000) * HT$$

VMT<sub>VE</sub>: Vehicle Exhaust Vehicle Miles Travel (miles)

BA: Area of Building (ft<sup>2</sup>)

BH: Height of Building (ft)

(0.42 / 1000): Conversion Factor ft<sup>3</sup> to trips (0.42 trip / 1000 ft<sup>3</sup>)

HT: Average Hauling Truck Round Trip Commute (mile/trip)

$$V_{POL} = (VMT_{VE} * 0.002205 * EF_{POL} * VM) / 2000$$

V<sub>POL</sub>: Vehicle Emissions (TONs)

VMT<sub>VE</sub>: Vehicle Exhaust Vehicle Miles Travel (miles)

0.002205: Conversion Factor grams to pounds

EF<sub>POL</sub>: Emission Factor for Pollutant (grams/mile)

VM: Worker Trips On Road Vehicle Mixture (%)

2000: Conversion Factor pounds to tons

### - Worker Trips Emissions per Phase

$$VMT_{WT} = WD * WT * 1.25 * NE$$

VMT<sub>WT</sub>: Worker Trips Vehicle Miles Travel (miles)

WD: Number of Total Work Days (days)

WT: Average Worker Round Trip Commute (mile)

1.25: Conversion Factor Number of Construction Equipment to Number of Works

NE: Number of Construction Equipment

$$V_{POL} = (VMT_{WT} * 0.002205 * EF_{POL} * VM) / 2000$$

V<sub>POL</sub>: Vehicle Emissions (TONs)

VMT<sub>WT</sub>: Worker Trips Vehicle Miles Travel (miles)

0.002205: Conversion Factor grams to pounds

EF<sub>POL</sub>: Emission Factor for Pollutant (grams/mile)

VM: Worker Trips On Road Vehicle Mixture (%)

2000: Conversion Factor pounds to tons

### - Vender Trips Emissions per Phase

$$VMT_{VT} = BA * BH * (0.38 / 1000) * HT$$

# DETAIL AIR CONFORMITY APPLICABILITY MODEL REPORT

VMT<sub>VT</sub>: Vender Trips Vehicle Miles Travel (miles)  
 BA: Area of Building (ft<sup>2</sup>)  
 BH: Height of Building (ft)  
 (0.38 / 1000): Conversion Factor ft<sup>3</sup> to trips (0.38 trip / 1000 ft<sup>3</sup>)  
 HT: Average Hauling Truck Round Trip Commute (mile/trip)

$$V_{POL} = (VMT_{VT} * 0.002205 * EF_{POL} * VM) / 2000$$

V<sub>POL</sub>: Vehicle Emissions (TONs)  
 VMT<sub>VT</sub>: Vender Trips Vehicle Miles Travel (miles)  
 0.002205: Conversion Factor grams to pounds  
 EF<sub>POL</sub>: Emission Factor for Pollutant (grams/mile)  
 VM: Worker Trips On Road Vehicle Mixture (%)  
 2000: Conversion Factor pounds to tons

## 2.5 Architectural Coatings Phase

### 2.5.1 Architectural Coatings Phase Timeline Assumptions

**- Phase Start Date**

Start Month: 7  
 Start Quarter: 1  
 Start Year: 2022

**- Phase Duration**

Number of Month: 2  
 Number of Days: 0

### 2.5.2 Architectural Coatings Phase Assumptions

**- General Architectural Coatings Information**

Building Category:  
 Total Square Footage (ft<sup>2</sup>): 34040  
 Number of Units: N/A

**- Architectural Coatings Default Settings**

Default Settings Used: Yes  
 Average Day(s) worked per week: 5 (default)

**- Worker Trips**

Average Worker Round Trip Commute (mile): 20 (default)

**- Worker Trips Vehicle Mixture (%)**

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	50.00	50.00	0	0	0	0	0

### 2.5.3 Architectural Coatings Phase Emission Factor(s)

**- Worker Trips Emission Factors (grams/mile)**

	VOC	SO <sub>x</sub>	NO <sub>x</sub>	CO	PM 10	PM 2.5	Pb	NH <sub>3</sub>	CO <sub>2e</sub>
LDGV	000.114	000.003	000.084	000.992	000.047	000.020		000.023	00298.845
LDGT	000.288	000.004	000.178	001.871	000.048	000.021		000.024	00379.038
HDGV	000.600	000.011	001.339	008.875	000.183	000.078		000.045	01128.468
LDDV	000.026	000.003	000.125	000.281	000.060	000.032		000.008	00271.718
LDDT	000.094	000.003	000.533	000.594	000.112	000.082		000.008	00364.857

