Calculation of Portal Emission

Portal Name	Description	Percentage from Portal	Length (m)	Portal ID	Source ID	Hour	Q (veh/hr)	Total E.F. (portal + VB)		Total emission rate (portal + VB)		Emission rate (from portal)	
								NOX E.F. (g/mile-veh)	RSP E.F. (g/mile-veh)	NO_X (g/s)	RSP (g/s)	NOX (g/s)	RSP (g/s)
A	P2 (northbound)	100%	200	A1 - A8	P2-5	1	402	0.4583	0.0162	6.366E-03	2.246E-04	4.941E-03	1.788E-04
						2	294	0.4590	0.0162	4.659E-03	1.642E-04	3.598E-03	1.294E-04
						3	232	0.4605	0.0162	3.690E-03	1.296E-04	2.842E-03	1.018E-04
						4	170	0.4618	0.0162	2.714E-03	9.504E-05	2.086E-03	7.426E-05
						5	155	0.4630	0.0162	2.473E-03	8.640E-05	1.901E-03	6.801E-05
						6	175	0.4535	0.0260	2.737E-03	1.572E-04	2.972E-03	1.653E-04
						7	379	0.4520	0.0260	5.912E-03	3.405E-04	6.561E-03	3.645E-04
						8	991	0.4519	0.0260	1.546E-02	8.908E-04	1.730E-02	9.613E-04
						9	1078	0.4513	0.0225	1.680E-02	8.378E-04	1.870E-02	9.498E-04
						10	962	0.4779	0.0213	1.587E-02	7.066E-04	1.735E-02	7.827E-04
						11	816	0.4572	0.0189	1.288E-02	5.315E-04	1.400E-02	5.991E-04
						12	729	0.4610	0.0199	1.159E-02	5.006E-04	1.264E-02	5.567E-04
						13	670	0.4314	0.0230	9.983E-03	5.331E-04	1.099E-02	5.694E-04
						14	714	0.4528	0.0239	1.116E-02	5.899E-04	1.229E-02	6.299E-04
						15	743	0.4128	0.0208	1.059E-02	5.341E-04	1.170E-02	5.846E-04
						16	820	0.4338	0.0215	1.228E-02	6.084E-04	9.753E-03	4.780E-04
						17	898	0.4291	0.0234	1.330E-02	7.246E-04	1.058E-02	5.582E-04
						18	990	0.4319	0.0225	1.477E-02	7.681E-04	1.181E-02	6.071E-04
						19	1083	0.4132	0.0209	1.545E-02	7.801E-04	1.232E-02	6.231E-04
						20	929	0.3789	0.0177	1.214E-02	5.686E-04	9.581E-03	4.504E-04
						21	743	0.3958	0.0164	1.015E-02	4.206E-04	7.964E-03	3.392E-04
						22	727	0.4649	0.0172	1.167E-02	4.310E-04	9.145E-03	3.471E-04
						23	743	0.4572	0.0162	1.172E-02	4.147E-04	9.190E-03	3.360E-04
						24	634	0.4574	0.0162	1.002E-02	3.543E-04	7.825E-03	2.858E-04
						Daily	**-**	**-**	**-**	**2.444E-01**	**1.139E-02**	**2.280E-01**	**1.074E-02**
B	P2 (southbound)	100%	200	B1 - B8	P2-6	1	193	0.5273	0.0200	3.515E-03	1.330E-04	4.941E-03	1.788E-04
						2	141	0.5207	0.0194	2.537E-03	9.469E-05	3.598E-03	1.294E-04
						3	111	0.5182	0.0193	1.993E-03	7.404E-05	2.842E-03	1.018E-04
						4	82	0.5170	0.0190	1.458E-03	5.348E-05	2.086E-03	7.426E-05
						5	74	0.5185	0.0194	1.330E-03	4.962E-05	1.901E-03	6.801E-05
						6	166	0.5587	0.0302	3.207E-03	1.734E-04	2.972E-03	1.653E-04
						7	360	0.5797	0.0312	7.209E-03	3.885E-04	6.561E-03	3.645E-04
						8	942	0.5887	0.0317	1.915E-02	1.032E-03	1.730E-02	9.613E-04
						9	1025	0.5823	0.0300	2.061E-02	1.062E-03	1.870E-02	9.498E-04
						10	914	0.5970	0.0272	1.884E-02	8.588E-04	1.735E-02	7.827E-04
