

**APPENDIX L**  
*Transportation Technical Data*





# **TECHNICAL APPENDIX**

**VALLEJO MARINE TERMINAL & ORCEM PROJECT**





**APPENDIX L.1:  
INTERSECTION TRAFFIC COUNTS**



# All Traffic Data

(916) 771-8700

[orders@atdtraffic.com](mailto:orders@atdtraffic.com)

City of Vallejo  
 All Vehicles on Unshifted Tab  
 Peds & Bikes on Bank 1 Tab  
 Heavy Trucks on Bank 2 Tab

File Name : 14-7219-001 Sonoma Boulevard (SR29)-Curtola Parkway  
 Site Code : 00000000  
 Start Date : 4/8/2014  
 Page No : 1

## Groups Printed- Unshifted

Start Time	Sonoma Boulevard (SR 29) Southbound					Curtola Parkway Westbound					Sonoma Boulevard (SR 29) Northbound					Coral Road Northeastbound					Curtola Parkway Eastbound					Int. Total
	Left	Thru	Bear Right	Right	App. Total	Left	Bear Left	Thru	Right	App. Total	Hard Left	Left	Thru	Right	App. Total	Hard Left	Bear Left	Bear Right	Hard Right	App. Total	Left	Thru	Right	Hard Right	App. Total	
07:00	29	30	3	5	67	0	0	66	21	87	1	34	18	0	53	0	2	0	1	3	0	55	23	0	78	288
07:15	33	26	1	3	63	0	0	97	25	122	3	30	27	0	60	1	1	1	1	4	0	41	33	0	74	323
07:30	27	32	1	5	65	0	0	127	25	152	0	35	30	0	65	1	0	1	0	2	0	71	27	1	99	383
07:45	38	28	1	6	73	0	0	124	46	170	0	54	27	2	83	0	2	0	0	2	0	56	22	0	78	406
<b>Total</b>	<b>127</b>	<b>116</b>	<b>6</b>	<b>19</b>	<b>268</b>	<b>0</b>	<b>0</b>	<b>414</b>	<b>117</b>	<b>531</b>	<b>4</b>	<b>153</b>	<b>102</b>	<b>2</b>	<b>261</b>	<b>2</b>	<b>5</b>	<b>2</b>	<b>2</b>	<b>11</b>	<b>0</b>	<b>223</b>	<b>105</b>	<b>1</b>	<b>329</b>	<b>1400</b>
08:00	34	36	1	2	73	0	0	97	44	141	1	42	34	0	77	0	0	0	0	0	0	72	19	0	91	382
08:15	28	33	1	4	66	0	0	109	31	140	0	44	30	2	76	0	1	0	0	1	0	63	20	1	84	367
08:30	34	34	0	5	73	0	0	122	42	164	0	47	44	0	91	0	1	0	2	3	0	58	35	0	93	424
08:45	43	37	1	1	82	0	0	76	42	118	1	52	60	3	116	0	0	0	0	0	0	53	29	1	83	399
<b>Total</b>	<b>139</b>	<b>140</b>	<b>3</b>	<b>12</b>	<b>294</b>	<b>0</b>	<b>0</b>	<b>404</b>	<b>159</b>	<b>563</b>	<b>2</b>	<b>185</b>	<b>168</b>	<b>5</b>	<b>360</b>	<b>0</b>	<b>2</b>	<b>0</b>	<b>2</b>	<b>4</b>	<b>0</b>	<b>246</b>	<b>103</b>	<b>2</b>	<b>351</b>	<b>1572</b>
16:00	47	50	0	2	99	0	0	55	47	102	0	35	70	4	109	1	1	1	0	3	0	87	33	1	121	434
16:15	48	43	2	3	96	0	0	81	50	131	2	30	71	2	105	0	0	0	0	0	0	81	42	0	123	455
16:30	43	50	1	6	100	0	0	79	46	125	7	40	76	1	124	2	0	0	1	3	0	138	48	2	188	540
16:45	30	36	5	3	74	0	0	51	51	102	2	36	53	3	94	0	2	1	3	6	0	97	38	1	136	412
<b>Total</b>	<b>168</b>	<b>179</b>	<b>8</b>	<b>14</b>	<b>369</b>	<b>0</b>	<b>0</b>	<b>266</b>	<b>194</b>	<b>460</b>	<b>11</b>	<b>141</b>	<b>270</b>	<b>10</b>	<b>432</b>	<b>3</b>	<b>3</b>	<b>2</b>	<b>4</b>	<b>12</b>	<b>0</b>	<b>403</b>	<b>161</b>	<b>4</b>	<b>568</b>	<b>1841</b>
17:00	55	49	0	4	108	0	0	72	49	121	2	47	64	0	113	2	2	2	0	6	0	99	37	0	136	484
17:15	59	36	0	6	101	0	0	86	49	135	1	37	53	1	92	0	2	1	1	4	0	163	47	0	210	542
17:30	46	42	0	3	91	0	0	60	34	94	1	35	50	2	88	0	0	0	1	1	0	120	35	0	155	429
17:45	54	39	0	2	95	0	0	70	43	113	1	41	61	4	107	0	0	0	0	0	0	91	44	0	135	450
<b>Total</b>	<b>214</b>	<b>166</b>	<b>0</b>	<b>15</b>	<b>395</b>	<b>0</b>	<b>0</b>	<b>288</b>	<b>175</b>	<b>463</b>	<b>5</b>	<b>160</b>	<b>228</b>	<b>7</b>	<b>400</b>	<b>2</b>	<b>4</b>	<b>3</b>	<b>2</b>	<b>11</b>	<b>0</b>	<b>473</b>	<b>163</b>	<b>0</b>	<b>636</b>	<b>1905</b>
<b>Grand Total</b>	<b>648</b>	<b>601</b>	<b>17</b>	<b>60</b>	<b>1326</b>	<b>0</b>	<b>0</b>	<b>1372</b>	<b>645</b>	<b>2017</b>	<b>22</b>	<b>639</b>	<b>768</b>	<b>24</b>	<b>1453</b>	<b>7</b>	<b>14</b>	<b>7</b>	<b>10</b>	<b>38</b>	<b>0</b>	<b>1345</b>	<b>532</b>	<b>7</b>	<b>1884</b>	<b>6718</b>
<b>Apprch %</b>	<b>48.9</b>	<b>45.3</b>	<b>1.3</b>	<b>4.5</b>		<b>0</b>	<b>0</b>	<b>68</b>	<b>32</b>		<b>1.5</b>	<b>44</b>	<b>52.9</b>	<b>1.7</b>		<b>18.4</b>	<b>36.8</b>	<b>18.4</b>	<b>26.3</b>		<b>0</b>	<b>71.4</b>	<b>28.2</b>	<b>0.4</b>		
<b>Total %</b>	<b>9.6</b>	<b>8.9</b>	<b>0.3</b>	<b>0.9</b>	<b>19.7</b>	<b>0</b>	<b>0</b>	<b>20.4</b>	<b>9.6</b>	<b>30</b>	<b>0.3</b>	<b>9.5</b>	<b>11.4</b>	<b>0.4</b>	<b>21.6</b>	<b>0.1</b>	<b>0.2</b>	<b>0.1</b>	<b>0.1</b>	<b>0.6</b>	<b>0</b>	<b>20</b>	<b>7.9</b>	<b>0.1</b>	<b>28</b>	

# All Traffic Data

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City of Vallejo  
 All Vehicles on Unshifted Tab  
 Peds & Bikes on Bank 1 Tab  
 Heavy Trucks on Bank 2 Tab

File Name : 14-7219-001 Sonoma Boulevard (SR29)-Curtola Parkway  
 Site Code : 00000000  
 Start Date : 4/8/2014  
 Page No : 2

Start Time	Sonoma Boulevard (SR 29) Southbound					Curtola Parkway Westbound					Sonoma Boulevard (SR 29) Northbound					Coral Road Northeastbound					Curtola Parkway Eastbound					Int. Total
	Left	Thru	Bear Right	Right	App. Total	Left	Bear Left	Thru	Right	App. Total	Hard Left	Left	Thru	Right	App. Total	Hard Left	Bear Left	Bear Right	Hard Right	App. Total	Left	Thru	Right	Hard Right	App. Total	
Peak Hour Analysis From 07:00 to 08:45 - Peak 1 of 1																										
Peak Hour for Entire Intersection Begins at 07:45																										
07:45	<b>38</b>	28	<b>1</b>	<b>6</b>	<b>73</b>	0	0	<b>124</b>	<b>46</b>	<b>170</b>	0	<b>54</b>	27	<b>2</b>	83	0	<b>2</b>	0	0	2	0	56	22	0	78	406
08:00	34	<b>36</b>	1	2	73	0	0	97	44	141	<b>1</b>	42	34	0	77	0	0	0	0	0	0	<b>72</b>	19	0	91	382
08:15	28	33	1	4	66	0	0	109	31	140	0	44	30	2	76	0	1	0	0	1	0	63	20	<b>1</b>	84	367
08:30	34	34	0	5	73	0	0	122	42	164	0	47	<b>44</b>	0	<b>91</b>	0	1	0	<b>2</b>	<b>3</b>	0	58	<b>35</b>	0	<b>93</b>	<b>424</b>
Total Volume	134	131	3	17	285	0	0	452	163	615	1	187	135	4	327	0	4	0	2	6	0	249	96	1	346	1579
% App. Total	47	46	1.1	6		0	0	73.5	26.5		0.3	57.2	41.3	1.2		0	66.7	0	33.3		0	72	27.7	0.3		
PHF	.882	.910	.750	.708	.976	.000	.000	.911	.886	.904	.250	.866	.767	.500	.898	.000	.500	.000	.250	.500	.000	.865	.686	.250	.930	.931

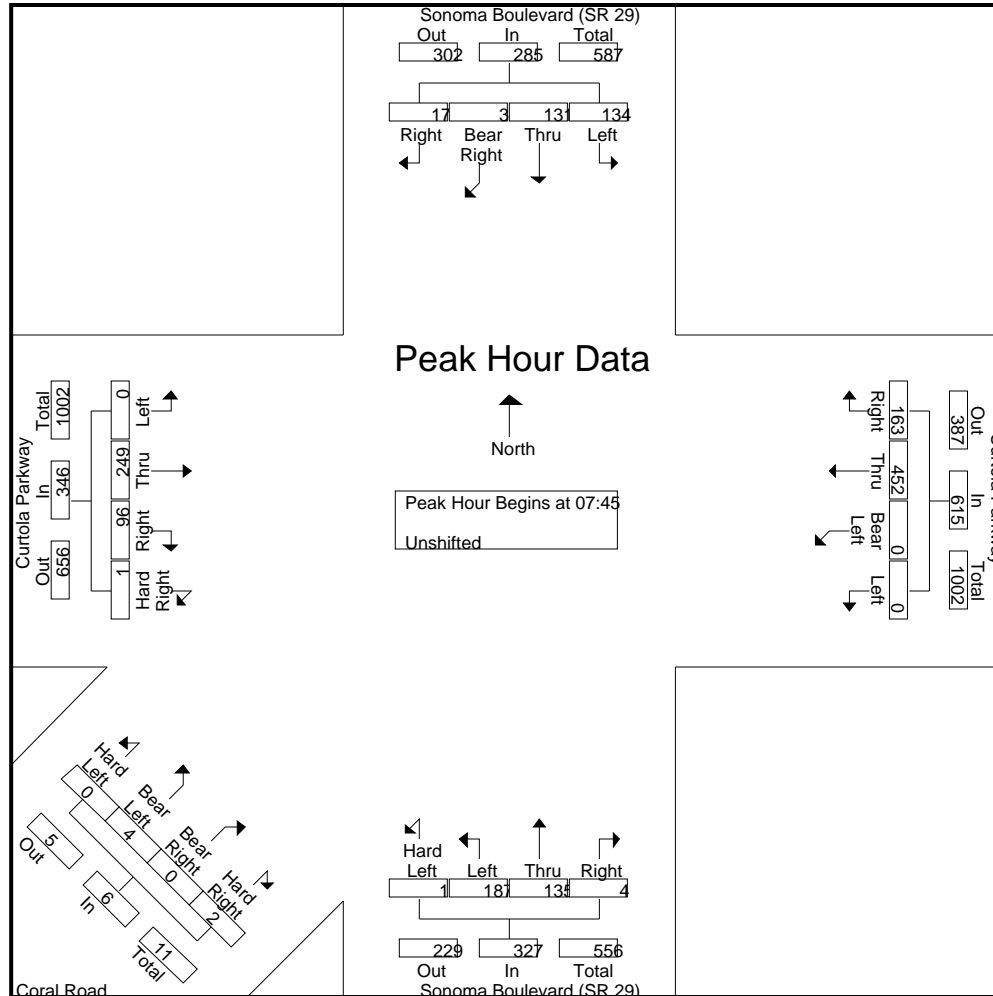
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City of Vallejo  
 All Vehicles on Unshifted Tab  
 Peds & Bikes on Bank 1 Tab  
 Heavy Trucks on Bank 2 Tab