# DETAIL AIR CONFORMITY APPLICABILITY MODEL REPORT

HDDV	000.194	000.014	004.796	001.133	000.211	000.117		000.028	01514.699
MC	004.452	000.002	001.252	023.791	000.019	000.009		000.054	00187.891

## 2.5.4 Architectural Coatings Phase Formula(s)

### - Worker Trips Emissions per Phase

$$VMT_{WT} = (1 * WT * PA) / 800$$

VMT<sub>WT</sub>: Worker Trips Vehicle Miles Travel (miles)

1: Conversion Factor man days to trips ( 1 trip / 1 man \* day)

WT: Average Worker Round Trip Commute (mile)

PA: Paint Area (ft<sup>2</sup>)

800: Conversion Factor square feet to man days ( 1 ft<sup>2</sup> / 1 man \* day)

$$V_{POL} = (VMT_{WT} * 0.002205 * EF_{POL} * VM) / 2000$$

V<sub>POL</sub>: Vehicle Emissions (TONs)

VMT<sub>WT</sub>: Worker Trips Vehicle Miles Travel (miles)

0.002205: Conversion Factor grams to pounds

EF<sub>POL</sub>: Emission Factor for Pollutant (grams/mile)

VM: Worker Trips On Road Vehicle Mixture (%)

2000: Conversion Factor pounds to tons

### - Off-Gassing Emissions per Phase

$$VOC_{AC} = (AB * 2.0 * 0.0116) / 2000.0$$

VOC<sub>AC</sub>: Architectural Coating VOC Emissions (TONs)

BA: Area of Building (ft<sup>2</sup>)

2.0: Conversion Factor total area to coated area (2.0 ft<sup>2</sup> coated area / total area)

0.0116: Emission Factor (lb/ft<sup>2</sup>)

2000: Conversion Factor pounds to tons

## 2.6 Paving Phase

### 2.6.1 Paving Phase Timeline Assumptions

#### - Phase Start Date

Start Month: 9

Start Quarter: 1

Start Year: 2022

#### - Phase Duration

Number of Month: 1

Number of Days: 0

### 2.6.2 Paving Phase Assumptions

#### - General Paving Information

Paving Area (ft<sup>2</sup>): 160000

#### - Paving Default Settings

Default Settings Used: Yes

Average Day(s) worked per week: 5 (default)

#### - Construction Exhaust (default)

# DETAIL AIR CONFORMITY APPLICABILITY MODEL REPORT

Equipment Name	Number Of Equipment	Hours Per Day
Cement and Mortar Mixers Composite	4	6
Pavers Composite	1	7
Paving Equipment Composite	2	6
Rollers Composite	1	7

**- Vehicle Exhaust**

Average Hauling Truck Round Trip Commute (mile): 20 (default)

**- Vehicle Exhaust Vehicle Mixture (%)**

	LDGV	LDGT	HDTV	LDDV	LDDT	HDDV	MC
POVs	0	0	0	0	0	100.00	0

**- Worker Trips**

Average Worker Round Trip Commute (mile): 20 (default)

**- Worker Trips Vehicle Mixture (%)**

	LDGV	LDGT	HDTV	LDDV	LDDT	HDDV	MC
POVs	50.00	50.00	0	0	0	0	0

### 2.6.3 Paving Phase Emission Factor(s)

**- Construction Exhaust Emission Factors (lb/hour) (default)**

Excavators Composite								
	VOC	SO <sub>x</sub>	NO <sub>x</sub>	CO	PM 10	PM 2.5	CH <sub>4</sub>	CO <sub>2e</sub>
Emission Factors	0.0732	0.0013	0.4042	0.5124	0.0183	0.0183	0.0066	119.74
Graders Composite								
	VOC	SO <sub>x</sub>	NO <sub>x</sub>	CO	PM 10	PM 2.5	CH <sub>4</sub>	CO <sub>2e</sub>
Emission Factors	0.0919	0.0014	0.5823	0.5765	0.0280	0.0280	0.0082	132.95
Other Construction Equipment Composite								
	VOC	SO <sub>x</sub>	NO <sub>x</sub>	CO	PM 10	PM 2.5	CH <sub>4</sub>	CO <sub>2e</sub>
Emission Factors	0.0562	0.0012	0.3519	0.3508	0.0138	0.0138	0.0050	122.62
Rubber Tired Dozers Composite								
	VOC	SO <sub>x</sub>	NO <sub>x</sub>	CO	PM 10	PM 2.5	CH <sub>4</sub>	CO <sub>2e</sub>
Emission Factors	0.2117	0.0024	1.5772	0.8005	0.0630	0.0630	0.0191	239.56
Tractors/Loaders/Backhoes Composite								
	VOC	SO <sub>x</sub>	NO <sub>x</sub>	CO	PM 10	PM 2.5	CH <sub>4</sub>	CO <sub>2e</sub>
Emission Factors	0.0436	0.0007	0.2744	0.3616	0.0134	0.0134	0.0039	66.897