						11	776	0.5642	0.0249	1.511E-02	6.667E-04	1.400E-02	5.991E-04
						12	693	0.5724	0.0256	1.369E-02	6.129E-04	1.264E-02	5.567E-04
						13	637	0.5453	0.0275	1.200E-02	6.056E-04	1.099E-02	5.694E-04
						14	679	0.5722	0.0286	1.341E-02	6.699E-04	1.229E-02	6.299E-04
						15	707	0.5251	0.0260	1.281E-02	6.351E-04	1.170E-02	5.846E-04
						16	394	0.5314	0.0256	7.223E-03	3.476E-04	9.753E-03	4.780E-04
						17	431	0.5290	0.0263	7.868E-03	3.917E-04	1.058E-02	5.582E-04
						18	475	0.5399	0.0272	8.860E-03	4.461E-04	1.181E-02	6.071E-04
						19	520	0.5118	0.0260	9.187E-03	4.661E-04	1.232E-02	6.231E-04
						20	446	0.4561	0.0216	7.018E-03	3.322E-04	9.581E-03	4.504E-04
						21	357	0.4695	0.0209	5.779E-03	2.578E-04	7.964E-03	3.392E-04
						22	349	0.5490	0.0218	6.616E-03	2.633E-04	9.145E-03	3.471E-04
						23	357	0.5407	0.0209	6.655E-03	2.573E-04	9.190E-03	3.360E-04
						24	305	0.5356	0.0207	5.631E-03	2.174E-04	7.825E-03	2.858E-04
						Daily	**-**	**-**	**-**	**2.117E-01**	**1.009E-02**	**2.280E-01**	**1.074E-02**
C	TKO-LTT (eastbound)	40%	2200	C1 - C14	CBL3	1	915	0.6152	0.0252	2.137E-01	8.770E-03	8.547E-02	3.508E-03
						2	668	0.6159	0.0252	1.563E-01	6.409E-03	6.254E-02	2.563E-03
						3	528	0.6177	0.0252	1.238E-01	5.060E-03	4.952E-02	2.024E-03
						4	387	0.6192	0.0252	9.100E-02	3.710E-03	3.640E-02	1.484E-03
						5	352	0.6207	0.0252	8.292E-02	3.373E-03	3.317E-02	1.349E-03
						6	363	0.8318	0.0512	1.148E-01	7.062E-03	4.591E-02	2.825E-03
						7	787	0.8292	0.0512	2.479E-01	1.530E-02	9.916E-02	6.121E-03
						8	2059	0.8288	0.0512	6.480E-01	4.002E-02	2.592E-01	1.601E-02
						9	2241	0.7127	0.0379	6.064E-01	3.226E-02	2.426E-01	1.290E-02
						10	1998	0.7213	0.0358	5.474E-01	2.713E-02	2.190E-01	1.085E-02
						11	1696	0.6747	0.0314	4.345E-01	2.021E-02	1.738E-01	8.083E-03
						12	1514	0.6861	0.0330	3.944E-01	1.895E-02	1.578E-01	7.579E-03
						13	1393	0.7852	0.0457	4.153E-01	2.416E-02	1.661E-01	9.664E-03
						14	1484	0.7724	0.0440	4.352E-01	2.482E-02	1.741E-01	9.926E-03
						15	1544	0.7066	0.0385	4.144E-01	2.257E-02	1.657E-01	9.030E-03
						16	1865	0.7216	0.0400	5.110E-01	2.833E-02	2.044E-01	1.133E-02
						17	2041	0.7919	0.0489	6.136E-01	3.790E-02	2.454E-01	1.516E-02
						18	2252	0.7282	0.0420	6.227E-01	3.587E-02	2.491E-01	1.435E-02
						19	2463	0.6530	0.0357	6.107E-01	3.334E-02	2.443E-01	1.334E-02
						20	2111	0.5884	0.0301	4.717E-01	2.410E-02	1.887E-01	9.642E-03
						21	1689	0.5641	0.0258	3.617E-01	1.653E-02	1.447E-01	6.611E-03
						22	1654	0.6243	0.0265	3.920E-01	1.662E-02	1.568E-01	6.646E-03
						23	1689	0.6138	0.0252	3.936E-01	1.619E-02	1.574E-01	6.476E-03
						24	1442	0.6140	0.0252	3.363E-01	1.383E-02	1.345E-01	5.532E-03
						Daily	**-**	**-**	**-**	**9.239E+00**	**4.825E-01**	**3.696E+00**	**1.930E-01**