File Name : 14-7219-001 Sonoma Boulevard (SR29)-Curtola Parkway  
 Site Code : 00000000  
 Start Date : 4/8/2014  
 Page No : 3



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City of Vallejo  
 All Vehicles on Unshifted Tab  
 Peds & Bikes on Bank 1 Tab  
 Heavy Trucks on Bank 2 Tab

File Name : 14-7219-001 Sonoma Boulevard (SR29)-Curtola Parkway  
 Site Code : 00000000  
 Start Date : 4/8/2014  
 Page No : 4

Start Time	Sonoma Boulevard (SR 29) Southbound					Curtola Parkway Westbound					Sonoma Boulevard (SR 29) Northbound					Coral Road Northeastbound					Curtola Parkway Eastbound					Int. Total
	Left	Thru	Bear Right	Right	App. Total	Left	Bear Left	Thru	Right	App. Total	Hard Left	Left	Thru	Right	App. Total	Hard Left	Bear Left	Bear Right	Hard Right	App. Total	Left	Thru	Right	Hard Right	App. Total	
Peak Hour Analysis From 16:00 to 17:45 - Peak 1 of 1																										
Peak Hour for Entire Intersection Begins at 16:30																										
16:30	43	<b>50</b>	1	<b>6</b>	100	0	0	79	46	125	<b>7</b>	40	<b>76</b>	1	<b>124</b>	<b>2</b>	0	0	1	3	0	138	<b>48</b>	2	188	540
16:45	30	36	<b>5</b>	3	74	0	0	51	<b>51</b>	102	2	36	53	<b>3</b>	94	0	<b>2</b>	1	<b>3</b>	<b>6</b>	0	97	38	1	136	412
17:00	55	49	0	4	<b>108</b>	0	0	72	49	121	2	<b>47</b>	64	0	113	2	2	<b>2</b>	0	6	0	99	37	0	136	484
17:15	<b>59</b>	36	0	6	101	0	0	<b>86</b>	49	<b>135</b>	1	37	53	1	92	0	2	1	1	4	0	<b>163</b>	47	0	<b>210</b>	<b>542</b>
Total Volume	187	171	6	19	383	0	0	288	195	483	12	160	246	5	423	4	6	4	5	19	0	497	170	3	670	1978
% App. Total	48.8	44.6	1.6	5		0	0	59.6	40.4		2.8	37.8	58.2	1.2		21.1	31.6	21.1	26.3		0	74.2	25.4	0.4		
PHF	.792	.855	.300	.792	.887	.000	.000	.837	.956	.894	.429	.851	.809	.417	.853	.500	.750	.500	.417	.792	.000	.762	.885	.375	.798	.912



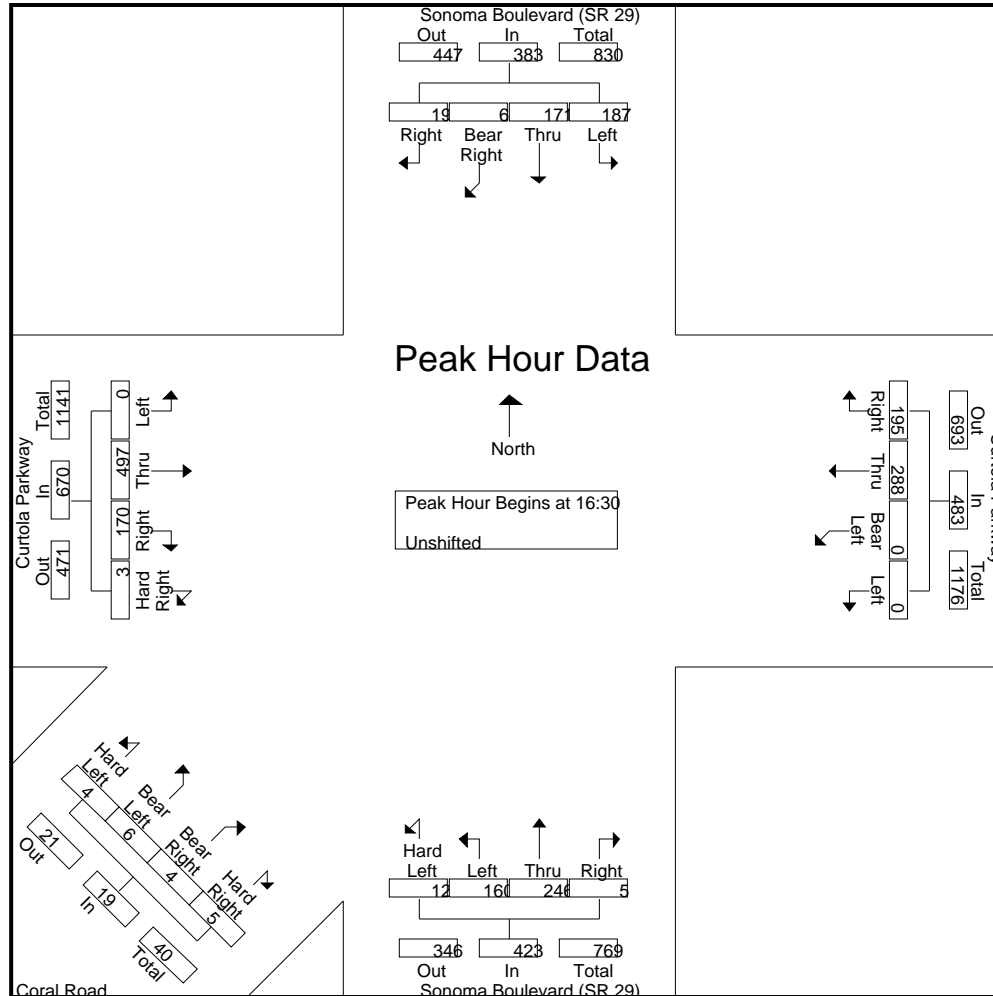
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City of Vallejo  
 All Vehicles on Unshifted Tab  
 Peds & Bikes on Bank 1 Tab  
 Heavy Trucks on Bank 2 Tab

File Name : 14-7219-001 Sonoma Boulevard (SR29)-Curtola Parkway  
 Site Code : 00000000  
 Start Date : 4/8/2014  
 Page No : 5



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City of Vallejo  
 All Vehicles on Unshifted Tab  
 Peds & Bikes on Bank 1 Tab  
 Heavy Trucks on Bank 2 Tab

File Name : 14-7219-001 Sonoma Boulevard (SR29)-Curtola Parkway  
 Site Code : 00000000  
 Start Date : 4/8/2014  
 Page No : 1

## Groups Printed- Bank 2

Start Time	Sonoma Boulevard (SR 29) Southbound						Curtola Parkway Westbound						Sonoma Boulevard (SR 29) Northbound						Coral Road Northeastbound						Curtola Parkway Eastbound						Exclu. Total	Inclu. Total	Int. Total			
	Left	Thru	Bear Right	Right	Peds	App. Total	Left	Bear Left	Thru	Right	Peds	App. Total	Hard Left	Left	Thru	Right	Peds	App. Total	Hard Left	Bear Left	Bear Right	Hard Right	Peds	App. Total	Left	Thru	Right	Hard Right	Peds	App. Total						
07:00	0	2	0	0	0	2	0	0	3	2	0	5	0	0	2	0	0	2	0	0	0	0	0	0	0	0	3	1	0	4	0	0	13	0	13	13
07:15	0	0	0	0	0	0	0	0	1	1	0	2	1	1	1	0	0	3	0	1	1	0	0	2	0	0	4	1	0	5	0	0	12	0	12	12
07:30	1	1	0	0	0	2	2	0	1	1	0	2	0	1	1	0	0	2	0	0	0	0	0	0	0	0	4	0	0	4	0	0	10	0	10	10
07:45	1	1	0	0	0	2	0	0	4	0	0	4	0	1	0	0	0	1	0	0	0	0	0	0	0	0	1	0	0	1	0	0	8	0	8	8
<b>Total</b>	<b>2</b>	<b>4</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>6</b>	<b>1</b>	<b>0</b>	<b>9</b>	<b>4</b>	<b>0</b>	<b>13</b>	<b>1</b>	<b>3</b>	<b>4</b>	<b>0</b>	<b>0</b>	<b>8</b>	<b>0</b>	<b>1</b>	<b>1</b>	<b>0</b>	<b>0</b>	<b>2</b>	<b>0</b>	<b>0</b>	<b>12</b>	<b>2</b>	<b>0</b>	<b>14</b>	<b>0</b>	<b>0</b>	<b>43</b>	<b>0</b>	<b>43</b>	<b>43</b>
08:00	0	2	0	0	0	2	0	0	3	1	0	4	0	1	1	0	0	2	0	0	0	0	0	0	0	0	3	0	0	3	0	0	11	0	11	11
08:15	2	2	0	0	0	4	4	0	3	1	0	4	0	3	0	1	0	4	0	0	0	0	0	0	0	0	1	1	0	2	0	0	14	0	14	14
08:30	0	1	0	1	0	2	0	0	3	1	0	4	0	1	2	0	0	3	0	0	1	0	0	1	0	0	1	2	0	3	0	0	13	0	13	13
08:45	1	1	0	0	0	2	0	0	3	2	0	5	0	1	1	0	0	2	0	0	0	0	0	0	0	0	2	1	0	3	0	0	12	0	12	12
<b>Total</b>	<b>3</b>	<b>6</b>	<b>0</b>	<b>1</b>	<b>0</b>	<b>10</b>	<b>0</b>	<b>0</b>	<b>12</b>	<b>5</b>	<b>0</b>	<b>17</b>	<b>0</b>	<b>6</b>	<b>4</b>	<b>1</b>	<b>0</b>	<b>11</b>	<b>0</b>	<b>0</b>	<b>1</b>	<b>0</b>	<b>0</b>	<b>1</b>	<b>0</b>	<b>0</b>	<b>7</b>	<b>4</b>	<b>0</b>	<b>11</b>	<b>0</b>	<b>0</b>	<b>50</b>	<b>0</b>	<b>50</b>	<b>50</b>
16:00	1	1	0	0	0	2	0	0	1	0	0	1	0	2	1	0	0	3	0	0	0	0	0	0	0	0	3	1	0	4	0	0	10	0	10	10
16:15	1	1	0	0	0	2	2	0	2	1	0	3	0	0	1	0	0	1	0	0	0	0	0	0	0	0	3	1	0	4	0	0	10	0	10	10
16:30	0	2	0	1	0	3	0	0	1	0	0	1	1	1	1	0	0	3	0	1	0	0	0	1	0	0	2	1	0	3	0	0	11	0	11	11
16:45	1	1	0	0	0	1	0	0	4	0	0	4	0	2	0	0	0	2	0	0	0	0	0	0	0	0	5	0	0	5	0	0	12	0	12	12
<b>Total</b>	<b>3</b>	<b>4</b>	<b>0</b>	<b>1</b>	<b>0</b>	<b>8</b>	<b>0</b>	<b>0</b>	<b>8</b>	<b>1</b>	<b>0</b>	<b>9</b>	<b>1</b>	<b>5</b>	<b>3</b>	<b>0</b>	<b>0</b>	<b>9</b>	<b>0</b>	<b>1</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>1</b>	<b>0</b>	<b>0</b>	<b>13</b>	<b>3</b>	<b>0</b>	<b>16</b>	<b>0</b>	<b>0</b>	<b>43</b>	<b>0</b>	<b>43</b>	<b>43</b>
17:00	1	0	0	0	0	1	0	0	1	0	0	1	0	1	0	0	0	1	0	0	0	0	0	0	0	0	2	0	0	2	0	0	5	0	5	5
17:15	0	0	0	0	0	0	0	0	1	0	0	1	0	1	1	0	0	2	0	0	0	0	0	0	0	0	2	0	0	2	0	0	5	0	5	5
17:30	3	1	0	0	0	4	0	0	1	0	0	1	0	1	1	0	0	2	0	0	0	0	0	0	0	0	2	0	0	2	0	0	9	0	9	9
17:45	0	0	0	0	0	0	0	0	2	0	0	2	0	2	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4	0	4	4
<b>Total</b>	<b>4</b>	<b>1</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>5</b>	<b>0</b>	<b>0</b>	<b>5</b>	<b>0</b>	<b>0</b>	<b>5</b>	<b>0</b>	<b>5</b>	<b>2</b>	<b>0</b>	<b>0</b>	<b>7</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>6</b>	<b>0</b>	<b>0</b>	<b>6</b>	<b>0</b>	<b>0</b>	<b>23</b>	<b>0</b>	<b>23</b>	<b>23</b>
<b>Grand Total</b>	<b>12</b>	<b>15</b>	<b>0</b>	<b>2</b>	<b>0</b>	<b>29</b>	<b>0</b>	<b>0</b>	<b>34</b>	<b>10</b>	<b>0</b>	<b>44</b>	<b>2</b>	<b>19</b>	<b>13</b>	<b>1</b>	<b>0</b>	<b>35</b>	<b>0</b>	<b>2</b>	<b>2</b>	<b>0</b>	<b>0</b>	<b>4</b>	<b>0</b>	<b>38</b>	<b>9</b>	<b>0</b>	<b>0</b>	<b>47</b>	<b>0</b>	<b>0</b>	<b>159</b>	<b>0</b>	<b>159</b>	<b>159</b>
<b>Approch %</b>	<b>41.4</b>	<b>51.7</b>	<b>0</b>	<b>6.9</b>	<b>0</b>	<b>18.2</b>	<b>0</b>	<b>0</b>	<b>77.3</b>	<b>22.7</b>	<b>0</b>	<b>27.7</b>	<b>5.7</b>	<b>54.3</b>	<b>37.1</b>	<b>2.9</b>	<b>0</b>	<b>22</b>	<b>0</b>	<b>50</b>	<b>50</b>	<b>0</b>	<b>0</b>	<b>2.5</b>	<b>0</b>	<b>80.9</b>	<b>19.1</b>	<b>0</b>	<b>0</b>	<b>29.6</b>	<b>0</b>	<b>0</b>	<b>100</b>	<b>0</b>	<b>100</b>	<b>100</b>
<b>Total %</b>	<b>7.5</b>	<b>9.4</b>	<b>0</b>	<b>1.3</b>	<b>0</b>	<b>18.2</b>	<b>0</b>	<b>0</b>	<b>21.4</b>	<b>6.3</b>	<b>0</b>	<b>27.7</b>	<b>1.3</b>	<b>11.9</b>	<b>8.2</b>	<b>0.6</b>	<b>0</b>	<b>22</b>	<b>0</b>	<b>1.3</b>	<b>1.3</b>	<b>0</b>	<b>0</b>	<b>2.5</b>	<b>0</b>	<b>23.9</b>	<b>5.7</b>	<b>0</b>	<b>0</b>	<b>29.6</b>	<b>0</b>	<b>0</b>	<b>100</b>	<b>0</b>	<b>100</b>	<b>100</b>