**- Vehicle Exhaust & Worker Trips Emission Factors (grams/mile)**

	VOC	SO <sub>x</sub>	NO <sub>x</sub>	CO	PM 10	PM 2.5	Pb	NH <sub>3</sub>	CO <sub>2e</sub>
LDGV	000.114	000.003	000.084	000.992	000.047	000.020		000.023	00298.845
LDGT	000.288	000.004	000.178	001.871	000.048	000.021		000.024	00379.038
HDTV	000.600	000.011	001.339	008.875	000.183	000.078		000.045	01128.468
LDDV	000.026	000.003	000.125	000.281	000.060	000.032		000.008	00271.718
LDDT	000.094	000.003	000.533	000.594	000.112	000.082		000.008	00364.857
HDDV	000.194	000.014	004.796	001.133	000.211	000.117		000.028	01514.699
MC	004.452	000.002	001.252	023.791	000.019	000.009		000.054	00187.891

### 2.6.4 Paving Phase Formula(s)

**- Construction Exhaust Emissions per Phase**

$$CEE_{POL} = (NE * WD * H * EF_{POL}) / 2000$$

# DETAIL AIR CONFORMITY APPLICABILITY MODEL REPORT

CEE<sub>POL</sub>: Construction Exhaust Emissions (TONs)

NE: Number of Equipment

WD: Number of Total Work Days (days)

H: Hours Worked per Day (hours)

EF<sub>POL</sub>: Emission Factor for Pollutant (lb/hour)

2000: Conversion Factor pounds to tons

## - Vehicle Exhaust Emissions per Phase

$$VMT_{VE} = PA * 0.25 * (1 / 27) * (1 / HC) * HT$$

VMT<sub>VE</sub>: Vehicle Exhaust Vehicle Miles Travel (miles)

PA: Paving Area (ft<sup>2</sup>)

0.25: Thickness of Paving Area (ft)

(1 / 27): Conversion Factor cubic feet to cubic yards ( 1 yd<sup>3</sup> / 27 ft<sup>3</sup>)

HC: Average Hauling Truck Capacity (yd<sup>3</sup>)

(1 / HC): Conversion Factor cubic yards to trips (1 trip / HC yd<sup>3</sup>)

HT: Average Hauling Truck Round Trip Commute (mile/trip)

$$V_{POL} = (VMT_{VE} * 0.002205 * EF_{POL} * VM) / 2000$$

V<sub>POL</sub>: Vehicle Emissions (TONs)

VMT<sub>VE</sub>: Vehicle Exhaust Vehicle Miles Travel (miles)

0.002205: Conversion Factor grams to pounds

EF<sub>POL</sub>: Emission Factor for Pollutant (grams/mile)

VM: Vehicle Exhaust On Road Vehicle Mixture (%)

2000: Conversion Factor pounds to tons

## - Worker Trips Emissions per Phase

$$VMT_{WT} = WD * WT * 1.25 * NE$$

VMT<sub>WT</sub>: Worker Trips Vehicle Miles Travel (miles)

WD: Number of Total Work Days (days)

WT: Average Worker Round Trip Commute (mile)

1.25: Conversion Factor Number of Construction Equipment to Number of Works

NE: Number of Construction Equipment

$$V_{POL} = (VMT_{WT} * 0.002205 * EF_{POL} * VM) / 2000$$

V<sub>POL</sub>: Vehicle Emissions (TONs)

VMT<sub>VE</sub>: Worker Trips Vehicle Miles Travel (miles)

0.002205: Conversion Factor grams to pounds

EF<sub>POL</sub>: Emission Factor for Pollutant (grams/mile)

VM: Worker Trips On Road Vehicle Mixture (%)

2000: Conversion Factor pounds to tons

## - Off-Gassing Emissions per Phase

$$VOC_P = (2.62 * PA) / 43560$$

VOC<sub>P</sub>: Paving VOC Emissions (TONs)

2.62: Emission Factor (lb/acre)

PA: Paving Area (ft<sup>2</sup>)

43560: Conversion Factor square feet to acre (43560 ft<sup>2</sup> / acre)<sup>2</sup> / acre)