Note: The ventilation building for eastbound of TKO-LTT is out of the 500m Study Area of the Project, thus not included in the model. Please refer Sections 5.6.3.12 and 5.6.3.13 of the EIA Report for more details.

Calculation of Portal Emission

Road ID	Height (m)	Width (m)	Base Height (m)	Source ID	X	Y	Daily Emission Factor (QS) (g/s) NOx	RSP	HS	SY	SZ
P2 (southbound)	7.5	9	0	B1	844395.6	817891.9	3.041E-02	1.432E-03	3.75	4.19	3.49
	"	"	"	B2	844395.7	817881.9	3.041E-02	1.432E-03	3.75	4.19	3.49
	"	"	"	B3	844395.8	817871.9	3.041E-02	1.432E-03	3.75	4.19	3.49
	"	"	"	B4	844395.9	817861.9	3.041E-02	1.432E-03	3.75	4.19	3.49
	"	"	"	B5	844396.0	817851.9	3.041E-02	1.432E-03	3.75	4.19	3.49
	"	"	"	B6	844396.1	817841.9	1.520E-02	7.161E-04	3.75	4.19	3.49
	"	"	"	B7	844396.2	817831.9	1.520E-02	7.161E-04	3.75	4.19	3.49
	"	"	"	B8	844396.3	817821.9	1.520E-02	7.161E-04	3.75	4.19	3.49
	"	"	"	B9	844396.4	817811.9	1.520E-02	7.161E-04	3.75	4.19	3.49
	"	"	"	B10	844396.5	817801.9	1.520E-02	7.161E-04	3.75	4.19	3.49
TKO-LTT (eastbound)	9.5	7	8	C1	844085.8	817618.5	3.520E-01	1.838E-02	12.75	3.26	4.42
	"	"	"	C2	844091.1	817613.2	3.520E-01	1.838E-02	12.75	3.26	4.42
	"	"	"	C3	844096.4	817607.9	3.520E-01	1.838E-02	12.75	3.26	4.42
	"	"	"	C4	844101.8	817602.6	3.520E-01	1.838E-02	12.75	3.26	4.42
	"	"	"	C5	844107.1	817597.3	3.520E-01	1.838E-02	12.75	3.26	4.42
	"	"	"	C6	844112.4	817592.1	3.520E-01	1.838E-02	12.75	3.26	4.42
	"	"	"	C7	844117.7	817586.8	3.520E-01	1.838E-02	12.75	3.26	4.42
	"	"	"	C8	844123.0	817581.5	1.760E-01	9.191E-03	12.75	3.26	4.42
	"	"	"	C9	844128.3	817576.2	1.760E-01	9.191E-03	12.75	3.26	4.42
	"	"	"	C10	844133.6	817570.9	1.760E-01	9.191E-03	12.75	3.26	4.42
	"	"	"	C11	844138.9	817565.6	1.760E-01	9.191E-03	12.75	3.26	4.42
	"	"	"	C12	844144.3	817560.3	1.760E-01	9.191E-03	12.75	3.26	4.42
	"	"	"	C13	844149.6	817555.0	1.760E-01	9.191E-03	12.75	3.26	4.42
	"	"	"	C14	844154.9	817549.7	1.760E-01	9.191E-03	12.75	3.26	4.42

Note: Portal A - P2 (Northbound) is out of the 500m Study Area, thus not included in the model

Hourly Profile for Portals

Hour	P2 (southbound)		TKO-LLT (eastbound)	
	NOx	RSP	NOx	RSP
Hour 1	2.2%	1.7%	2.3%	1.8%
Hour 2	1.6%	1.2%	1.7%	1.3%
Hour 3	1.2%	0.9%	1.3%	1.0%
Hour 4	0.9%	0.7%	1.0%	0.8%
Hour 5	0.8%	0.6%	0.9%	0.7%
Hour 6	1.3%	1.5%	1.2%	1.5%
Hour 7	2.9%	3.4%	2.7%	3.2%
Hour 8	7.6%	9.0%	7.0%	8.3%
Hour 9	8.2%	8.8%	6.6%	6.7%
Hour 10	7.6%	7.3%	5.9%	5.6%
Hour 11	6.1%	5.6%	4.7%	4.2%
Hour 12	5.5%	5.2%	4.3%	3.9%
Hour 13	4.8%	5.3%	4.5%	5.0%
Hour 14	5.4%	5.9%	4.7%	5.1%
Hour 15	5.1%	5.4%	4.5%	4.7%
Hour 16	4.3%	4.5%	5.5%	5.9%
Hour 17	4.6%	5.2%	6.6%	7.9%
Hour 18	5.2%	5.7%	6.7%	7.4%
Hour 19	5.4%	5.8%	6.6%	6.9%
Hour 20	4.2%	4.2%	5.1%	5.0%
Hour 21	3.5%	3.2%	3.9%	3.4%
Hour 22	4.0%	3.2%	4.2%	3.4%
Hour 23	4.0%	3.1%	4.3%	3.4%
Hour 24	3.4%	2.7%	3.6%	2.9%