Start Time	Sonoma Boulevard (SR 29) Southbound						Curtola Parkway Westbound						Sonoma Boulevard (SR 29) Northbound						Coral Road Northeastbound						Curtola Parkway Eastbound						Int. Total					
	Left	Thru	Bear Right	Right	Peds	App. Total	Left	Bear Left	Thru	Right	Peds	App. Total	Hard Left	Left	Thru	Right	Peds	App. Total	Hard Left	Bear Left	Bear Right	Hard Right	Peds	App. Total	Left	Thru	Right	Hard Right	Peds	App. Total						
08:00	0	2	0	0	0	2	0	0	3	1	0	4	0	1	1	0	0	2	0	0	0	0	0	0	0	0	3	0	0	3	0	11	11			
08:15	2	2	0	0	0	4	0	0	3	1	0	4	0	3	0	1	0	4	0	0	0	0	0	0	0	0	1	1	0	2	0	14	14			
08:30	0	1	0	1	0	2	0	0	3	1	0	4	0	1	2	0	0	3	0	0	1	0	0	1	0	0	1	2	0	3	0	13	13			
08:45	1	1	0	0	0	2	0	0	3	2	0	5	0	1	1	0	0	2	0	0	0	0	0	0	0	0	2	1	0	3	0	12	12			
<b>Total Volume</b>	<b>3</b>	<b>6</b>	<b>0</b>	<b>1</b>	<b>0</b>	<b>10</b>	<b>0</b>	<b>0</b>	<b>12</b>	<b>5</b>	<b>0</b>	<b>17</b>	<b>0</b>	<b>6</b>	<b>4</b>	<b>1</b>	<b>0</b>	<b>11</b>	<b>0</b>	<b>0</b>	<b>1</b>	<b>0</b>	<b>0</b>	<b>1</b>	<b>0</b>	<b>7</b>	<b>4</b>	<b>0</b>	<b>0</b>	<b>11</b>	<b>0</b>	<b>0</b>	<b>50</b>	<b>0</b>	<b>50</b>	<b>50</b>
<b>% App. Total</b>	<b>30</b>	<b>60</b>	<b>0</b>	<b>10</b>	<b>0</b>	<b>18.2</b>	<b>0</b>	<b>0</b>	<b>70.6</b>	<b>29.4</b>	<b>0</b>	<b>27.7</b>	<b>0</b>	<b>54.5</b>	<b>36.4</b>	<b>9.1</b>	<b>0</b>	<b>22</b>	<b>0</b>	<b>0</b>	<b>100</b>	<b>0</b>	<b>0</b>	<b>2.5</b>	<b>0</b>	<b>63.6</b>	<b>36.4</b>	<b>0</b>	<b>0</b>	<b>29.6</b>	<b>0</b>	<b>0</b>	<b>100</b>	<b>0</b>	<b>100</b>	<b>100</b>
<b>PHF</b>	<b>.375</b>	<b>.750</b>	<b>.000</b>	<b>.250</b>	<b>.625</b>	<b>18.2</b>	<b>.000</b>	<b>.000</b>	<b>1.000</b>	<b>.625</b>	<b>.850</b>	<b>27.7</b>	<b>.000</b>	<b>.500</b>	<b>.500</b>	<b>.250</b>	<b>.688</b>	<b>.000</b>	<b>.000</b>	<b>.250</b>	<b>.000</b>	<b>.250</b>	<b>2.5</b>	<b>.000</b>	<b>.583</b>	<b>.500</b>	<b>.000</b>	<b>.917</b>	<b>29.6</b>	<b>.000</b>	<b>.917</b>	<b>100</b>	<b>.000</b>	<b>100</b>	<b>100</b>	

Peak Hour Analysis From 07:00 to 08:45 - Peak 1 of 1

Peak Hour for Entire Intersection Begins at 08:00

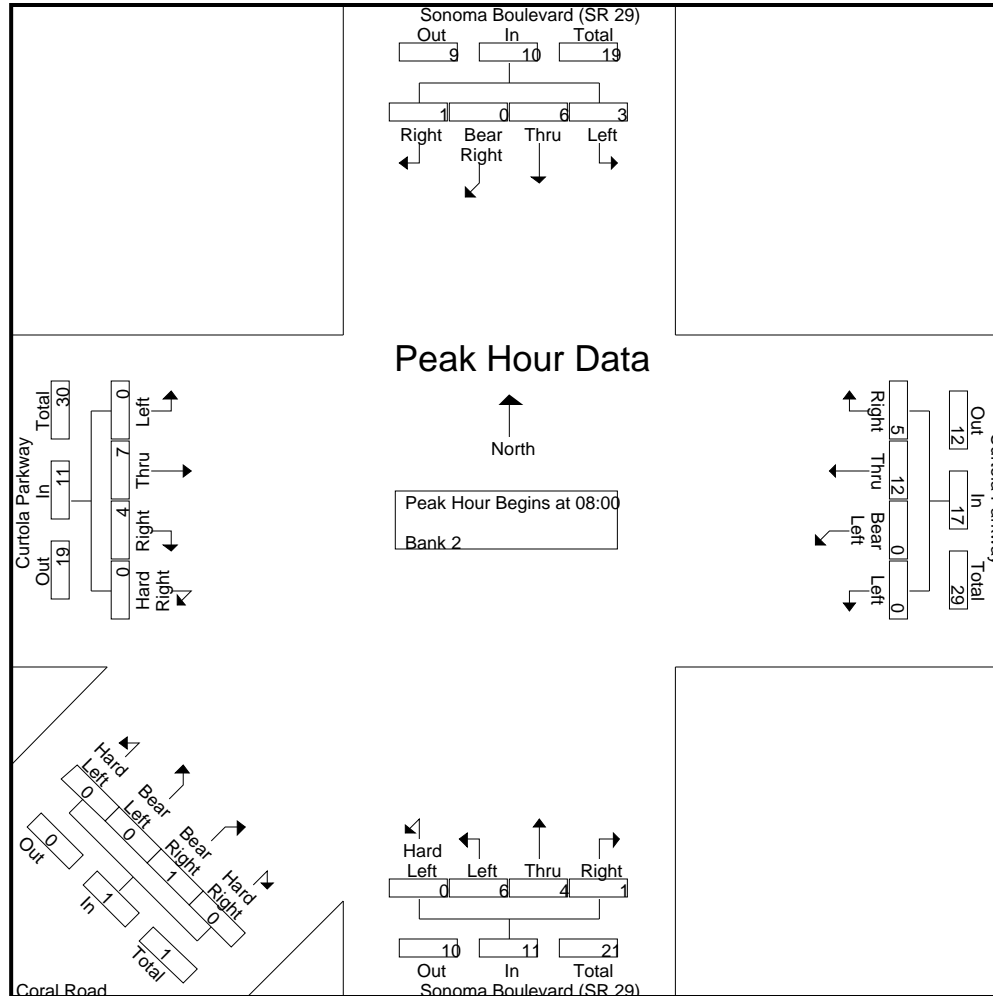
# All Traffic Data

(916) 771-8700

[orders@atdtraffic.com](mailto:orders@atdtraffic.com)

City of Vallejo  
 All Vehicles on Unshifted Tab  
 Peds & Bikes on Bank 1 Tab  
 Heavy Trucks on Bank 2 Tab

File Name : 14-7219-001 Sonoma Boulevard (SR29)-Curtola Parkway  
 Site Code : 00000000  
 Start Date : 4/8/2014  
 Page No : 2



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City of Vallejo  
 All Vehicles on Unshifted Tab  
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File Name : 14-7219-001 Sonoma Boulevard (SR29)-Curtola Parkway  
 Site Code : 00000000  
 Start Date : 4/8/2014  
 Page No : 3

Start Time	Sonoma Boulevard (SR 29) Southbound					Curtola Parkway Westbound					Sonoma Boulevard (SR 29) Northbound					Coral Road Northeastbound					Curtola Parkway Eastbound					Int. Total	
	Left	Thru	Bear Right	Right	App. Total	Left	Bear Left	Thru	Right	App. Total	Hard Left	Left	Thru	Right	App. Total	Hard Left	Bear Left	Bear Right	Hard Right	App. Total	Left	Thru	Right	Hard Right	App. Total		
Peak Hour Analysis From 16:00 to 17:45 - Peak 1 of 1																											
Peak Hour for Entire Intersection Begins at 16:00																											
16:00	1	1	0	0	2	0	0	1	0	1	0	2	1	0	3	0	0	0	0	0	0	0	3	1	0	4	10
16:15	1	1	0	0	2	0	0	2	1	3	0	0	1	0	1	0	0	0	0	0	0	3	1	0	4	10	
16:30	0	2	0	1	3	0	0	1	0	1	1	1	1	0	3	0	1	0	0	1	0	2	1	0	3	11	
16:45	1	0	0	0	1	0	0	4	0	4	0	2	0	0	2	0	0	0	0	0	0	5	0	0	5	12	
Total Volume	3	4	0	1	8	0	0	8	1	9	1	5	3	0	9	0	1	0	0	1	0	13	3	0	16	43	
% App. Total	37.5	50	0	12.5		0	0	88.9	11.1		11.1	55.6	33.3	0		0	100	0	0		0	81.2	18.8	0			
PHF	.750	.500	.000	.250	.667	.000	.000	.500	.250	.563	.250	.625	.750	.000	.750	.000	.250	.000	.000	.250	.000	.650	.750	.000	.800	.896	

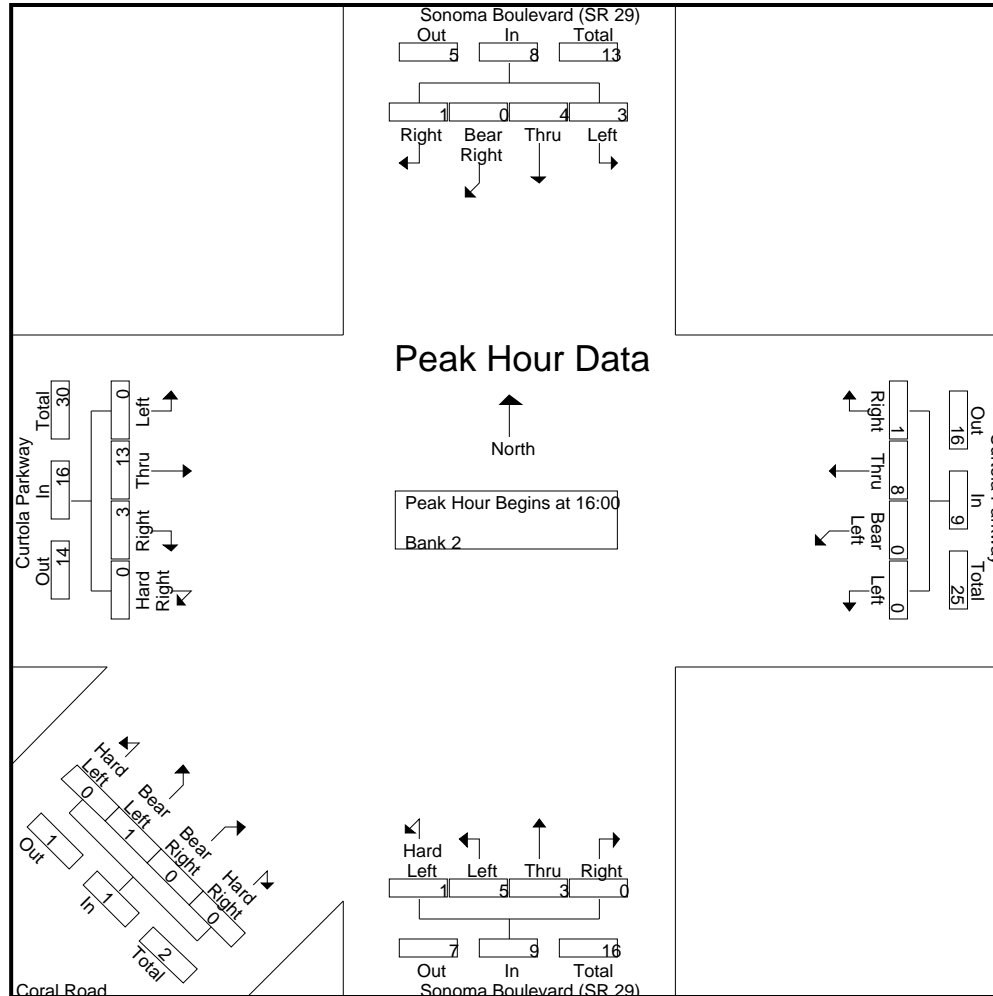
# All Traffic Data

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City of Vallejo  
 All Vehicles on Unshifted Tab  
 Peds & Bikes on Bank 1 Tab  
 Heavy Trucks on Bank 2 Tab

File Name : 14-7219-001 Sonoma Boulevard (SR29)-Curtola Parkway  
 Site Code : 00000000  
 Start Date : 4/8/2014  
 Page No : 4



# All Traffic Data

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City of Vallejo  
 All Vehicles on Unshifted Tab  
 Peds & Bikes on Bank 1 Tab  
 Heavy Trucks on Bank 2 Tab

File Name : 14-7219-001 Sonoma Boulevard (SR29)-Curtola Parkway  
 Site Code : 00000000  
 Start Date : 4/8/2014  
 Page No : 1

## Groups Printed- Bank 1

Start Time	Sonoma Boulevard (SR 29) Southbound						Curtola Parkway Westbound						Sonoma Boulevard (SR 29) Northbound						Coral Road Northeastbound						Curtola Parkway Eastbound						Exclu. Total	Inclu. Total	Int. Total													
	Left	Thru	Bear Right	Right	Peds	App. Total	Left	Bear Left	Thru	Right	Peds	App. Total	Hard Left	Left	Thru	Right	Peds	App. Total	Hard Left	Bear Left	Bear Right	Hard Right	Peds	App. Total	Left	Thru	Right	Hard Right	Peds	App. Total																
07:00	0	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	2	3
07:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08:30	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08:45	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
16:00	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
16:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
16:30	0	1	0	0	3	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
16:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	1	0	0	4	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
17:00	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
17:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
17:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
17:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Grand Total	0	2	0	0	5	2	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Apprch %	0	100	0	0	0	0	0	0	0	100	0	0	0	50	50	0	0	0	0	0	0	0	0	0	0	66.7	33.3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total %	0	18.2	0	0	0	18.2	0	0	0	18.2	0	0	0	18.2	18.2	0	0	0	0	0	0	0	0	0	0	18.2	9.1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Start Time	Sonoma Boulevard (SR 29) Southbound					Curtola Parkway Westbound					Sonoma Boulevard (SR 29) Northbound					Coral Road Northeastbound					Curtola Parkway Eastbound					Int. Total
	Left	Thru	Bear Right	Right	App. Total	Left	Bear Left	Thru	Right	App. Total	Hard Left	Left	Thru	Right	App. Total	Hard Left	Bear Left	Bear Right	Hard Right	App. Total	Left	Thru	Right	Hard Right	App. Total	

Peak Hour Analysis From 07:00 to 08:45 - Peak 1 of 1

Peak Hour for Entire Intersection Begins at 07:00

07:00	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Volume	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% App. Total	0	100	0	0	0	0	0	0	0	0	0	0	100	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
PHF	.000	.250	.000	.000	.250	.000	.000	.000	.000	.000	.000	.000	.250	.000	.250	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	

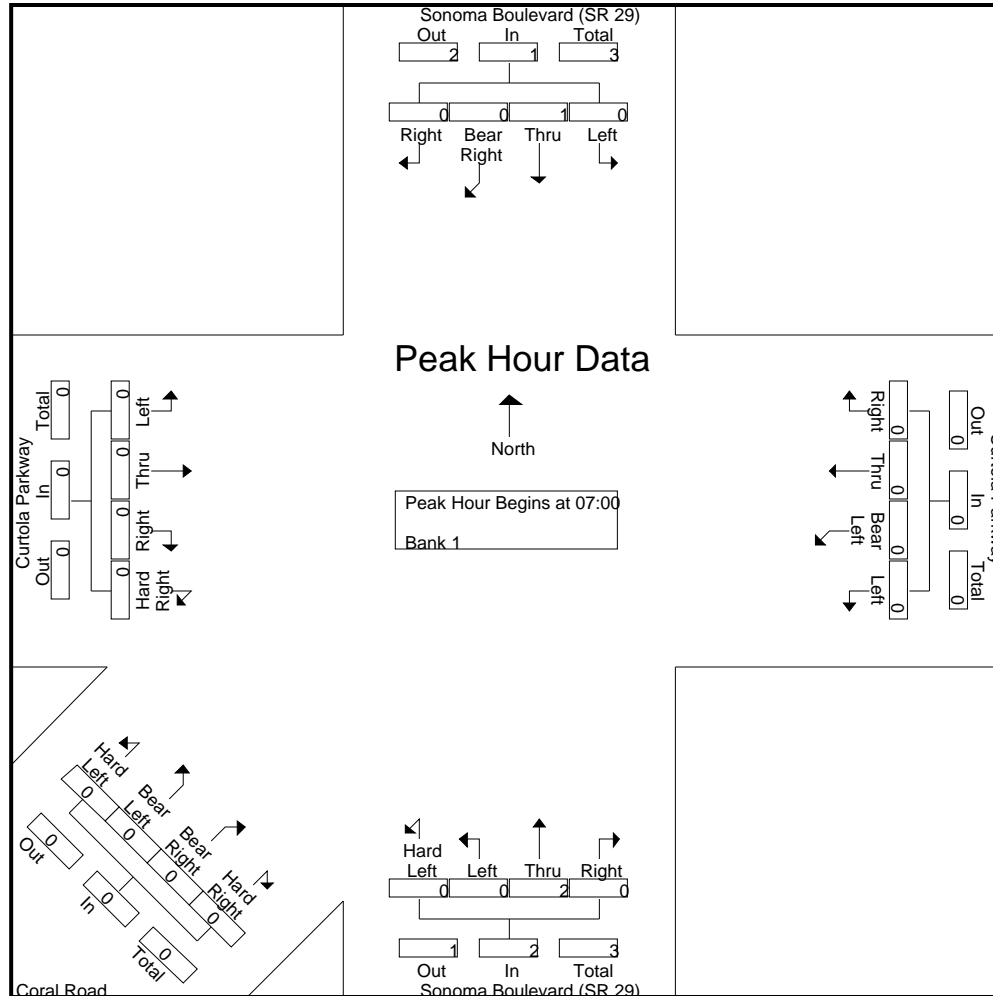
# All Traffic Data

(916) 771-8700

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City of Vallejo  
 All Vehicles on Unshifted Tab  
 Peds & Bikes on Bank 1 Tab  
 Heavy Trucks on Bank 2 Tab

File Name : 14-7219-001 Sonoma Boulevard (SR29)-Curtola Parkway  
 Site Code : 00000000  
 Start Date : 4/8/2014  
 Page No : 2



# All Traffic Data

(916) 771-8700

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City of Vallejo  
 All Vehicles on Unshifted Tab  
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File Name : 14-7219-001 Sonoma Boulevard (SR29)-Curtola Parkway  
 Site Code : 00000000  
 Start Date : 4/8/2014  
 Page No : 3

Start Time	Sonoma Boulevard (SR 29) Southbound					Curtola Parkway Westbound					Sonoma Boulevard (SR 29) Northbound					Coral Road Northeastbound					Curtola Parkway Eastbound					Int. Total	
	Left	Thru	Bear Right	Right	App. Total	Left	Bear Left	Thru	Right	App. Total	Hard Left	Left	Thru	Right	App. Total	Hard Left	Bear Left	Bear Right	Hard Right	App. Total	Left	Thru	Right	Hard Right	App. Total		
Peak Hour Analysis From 16:00 to 17:45 - Peak 1 of 1																											
Peak Hour for Entire Intersection Begins at 16:00																											
16:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	1
16:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	1
16:30	0	1	0	0	1	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	2
16:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Volume	0	1	0	0	1	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	1	1	0	0	2	4
% App. Total	0	100	0	0		0	0	0	0		0	100	0	0		0	0	0	0		0	50	50	0			
PHF	.000	.250	.000	.000	.250	.000	.000	.000	.000	.000	.000	.250	.000	.000	.250	.000	.000	.000	.000	.000	.000	.250	.250	.000	.500	.500	



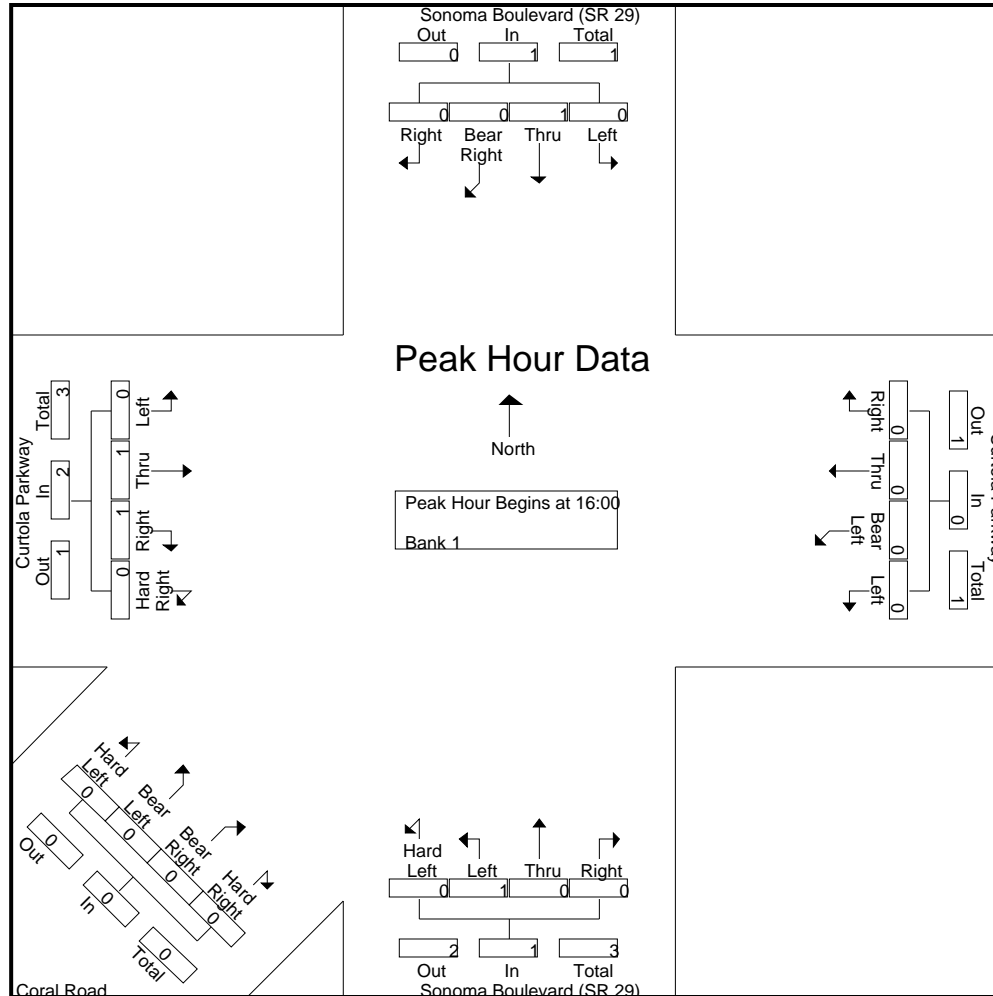
# All Traffic Data

(916) 771-8700

[orders@atdtraffic.com](mailto:orders@atdtraffic.com)

City of Vallejo  
 All Vehicles on Unshifted Tab  
 Peds & Bikes on Bank 1 Tab  
 Heavy Trucks on Bank 2 Tab

File Name : 14-7219-001 Sonoma Boulevard (SR29)-Curtola Parkway  
 Site Code : 00000000  
 Start Date : 4/8/2014  
 Page No : 4



# ALL TRAFFIC DATA

City of Vallejo  
 All Vehicles on Unshifted  
 Peds & Bikes on Bank 1  
 Heavy Trucks on Bank 2

(916) 771-8700

[orders@atdtraffic.com](mailto:orders@atdtraffic.com)

File Name : 14-7219-002 Sonoma Boulevard (SR 29)-Solano Avenue.pr

Date : 4/8/2014

## Unshifted Count = All Vehicles

START TIME	Sonoma Boulevard (SR 29) Southbound					Solano Avenue Westbound					Sonoma Boulevard (SR 29) Northbound					Solano Avenue Eastbound					Total	Utum Total
	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL		
07:00	3	43	4	0	50	6	29	3	0	38	2	52	3	0	57	0	1	0	0	1	146	0
07:15	3	57	4	0	64	0	5	5	0	10	3	58	6	0	67	2	0	2	0	4	145	0
07:30	2	59	2	0	63	5	0	2	0	7	1	61	8	0	70	1	2	0	0	3	143	0
07:45	4	46	0	0	50	10	10	4	0	24	2	72	5	0	79	2	0	0	0	2	155	0
<b>Total</b>	12	205	10	0	227	21	44	14	0	79	8	243	22	0	273	5	3	2	0	10	589	0
08:00	3	48	5	0	56	7	4	3	0	14	7	73	14	0	94	0	0	2	0	2	166	0
08:15	2	48	4	0	54	5	3	2	0	10	4	81	13	0	98	1	2	9	0	12	174	0
08:30	3	65	4	0	72	11	4	3	0	18	0	93	9	0	102	2	3	0	0	5	197	0
08:45	3	61	3	0	67	3	5	6	0	14	1	98	12	0	111	2	3	3	0	8	200	0
<b>Total</b>	11	222	16	0	249	26	16	14	0	56	12	345	48	0	405	5	8	14	0	27	737	0
16:00	2	80	2	0	84	13	2	11	0	26	1	92	9	0	102	2	1	5	0	8	220	0
16:15	1	76	5	0	82	8	5	6	0	19	0	87	11	0	98	2	3	5	0	10	209	0
16:30	4	95	1	0	100	11	7	14	0	32	2	111	11	0	124	4	5	2	0	11	267	0
16:45	3	71	3	0	77	6	2	8	0	16	2	87	9	0	98	4	12	2	0	18	209	0
<b>Total</b>	10	322	11	0	343	38	16	39	0	93	5	377	40	0	422	12	21	14	0	47	905	0
17:00	1	85	0	0	86	8	1	13	0	22	3	88	15	0	106	5	25	2	0	32	246	0
17:15	2	74	1	0	77	6	3	14	0	23	1	80	9	0	90	3	12	3	0	18	208	0
17:30	3	78	0	0	81	3	0	8	0	11	0	91	7	0	98	3	2	0	0	5	195	0
17:45	3	80	2	0	85	8	1	3	0	12	0	88	8	0	96	0	4	0	0	4	197	0
<b>Total</b>	9	317	3	0	329	25	5	38	0	68	4	347	39	0	390	11	43	5	0	59	846	0
<b>Grand Total</b>	42	1066	40	0	1148	110	81	105	0	296	29	1312	149	0	1490	33	75	35	0	143	3077	0
Apprch %	3.7%	92.9%	3.5%	0.0%		37.2%	27.4%	35.5%	0.0%		1.9%	88.1%	10.0%	0.0%		23.1%	52.4%	24.5%	0.0%			
Total %	1.4%	34.6%	1.3%	0.0%	37.3%	3.6%	2.6%	3.4%	0.0%	9.6%	0.9%	42.6%	4.8%	0.0%	48.4%	1.1%	2.4%	1.1%	0.0%	4.6%	100.0%	

# ALL TRAFFIC DATA

(916) 771-8700

[orders@atdtraffic.com](mailto:orders@atdtraffic.com)

File Name : 14-7219-002 Sonoma Boulevard (SR 29)-Solano Avenue.pr

Date : 4/8/2014

City of Vallejo  
All Vehicles on Unshifted  
Peds & Bikes on Bank 1  
Heavy Trucks on Bank 2

## Unshifted Count = All Vehicles

AM PEAK HOUR	Sonoma Boulevard (SR 29) Southbound					Solano Avenue Westbound					Sonoma Boulevard (SR 29) Northbound					Solano Avenue Eastbound					Total
	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	
Peak Hour Analysis From 08:00 to 09:00																					
Peak Hour For Entire Intersection Begins at 08:00																					
08:00	3	48	5	0	56	7	4	3	0	14	7	73	14	0	94	0	0	2	0	2	166
08:15	2	48	4	0	54	5	3	2	0	10	4	81	13	0	98	1	2	9	0	12	174
08:30	3	65	4	0	72	11	4	3	0	18	0	93	9	0	102	2	3	0	0	5	197
08:45	3	61	3	0	67	3	5	6	0	14	1	98	12	0	111	2	3	3	0	8	200
Total Volume	11	222	16	0	249	26	16	14	0	56	12	345	48	0	405	5	8	14	0	27	737
% App Total	4.4%	89.2%	6.4%	0.0%		46.4%	28.6%	25.0%	0.0%		3.0%	85.2%	11.9%	0.0%		18.5%	29.6%	51.9%	0.0%		
PHF	.917	.854	.800	.000	.865	.591	.800	.583	.000	.778	.429	.880	.857	.000	.912	.625	.667	.389	.000	.563	.921

PM PEAK HOUR	Sonoma Boulevard (SR 29) Southbound					Solano Avenue Westbound					Sonoma Boulevard (SR 29) Northbound					Solano Avenue Eastbound					Total
	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	
Peak Hour Analysis From 16:15 to 17:15																					
Peak Hour For Entire Intersection Begins at 16:15																					
16:15	1	76	5	0	82	8	5	6	0	19	0	87	11	0	98	2	3	5	0	10	209
16:30	4	95	1	0	100	11	7	14	0	32	2	111	11	0	124	4	5	2	0	11	267
16:45	3	71	3	0	77	6	2	8	0	16	2	87	9	0	98	4	12	2	0	18	209
17:00	1	85	0	0	86	8	1	13	0	22	3	88	15	0	106	5	25	2	0	32	246
Total Volume	9	327	9	0	345	33	15	41	0	89	7	373	46	0	426	15	45	11	0	71	931
% App Total	2.6%	94.8%	2.6%	0.0%		37.1%	16.9%	46.1%	0.0%		1.6%	87.6%	10.8%	0.0%		21.1%	63.4%	15.5%	0.0%		
PHF	.563	.861	.450	.000	.863	.750	.536	.732	.000	.695	.583	.840	.767	.000	.859	.750	.450	.550	.000	.555	.872

# ALL TRAFFIC DATA

City of Vallejo  
 All Vehicles on Unshifted  
 Peds & Bikes on Bank 1  
 Heavy Trucks on Bank 2

(916) 771-8700

[orders@atdtraffic.com](mailto:orders@atdtraffic.com)

File Name : 14-7219-002 Sonoma Boulevard (SR 29)-Solano Avenue.pr

Date : 4/8/2014

## Bank 2 Count = Heavy Trucks

START TIME	Sonoma Boulevard (SR 29) Southbound					Solano Avenue Westbound					Sonoma Boulevard (SR 29) Northbound					Solano Avenue Eastbound					Total	Ped Total
	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL		
07:00	1	3	0	0	4	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	5	0
07:15	0	0	1	0	1	0	0	2	0	2	0	2	0	0	2	0	0	0	0	0	5	0
07:30	0	2	0	0	2	0	0	0	0	0	1	1	0	0	2	0	0	0	0	0	4	0
07:45	0	1	0	0	1	0	0	1	0	1	0	0	0	0	0	1	0	0	0	1	3	0
<b>Total</b>	1	6	1	0	8	0	0	3	0	3	1	4	0	0	5	1	0	0	0	1	17	0
08:00	0	1	0	0	1	2	0	0	0	2	0	1	0	0	1	0	0	0	0	0	4	0
08:15	1	2	0	0	3	0	0	0	0	0	0	4	0	0	4	0	0	3	0	3	10	0
08:30	0	2	1	0	3	1	0	0	0	1	0	3	0	0	3	0	1	0	0	1	8	0
08:45	1	1	0	0	2	0	0	1	0	1	0	0	1	0	1	1	0	1	0	2	6	0
<b>Total</b>	2	6	1	0	9	3	0	1	0	4	0	8	1	0	9	1	1	4	0	6	28	0
16:00	1	1	0	0	2	0	1	1	0	2	0	2	0	0	2	0	0	0	0	0	6	0
16:15	0	2	0	0	2	0	2	1	0	3	0	1	0	0	1	0	0	0	0	0	6	0
16:30	0	2	0	0	2	0	0	0	0	0	0	2	2	0	4	0	0	0	0	0	6	0
16:45	0	1	0	0	1	0	0	0	0	0	0	2	0	0	2	0	0	0	0	0	3	0
<b>Total</b>	1	6	0	0	7	0	3	2	0	5	0	7	2	0	9	0	0	0	0	0	21	0
17:00	0	0	0	0	0	0	0	1	0	1	0	1	0	0	1	0	0	0	0	0	2	0
17:15	0	0	0	0	0	1	1	0	0	2	0	1	0	0	1	0	1	0	0	1	4	0
17:30	0	1	0	0	1	0	0	0	0	0	0	3	0	0	3	0	0	0	0	0	4	0
17:45	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	1	0
<b>Total</b>	0	1	0	0	1	1	1	1	0	3	0	6	0	0	6	0	1	0	0	1	11	0
<b>Grand Total</b>	4	19	2	0	25	4	4	7	0	15	1	25	3	0	29	2	2	4	0	8	77	0
Apprch %	16.0%	76.0%	8.0%			26.7%	26.7%	46.7%			3.4%	86.2%	10.3%			25.0%	25.0%	50.0%				
Total %	5.2%	24.7%	2.6%		32.5%	5.2%	5.2%	9.1%		19.5%	1.3%	32.5%	3.9%		37.7%	2.6%	2.6%	5.2%		10.4%	100.0%	

# ALL TRAFFIC DATA

City of Vallejo  
 All Vehicles on Unshifted  
 Peds & Bikes on Bank 1  
 Heavy Trucks on Bank 2

(916) 771-8700

[orders@atdtraffic.com](mailto:orders@atdtraffic.com)

File Name : 14-7219-002 Sonoma Boulevard (SR 29)-Solano Avenue.pr

Date : 4/8/2014

## Bank 2 Count = Heavy Trucks

AM PEAK HOUR	Sonoma Boulevard (SR 29) Southbound					Solano Avenue Westbound					Sonoma Boulevard (SR 29) Northbound					Solano Avenue Eastbound					Total
	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	
Peak Hour Analysis From 08:00 to 09:00																					
Peak Hour For Entire Intersection Begins at 08:00																					
08:00	0	1	0	0	1	2	0	0	0	2	0	1	0	0	1	0	0	0	0	0	4
08:15	1	2	0	0	3	0	0	0	0	0	0	4	0	0	4	0	0	3	0	3	10
08:30	0	2	1	0	3	1	0	0	0	1	0	3	0	0	3	0	1	0	0	1	8
08:45	1	1	0	0	2	0	0	1	0	1	0	0	1	0	1	1	0	1	0	2	6
Total Volume	2	6	1	0	9	3	0	1	0	4	0	8	1	0	9	1	1	4	0	6	28
% App Total	22.2%	66.7%	11.1%			75.0%	0.0%	25.0%			0.0%	88.9%	11.1%			16.7%	16.7%	66.7%			
PHF	.500	.750	.250		.750	.375	.000	.250		.500	.000	.500	.250		.563	.250	.250	.333		.500	.700

PM PEAK HOUR	Sonoma Boulevard (SR 29) Southbound					Solano Avenue Westbound					Sonoma Boulevard (SR 29) Northbound					Solano Avenue Eastbound					Total
	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	
Peak Hour Analysis From 16:15 to 17:15																					
Peak Hour For Entire Intersection Begins at 16:15																					
16:15	0	2	0	0	2	0	2	1	0	3	0	1	0	0	1	0	0	0	0	0	6
16:30	0	2	0	0	2	0	0	0	0	0	0	2	2	0	4	0	0	0	0	0	6
16:45	0	1	0	0	1	0	0	0	0	0	0	2	0	0	2	0	0	0	0	0	3
17:00	0	0	0	0	0	0	0	1	0	1	0	1	0	0	1	0	0	0	0	0	2
Total Volume	0	5	0	0	5	0	2	2	0	4	0	6	2	0	8	0	0	0	0	0	17
% App Total	0.0%	100.0%	0.0%			0.0%	50.0%	50.0%			0.0%	75.0%	25.0%			0.0%	0.0%	0.0%			
PHF	.000	.625	.000		.625	.000	.250	.500		.333	.000	.750	.250		.500	.000	.000	.000		.000	.708

# ALL TRAFFIC DATA

City of Vallejo  
 All Vehicles on Unshifted  
 Peds & Bikes on Bank 1  
 Heavy Trucks on Bank 2

(916) 771-8700

[orders@atdtraffic.com](mailto:orders@atdtraffic.com)

File Name : 14-7219-002 Sonoma Boulevard (SR 29)-Solano Avenue.pr

Date : 4/8/2014

## Bank 1 Count = Peds & Bikes

START TIME	Sonoma Boulevard (SR 29) Southbound					Solano Avenue Westbound					Sonoma Boulevard (SR 29) Northbound					Solano Avenue Eastbound					Total	Ped Total
	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL		
07:00	0	1	0	0	1	0	0	0	0	0	0	2	0	0	2	0	0	0	0	0	3	0
07:15	0	0	0	0	0	0	0	0	3	0	0	0	0	0	0	0	0	0	0	0	0	3
07:30	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	1	2
07:45	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0
<b>Total</b>	0	3	0	0	3	0	0	0	3	0	0	2	0	0	2	0	0	0	2	0	5	5
08:00	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	2	0	1	2
08:15	0	1	0	0	1	1	0	1	0	2	0	0	0	0	0	0	0	0	0	0	3	0
08:30	1	0	0	0	1	0	0	0	0	0	0	1	0	1	1	0	0	0	1	0	2	2
08:45	0	0	0	0	0	0	0	0	1	0	0	1	0	0	1	0	0	0	0	0	1	1
<b>Total</b>	1	1	0	0	2	1	0	1	1	2	0	3	0	1	3	0	0	0	3	0	7	5
16:00	0	1	0	0	1	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	2	0
16:15	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0
16:30	0	1	0	0	1	0	0	0	0	0	0	1	0	0	1	0	0	0	3	0	2	3
16:45	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1
<b>Total</b>	0	3	0	0	3	0	0	0	1	0	0	2	0	0	2	0	0	0	3	0	5	4
17:00	0	0	0	0	0	1	0	0	1	1	0	1	0	0	1	0	0	0	0	0	2	1
17:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1
17:30	0	2	0	0	2	0	0	0	0	0	0	1	0	0	1	0	0	0	1	0	3	1
17:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1
<b>Total</b>	0	2	0	0	2	1	0	0	1	1	0	2	0	0	2	0	0	0	3	0	5	4
<b>Grand Total</b>	1	9	0	0	10	2	0	1	6	3	0	9	0	1	9	0	0	0	11	0	22	18
Apprch %	10.0%	90.0%	0.0%			66.7%	0.0%	33.3%			0.0%	100.0%	0.0%			0.0%	0.0%	0.0%				
Total %	4.5%	40.9%	0.0%		45.5%	9.1%	0.0%	4.5%		13.6%	0.0%	40.9%	0.0%		40.9%	0.0%	0.0%	0.0%		0.0%	100.0%	

# ALL TRAFFIC DATA

City of Vallejo  
 All Vehicles on Unshifted  
 Peds & Bikes on Bank 1  
 Heavy Trucks on Bank 2

(916) 771-8700

[orders@atdtraffic.com](mailto:orders@atdtraffic.com)

File Name : 14-7219-002 Sonoma Boulevard (SR 29)-Solano Avenue.pr

Date : 4/8/2014

## Bank 1 Count = Peds & Bikes

AM PEAK HOUR	Sonoma Boulevard (SR 29) Southbound					Solano Avenue Westbound					Sonoma Boulevard (SR 29) Northbound					Solano Avenue Eastbound					Total
	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	
Peak Hour Analysis From 08:00 to 09:00																					
Peak Hour For Entire Intersection Begins at 08:00																					
08:00	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	2	0	1
08:15	0	1	0	0	1	1	0	1	0	2	0	0	0	0	0	0	0	0	0	0	3
08:30	1	0	0	0	1	0	0	0	0	0	0	1	0	1	1	0	0	0	1	0	2
08:45	0	0	0	0	0	0	0	0	1	0	0	1	0	0	1	0	0	0	0	0	1
Total Volume	1	1	0	0	2	1	0	1	1	2	0	3	0	1	3	0	0	0	3	0	7
% App Total	50.0%	50.0%	0.0%			50.0%	0.0%	50.0%	0.0%		0.0%	100.0%	0.0%			0.0%	0.0%	0.0%			
PHF	.250	.250	.000		.500	.250	.000	.250		.250	.000	.750	.000		.750	.000	.000	.000		.000	.583

PM PEAK HOUR	Sonoma Boulevard (SR 29) Southbound					Solano Avenue Westbound					Sonoma Boulevard (SR 29) Northbound					Solano Avenue Eastbound					Total
	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	
Peak Hour Analysis From 16:15 to 17:15																					
Peak Hour For Entire Intersection Begins at 16:15																					
16:15	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
16:30	0	1	0	0	1	0	0	0	0	0	0	1	0	0	1	0	0	0	3	0	2
16:45	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0
17:00	0	0	0	0	0	1	0	0	1	1	0	1	0	0	1	0	0	0	0	0	2
Total Volume	0	2	0	0	2	1	0	0	2	1	0	2	0	0	2	0	0	0	3	0	5
% App Total	0.0%	100.0%	0.0%			100.0%	0.0%	0.0%			0.0%	100.0%	0.0%			0.0%	0.0%	0.0%			
PHF	.000	.500	.000		.500	.250	.000	.000		.250	.000	.500	.000		.500	.000	.000	.000		.000	.625

# ALL TRAFFIC DATA

City of Vallejo  
 All Vehicles on Unshifted  
 Peds & Bikes on Bank 1  
 Heavy Trucks on Bank 2

(916) 771-8700

[orders@atdtraffic.com](mailto:orders@atdtraffic.com)

File Name : 14-7219-003 Sonoma Boulevard (SR 29)-Lemon Street.ppd

Date : 4/8/2014

## Unshifted Count = All Vehicles

START TIME	Sonoma Boulevard (SR 29) Southbound					Lemon Street Westbound					Sonoma Boulevard (SR 29) Northbound					Lemon Street Eastbound					Total	Utum Total
	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL		
07:00	4	45	1	0	50	8	1	10	0	19	2	49	12	0	63	1	1	1	0	3	135	0
07:15	6	59	0	0	65	8	0	9	0	17	0	61	19	0	80	3	3	0	0	6	168	0
07:30	2	51	2	0	55	9	1	1	0	11	2	71	17	0	90	2	6	1	0	9	165	0
07:45	4	52	3	0	59	16	4	5	0	25	1	66	15	0	82	3	3	1	0	7	173	0
<b>Total</b>	16	207	6	0	229	41	6	25	0	72	5	247	63	0	315	9	13	3	0	25	641	0
08:00	2	48	4	0	54	13	3	7	0	23	1	80	12	0	93	3	2	1	0	6	176	0
08:15	8	57	2	0	67	12	2	11	0	25	1	82	11	0	94	1	0	1	0	2	188	0
08:30	6	69	3	0	78	20	4	7	0	31	3	85	15	0	103	4	2	1	0	7	219	0
08:45	4	61	2	0	67	10	2	8	0	20	2	91	23	0	116	2	8	0	0	10	213	0
<b>Total</b>	20	235	11	0	266	55	11	33	0	99	7	338	61	0	406	10	12	3	0	25	796	0
16:00	15	79	5	0	99	12	3	7	0	22	1	88	22	0	111	2	5	3	0	10	242	0
16:15	7	75	4	0	86	12	4	13	0	29	1	94	21	0	116	2	2	2	0	6	237	0
16:30	14	89	1	0	104	9	3	9	0	21	1	94	23	0	118	2	5	2	0	9	252	0
16:45	10	78	3	0	91	12	3	8	0	23	2	89	23	0	114	2	4	2	0	8	236	0
<b>Total</b>	46	321	13	0	380	45	13	37	0	95	5	365	89	0	459	8	16	9	0	33	967	0
17:00	15	80	3	0	98	12	4	4	0	20	2	82	38	0	122	2	4	0	0	6	246	0
17:15	9	77	3	0	89	11	10	9	0	30	2	75	29	0	106	2	3	1	0	6	231	0
17:30	4	78	2	0	84	17	5	6	0	28	3	83	24	0	110	3	6	0	0	9	231	0
17:45	8	75	2	0	85	17	2	7	0	26	2	86	24	0	112	3	2	2	0	7	230	0
<b>Total</b>	36	310	10	0	356	57	21	26	0	104	9	326	115	0	450	10	15	3	0	28	938	0
<b>Grand Total</b>	118	1073	40	0	1231	198	51	121	0	370	26	1276	328	0	1630	37	56	18	0	111	3342	0
Apprch %	9.6%	87.2%	3.2%	0.0%		53.5%	13.8%	32.7%	0.0%		1.6%	78.3%	20.1%	0.0%		33.3%	50.5%	16.2%	0.0%			
Total %	3.5%	32.1%	1.2%	0.0%	36.8%	5.9%	1.5%	3.6%	0.0%	11.1%	0.8%	38.2%	9.8%	0.0%	48.8%	1.1%	1.7%	0.5%	0.0%	3.3%	100.0%	



# ALL TRAFFIC DATA

City of Vallejo  
 All Vehicles on Unshifted  
 Peds & Bikes on Bank 1  
 Heavy Trucks on Bank 2

(916) 771-8700

[orders@atdtraffic.com](mailto:orders@atdtraffic.com)

File Name : 14-7219-003 Sonoma Boulevard (SR 29)-Lemon Street.ppd

Date : 4/8/2014

## Unshifted Count = All Vehicles

AM PEAK HOUR	Sonoma Boulevard (SR 29) Southbound					Lemon Street Westbound					Sonoma Boulevard (SR 29) Northbound					Lemon Street Eastbound					Total
	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	
Peak Hour Analysis From 08:00 to 09:00																					
Peak Hour For Entire Intersection Begins at 08:00																					
08:00	2	48	4	0	54	13	3	7	0	23	1	80	12	0	93	3	2	1	0	6	176
08:15	8	57	2	0	67	12	2	11	0	25	1	82	11	0	94	1	0	1	0	2	188
08:30	6	69	3	0	78	20	4	7	0	31	3	85	15	0	103	4	2	1	0	7	219
08:45	4	61	2	0	67	10	2	8	0	20	2	91	23	0	116	2	8	0	0	10	213
Total Volume	20	235	11	0	266	55	11	33	0	99	7	338	61	0	406	10	12	3	0	25	796
% App Total	7.5%	88.3%	4.1%	0.0%		55.6%	11.1%	33.3%	0.0%		1.7%	83.3%	15.0%	0.0%		40.0%	48.0%	12.0%	0.0%		
PHF	.625	.851	.688	.000	.853	.688	.688	.750	.000	.798	.583	.929	.663	.000	.875	.625	.375	.750	.000	.625	.909

PM PEAK HOUR	Sonoma Boulevard (SR 29) Southbound					Lemon Street Westbound					Sonoma Boulevard (SR 29) Northbound					Lemon Street Eastbound					Total
	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	
Peak Hour Analysis From 16:15 to 17:15																					
Peak Hour For Entire Intersection Begins at 16:15																					
16:15	7	75	4	0	86	12	4	13	0	29	1	94	21	0	116	2	2	2	0	6	237
16:30	14	89	1	0	104	9	3	9	0	21	1	94	23	0	118	2	5	2	0	9	252
16:45	10	78	3	0	91	12	3	8	0	23	2	89	23	0	114	2	4	2	0	8	236
17:00	15	80	3	0	98	12	4	4	0	20	2	82	38	0	122	2	4	0	0	6	246
Total Volume	46	322	11	0	379	45	14	34	0	93	6	359	105	0	470	8	15	6	0	29	971
% App Total	12.1%	85.0%	2.9%	0.0%		48.4%	15.1%	36.6%	0.0%		1.3%	76.4%	22.3%	0.0%		27.6%	51.7%	20.7%	0.0%		
PHF	.767	.904	.688	.000	.911	.938	.875	.654	.000	.802	.750	.955	.691	.000	.963	1.000	.750	.750	.000	.806	.963

# ALL TRAFFIC DATA

City of Vallejo  
 All Vehicles on Unshifted  
 Peds & Bikes on Bank 1  
 Heavy Trucks on Bank 2

(916) 771-8700

[orders@atdtraffic.com](mailto:orders@atdtraffic.com)

File Name : 14-7219-003 Sonoma Boulevard (SR 29)-Lemon Street.ppd

Date : 4/8/2014

## Bank 2 Count = Heavy Trucks

START TIME	Sonoma Boulevard (SR 29) Southbound					Lemon Street Westbound					Sonoma Boulevard (SR 29) Northbound					Lemon Street Eastbound					Total	Ped Total
	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL		
07:00	0	4	0	0	4	1	0	1	0	2	0	0	0	0	0	0	0	0	0	0	6	0
07:15	0	0	0	0	0	0	0	0	0	0	0	2	1	0	3	0	0	0	0	0	3	0
07:30	0	2	0	0	2	0	0	0	0	0	0	1	1	0	2	0	0	0	0	0	4	0
07:45	0	1	0	0	1	1	0	0	0	1	0	1	0	0	1	0	0	0	0	0	3	0
<b>Total</b>	0	7	0	0	7	2	0	1	0	3	0	4	2	0	6	0	0	0	0	0	16	0
08:00	0	3	0	0	3	2	0	0	0	2	1	1	1	0	3	0	0	0	0	0	8	0
08:15	2	3	0	0	5	2	0	0	0	2	0	4	0	0	4	0	0	0	0	0	11	0
08:30	0	3	0	0	3	0	0	0	0	0	0	3	1	0	4	0	0	0	0	0	7	0
08:45	0	4	0	0	4	1	0	1	0	2	0	1	0	0	1	0	0	0	0	0	7	0
<b>Total</b>	2	13	0	0	15	5	0	1	0	6	1	9	2	0	12	0	0	0	0	0	33	0
16:00	0	1	0	0	1	0	0	0	0	0	0	1	0	0	1	1	0	0	0	1	3	0
16:15	0	0	0	0	0	0	0	0	0	0	0	6	0	0	6	0	0	0	0	0	6	0
16:30	0	2	0	0	2	0	0	0	0	0	0	1	1	0	2	0	0	0	0	0	4	0
16:45	0	1	0	0	1	0	0	1	0	1	0	2	0	0	2	0	0	0	0	0	4	0
<b>Total</b>	0	4	0	0	4	0	0	1	0	1	0	10	1	0	11	1	0	0	0	1	17	0
17:00	0	0	0	0	0	0	0	0	0	0	0	1	1	0	2	0	0	0	0	0	2	0
17:15	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	1	0
17:30	0	1	0	0	1	0	0	0	0	0	0	2	0	0	2	0	0	0	0	0	3	0
17:45	0	1	0	0	1	0	0	0	0	0	0	2	0	0	2	0	0	0	0	0	3	0
<b>Total</b>	0	2	0	0	2	0	0	0	0	0	0	6	1	0	7	0	0	0	0	0	9	0
<b>Grand Total</b>	2	26	0	0	28	7	0	3	0	10	1	29	6	0	36	1	0	0	0	1	75	0
Apprch %	7.1%	92.9%	0.0%			70.0%	0.0%	30.0%			2.8%	80.6%	16.7%			100.0%	0.0%	0.0%				
Total %	2.7%	34.7%	0.0%		37.3%	9.3%	0.0%	4.0%		13.3%	1.3%	38.7%	8.0%		48.0%	1.3%	0.0%	0.0%		1.3%	100.0%	

# ALL TRAFFIC DATA

City of Vallejo  
 All Vehicles on Unshifted  
 Peds & Bikes on Bank 1  
 Heavy Trucks on Bank 2

(916) 771-8700

[orders@atdtraffic.com](mailto:orders@atdtraffic.com)

File Name : 14-7219-003 Sonoma Boulevard (SR 29)-Lemon Street.ppd

Date : 4/8/2014

## Bank 2 Count = Heavy Trucks

AM PEAK HOUR	Sonoma Boulevard (SR 29) Southbound					Lemon Street Westbound					Sonoma Boulevard (SR 29) Northbound					Lemon Street Eastbound					Total
	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	
Peak Hour Analysis From 08:00 to 09:00																					
Peak Hour For Entire Intersection Begins at 08:00																					
08:00	0	3	0	0	3	2	0	0	0	2	1	1	1	0	3	0	0	0	0	0	8
08:15	2	3	0	0	5	2	0	0	0	2	0	4	0	0	4	0	0	0	0	0	11
08:30	0	3	0	0	3	0	0	0	0	0	0	3	1	0	4	0	0	0	0	0	7
08:45	0	4	0	0	4	1	0	1	0	2	0	1	0	0	1	0	0	0	0	0	7
Total Volume	2	13	0	0	15	5	0	1	0	6	1	9	2	0	12	0	0	0	0	0	33
% App Total	13.3%	86.7%	0.0%			83.3%	0.0%	16.7%	0.0%		8.3%	75.0%	16.7%			0.0%	0.0%	0.0%			
PHF	.250	.813	.000		.750	.625	.000	.250		.750	.250	.563	.500		.750	.000	.000	.000		.000	.750

PM PEAK HOUR	Sonoma Boulevard (SR 29) Southbound					Lemon Street Westbound					Sonoma Boulevard (SR 29) Northbound					Lemon Street Eastbound					Total
	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	
Peak Hour Analysis From 16:15 to 17:15																					
Peak Hour For Entire Intersection Begins at 16:15																					
16:15	0	0	0	0	0	0	0	0	0	0	0	6	0	0	6	0	0	0	0	0	6
16:30	0	2	0	0	2	0	0	0	0	0	0	1	1	0	2	0	0	0	0	0	4
16:45	0	1	0	0	1	0	0	1	0	1	0	2	0	0	2	0	0	0	0	0	4
17:00	0	0	0	0	0	0	0	0	0	0	0	1	1	0	2	0	0	0	0	0	2
Total Volume	0	3	0	0	3	0	0	1	0	1	0	10	2	0	12	0	0	0	0	0	16
% App Total	0.0%	100.0%	0.0%			0.0%	0.0%	100.0%	0.0%		0.0%	83.3%	16.7%			0.0%	0.0%	0.0%			
PHF	.000	.375	.000		.375	.000	.000	.250		.250	.000	.417	.500		.500	.000	.000	.000		.000	.667

# ALL TRAFFIC DATA

City of Vallejo  
 All Vehicles on Unshifted  
 Peds & Bikes on Bank 1  
 Heavy Trucks on Bank 2

(916) 771-8700

[orders@atdtraffic.com](mailto:orders@atdtraffic.com)

File Name : 14-7219-003 Sonoma Boulevard (SR 29)-Lemon Street.ppd

Date : 4/8/2014

## Bank 1 Count = Peds & Bikes

START TIME	Sonoma Boulevard (SR 29) Southbound					Lemon Street Westbound					Sonoma Boulevard (SR 29) Northbound					Lemon Street Eastbound					Total	Ped Total
	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL		
07:00	0	0	0	1	0	0	0	0	3	0	0	2	1	0	3	0	0	0	1	0	3	5
07:15	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	2
07:30	0	1	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	2
07:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
<b>Total</b>	0	1	0	3	1	0	0	0	3	0	0	2	1	0	3	0	0	0	3	0	4	9
08:00	0	1	0	2	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	3
08:15	0	2	0	0	2	0	0	0	2	0	0	0	0	0	0	0	0	0	1	0	2	3
08:30	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	1	0
08:45	0	0	0	2	0	0	0	0	0	0	0	1	0	0	1	0	0	0	5	0	1	7
<b>Total</b>	0	3	0	4	3	0	0	0	2	0	0	2	0	0	2	0	0	0	7	0	5	13
16:00	0	1	0	1	1	0	0	0	1	0	0	1	0	0	1	0	0	0	6	0	2	8
16:15	0	1	0	0	1	0	0	0	0	0	0	0	0	6	0	0	0	0	8	0	1	14
16:30	0	0	0	1	0	0	0	0	0	0	0	1	0	6	1	0	0	0	9	0	1	16
16:45	0	0	0	2	0	0	0	0	0	0	0	1	0	1	1	0	0	0	0	0	1	3
<b>Total</b>	0	2	0	4	2	0	0	0	1	0	0	3	0	13	3	0	0	0	23	0	5	41
17:00	0	1	0	9	1	0	0	0	0	0	0	0	0	1	0	0	0	0	2	0	1	12
17:15	0	0	0	1	0	0	0	0	2	0	0	0	0	0	0	0	0	0	1	0	0	4
17:30	0	3	0	0	3	0	0	1	0	1	0	2	0	2	2	0	0	0	3	0	6	5
17:45	0	0	0	5	0	0	0	0	0	0	0	0	0	1	0	0	0	0	3	0	0	9
<b>Total</b>	0	4	0	15	4	0	0	1	2	1	0	2	0	4	2	0	0	0	9	0	7	30
<b>Grand Total</b>	0	10	0	26	10	0	0	1	8	1	0	9	1	17	10	0	0	0	42	0	21	93
Apprch %	0.0%	100.0%	0.0%			0.0%	0.0%	100.0%			0.0%	90.0%	10.0%			0.0%	0.0%	0.0%				
Total %	0.0%	47.6%	0.0%		47.6%	0.0%	0.0%	4.8%		4.8%	0.0%	42.9%	4.8%		47.6%	0.0%	0.0%	0.0%		0.0%	100.0%	

# ALL TRAFFIC DATA

City of Vallejo  
 All Vehicles on Unshifted  
 Peds & Bikes on Bank 1  
 Heavy Trucks on Bank 2

(916) 771-8700

[orders@atdtraffic.com](mailto:orders@atdtraffic.com)

File Name : 14-7219-003 Sonoma Boulevard (SR 29)-Lemon Street.ppd

Date : 4/8/2014

## Bank 1 Count = Peds & Bikes

AM PEAK HOUR	Sonoma Boulevard (SR 29) Southbound					Lemon Street Westbound					Sonoma Boulevard (SR 29) Northbound					Lemon Street Eastbound					Total
	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	
Peak Hour Analysis From 08:00 to 09:00																					
Peak Hour For Entire Intersection Begins at 08:00																					
08:00	0	1	0	2	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1
08:15	0	2	0	0	2	0	0	0	2	0	0	0	0	0	0	0	0	0	1	0	2
08:30	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	1
08:45	0	0	0	2	0	0	0	0	0	0	0	1	0	0	1	0	0	0	5	0	1
Total Volume	0	3	0	4	3	0	0	0	2	0	0	2	0	0	2	0	0	0	7	0	5
% App Total	0.0%	100.0%	0.0%			0.0%	0.0%	0.0%			0.0%	100.0%	0.0%			0.0%	0.0%	0.0%			
PHF	.000	.375	.000		.375	.000	.000	.000		.000	.000	.500	.000		.500	.000	.000	.000		.000	.625

PM PEAK HOUR	Sonoma Boulevard (SR 29) Southbound					Lemon Street Westbound					Sonoma Boulevard (SR 29) Northbound					Lemon Street Eastbound					Total
	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	
Peak Hour Analysis From 16:15 to 17:15																					
Peak Hour For Entire Intersection Begins at 16:15																					
16:15	0	1	0	0	1	0	0	0	0	0	0	0	0	6	0	0	0	0	8	0	1
16:30	0	0	0	1	0	0	0	0	0	0	0	1	0	6	1	0	0	0	9	0	1
16:45	0	0	0	2	0	0	0	0	0	0	0	1	0	1	1	0	0	0	0	0	1
17:00	0	1	0	9	1	0	0	0	0	0	0	0	0	1	0	0	0	0	2	0	1
Total Volume	0	2	0	12	2	0	0	0	0	0	0	2	0	14	2	0	0	0	19	0	4
% App Total	0.0%	100.0%	0.0%			0.0%	0.0%	0.0%			0.0%	100.0%	0.0%			0.0%	0.0%	0.0%			
PHF	.000	.500	.000		.500	.000	.000	.000		.000	.000	.500	.000		.500	.000	.000	.000		.000	1.000

# ALL TRAFFIC DATA

City of Vallejo  
 All Vehicles on Unshifted  
 Peds & Bikes on Bank 1  
 Heavy Trucks on Bank 2

(916) 771-8700

[orders@atdtraffic.com](mailto:orders@atdtraffic.com)

File Name : 14-7219-004 Sonoma Boulevard (SR 29)-Winchester Street

Date : 4/8/2014

## Unshifted Count = All Vehicles

START TIME	Sonoma Boulevard (SR 29) Southbound					Winchester Street Westbound					Sonoma Boulevard (SR 29) Northbound					Winchester Street Eastbound					Total	Utum Total
	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL		
07:00	0	50	1	0	51	1	0	0	0	1	0	59	0	0	59	2	0	2	0	4	115	0
07:15	0	65	2	0	67	0	0	2	0	2	1	73	0	0	74	4	0	1	0	5	148	0
07:30	0	58	3	0	61	1	0	1	0	2	0	87	0	0	87	2	0	0	0	2	152	0
07:45	0	64	2	0	66	2	0	1	0	3	1	70	1	0	72	7	0	0	0	7	148	0
<b>Total</b>	0	237	8	0	245	4	0	4	0	8	2	289	1	0	292	15	0	3	0	18	563	0
08:00	1	61	1	0	63	0	1	1	0	2	1	91	0	1	93	3	1	1	0	5	163	1
08:15	1	69	0	0	70	1	1	2	0	4	1	87	0	0	88	5	0	1	0	6	168	0
08:30	0	92	1	0	93	0	1	2	0	3	2	98	3	0	103	4	0	1	0	5	204	0
08:45	2	69	3	0	74	1	0	2	0	3	1	112	0	0	113	3	0	1	0	4	194	0
<b>Total</b>	4	291	5	0	300	2	3	7	0	12	5	388	3	1	397	15	1	4	0	20	729	1
16:00	1	84	5	0	90	0	0	0	0	0	5	110	0	0	115	3	0	0	0	3	208	0
16:15	2	88	3	0	93	0	1	1	0	2	1	109	0	1	111	5	0	2	0	7	213	1
16:30	1	92	2	0	95	0	1	1	0	2	0	117	1	0	118	1	0	0	0	1	216	0
16:45	1	87	5	0	93	2	0	2	0	4	1	113	1	0	115	3	1	3	0	7	219	0
<b>Total</b>	5	351	15	0	371	2	2	4	0	8	7	449	2	1	459	12	1	5	0	18	856	1
17:00	2	86	5	0	93	1	1	1	0	3	1	112	1	0	114	5	2	1	0	8	218	0
17:15	1	87	0	0	88	1	0	1	0	2	1	104	0	0	105	4	0	1	0	5	200	0
17:30	2	94	2	0	98	0	0	1	0	1	2	102	0	0	104	8	0	2	0	10	213	0
17:45	0	85	2	1	88	1	0	1	0	2	0	110	1	0	111	3	1	1	0	5	206	1
<b>Total</b>	5	352	9	1	367	3	1	4	0	8	4	428	2	0	434	20	3	5	0	28	837	1
<b>Grand Total</b>	14	1231	37	1	1283	11	6	19	0	36	18	1554	8	2	1582	62	5	17	0	84	2985	3
Apprch %	1.1%	95.9%	2.9%	0.1%		30.6%	16.7%	52.8%	0.0%		1.1%	98.2%	0.5%	0.1%		73.8%	6.0%	20.2%	0.0%			
Total %	0.5%	41.2%	1.2%	0.0%	43.0%	0.4%	0.2%	0.6%	0.0%	1.2%	0.6%	52.1%	0.3%	0.1%	53.0%	2.1%	0.2%	0.6%	0.0%	2.8%	100.0%	

# ALL TRAFFIC DATA

City of Vallejo  
 All Vehicles on Unshifted  
 Peds & Bikes on Bank 1  
 Heavy Trucks on Bank 2

(916) 771-8700

[orders@atdtraffic.com](mailto:orders@atdtraffic.com)

File Name : 14-7219-004 Sonoma Boulevard (SR 29)-Winchester Street

Date : 4/8/2014

## Unshifted Count = All Vehicles

AM PEAK HOUR	Sonoma Boulevard (SR 29) Southbound					Winchester Street Westbound					Sonoma Boulevard (SR 29) Northbound					Winchester Street Eastbound					Total
	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	
Peak Hour Analysis From 08:00 to 09:00																					
Peak Hour For Entire Intersection Begins at 08:00																					
08:00	1	61	1	0	63	0	1	1	0	2	1	91	0	1	93	3	1	1	0	5	163
08:15	1	69	0	0	70	1	1	2	0	4	1	87	0	0	88	5	0	1	0	6	168
08:30	0	92	1	0	93	0	1	2	0	3	2	98	3	0	103	4	0	1	0	5	204
08:45	2	69	3	0	74	1	0	2	0	3	1	112	0	0	113	3	0	1	0	4	194
Total Volume	4	291	5	0	300	2	3	7	0	12	5	388	3	1	397	15	1	4	0	20	729
% App Total	1.3%	97.0%	1.7%	0.0%		16.7%	25.0%	58.3%	0.0%		1.3%	97.7%	0.8%	0.3%		75.0%	5.0%	20.0%	0.0%		
PHF	.500	.791	.417	.000	.806	.500	.750	.875	.000	.750	.625	.866	.250	.250	.878	.750	.250	1.000	.000	.833	.893

PM PEAK HOUR	Sonoma Boulevard (SR 29) Southbound					Winchester Street Westbound					Sonoma Boulevard (SR 29) Northbound					Winchester Street Eastbound					Total
	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	
Peak Hour Analysis From 16:15 to 17:15																					
Peak Hour For Entire Intersection Begins at 16:15																					
16:15	2	88	3	0	93	0	1	1	0	2	1	109	0	1	111	5	0	2	0	7	213
16:30	1	92	2	0	95	0	1	1	0	2	0	117	1	0	118	1	0	0	0	1	216
16:45	1	87	5	0	93	2	0	2	0	4	1	113	1	0	115	3	1	3	0	7	219
17:00	2	86	5	0	93	1	1	1	0	3	1	112	1	0	114	5	2	1	0	8	218
Total Volume	6	353	15	0	374	3	3	5	0	11	3	451	3	1	458	14	3	6	0	23	866
% App Total	1.6%	94.4%	4.0%	0.0%		27.3%	27.3%	45.5%	0.0%		0.7%	98.5%	0.7%	0.2%		60.9%	13.0%	26.1%	0.0%		
PHF	.750	.959	.750	.000	.984	.375	.750	.625	.000	.688	.750	.964	.750	.250	.970	.700	.375	.500	.000	.719	.989

# ALL TRAFFIC DATA

City of Vallejo  
 All Vehicles on Unshifted  
 Peds & Bikes on Bank 1  
 Heavy Trucks on Bank 2

(916) 771-8700

[orders@atdtraffic.com](mailto:orders@atdtraffic.com)

File Name : 14-7219-004 Sonoma Boulevard (SR 29)-Winchester Street

Date : 4/8/2014

## Bank 2 Count = Heavy Trucks

START TIME	Sonoma Boulevard (SR 29) Southbound					Winchester Street Westbound					Sonoma Boulevard (SR 29) Northbound					Winchester Street Eastbound					Total	Ped Total
	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL		
07:00	0	5	0	0	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	5	0
07:15	0	0	0	0	0	0	0	0	0	0	0	3	0	0	3	0	0	0	0	0	3	0
07:30	0	2	0	0	2	0	0	0	0	0	0	2	0	0	2	0	0	0	0	0	4	0
07:45	0	2	0	0	2	0	0	0	0	0	0	1	0	0	1	1	0	0	0	1	4	0
<b>Total</b>	0	9	0	0	9	0	0	0	0	0	0	6	0	0	6	1	0	0	0	1	16	0
08:00	0	4	0	0	4	0	0	0	0	0	0	2	0	0	2	0	0	0	0	0	6	0
08:15	0	6	0	0	6	0	0	0	0	0	0	3	0	0	3	1	0	0	0	1	10	0
08:30	0	2	0	0	2	0	0	0	0	0	0	3	1	0	4	1	0	0	0	1	7	0
08:45	0	5	1	0	6	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	7	0
<b>Total</b>	0	17	1	0	18	0	0	0	0	0	0	9	1	0	10	2	0	0	0	2	30	0
16:00	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	1	0
16:15	0	1	0	0	1	0	0	0	0	0	0	6	0	0	6	0	0	0	0	0	7	0
16:30	0	2	0	0	2	0	0	0	0	0	0	2	0	0	2	0	0	0	0	0	4	0
16:45	0	1	0	0	1	0	0	0	0	0	0	1	0	0	1	1	0	0	0	1	3	0
<b>Total</b>	0	4	0	0	4	0	0	0	0	0	0	10	0	0	10	1	0	0	0	1	15	0
17:00	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	1	0	0	0	1	2	0
17:15	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	1	0
17:30	0	1	0	0	1	0	0	0	0	0	0	1	0	0	1	1	0	0	0	1	3	0
17:45	0	0	1	0	1	0	0	0	0	0	0	2	0	0	2	0	0	0	0	0	3	0
<b>Total</b>	0	1	1	0	2	0	0	0	0	0	0	5	0	0	5	2	0	0	0	2	9	0
<b>Grand Total</b>	0	31	2	0	33	0	0	0	0	0	0	30	1	0	31	6	0	0	0	6	70	0
Apprch %	0.0%	93.9%	6.1%			0.0%	0.0%	0.0%			0.0%	96.8%	3.2%		100.0%	0.0%	0.0%			8.6%	100.0%	
Total %	0.0%	44.3%	2.9%		47.1%	0.0%	0.0%	0.0%		0.0%	0.0%	42.9%	1.4%		44.3%	8.6%	0.0%	0.0%		8.6%	100.0%	



# ALL TRAFFIC DATA

City of Vallejo  
 All Vehicles on Unshifted  
 Peds & Bikes on Bank 1  
 Heavy Trucks on Bank 2

(916) 771-8700

[orders@atdtraffic.com](mailto:orders@atdtraffic.com)

File Name : 14-7219-004 Sonoma Boulevard (SR 29)-Winchester Street

Date : 4/8/2014

## Bank 2 Count = Heavy Trucks

AM PEAK HOUR	Sonoma Boulevard (SR 29) Southbound					Winchester Street Westbound					Sonoma Boulevard (SR 29) Northbound					Winchester Street Eastbound					Total
	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	
Peak Hour Analysis From 08:00 to 09:00																					
Peak Hour For Entire Intersection Begins at 08:00																					
08:00	0	4	0	0	4	0	0	0	0	0	0	2	0	0	2	0	0	0	0	0	6
08:15	0	6	0	0	6	0	0	0	0	0	0	3	0	0	3	1	0	0	0	1	10
08:30	0	2	0	0	2	0	0	0	0	0	0	3	1	0	4	1	0	0	0	1	7
08:45	0	5	1	0	6	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	7
Total Volume	0	17	1	0	18	0	0	0	0	0	0	9	1	0	10	2	0	0	0	2	30
% App Total	0.0%	94.4%	5.6%			0.0%	0.0%	0.0%			0.0%	90.0%	10.0%			100.0%	0.0%	0.0%			
PHF	.000	.708	.250		.750	.000	.000	.000		.000	.000	.750	.250		.625	.500	.000	.000		.500	.750

PM PEAK HOUR	Sonoma Boulevard (SR 29) Southbound					Winchester Street Westbound					Sonoma Boulevard (SR 29) Northbound					Winchester Street Eastbound					Total
	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	
Peak Hour Analysis From 16:15 to 17:15																					
Peak Hour For Entire Intersection Begins at 16:15																					
16:15	0	1	0	0	1	0	0	0	0	0	0	6	0	0	6	0	0	0	0	0	7
16:30	0	2	0	0	2	0	0	0	0	0	0	2	0	0	2	0	0	0	0	0	4
16:45	0	1	0	0	1	0	0	0	0	0	0	1	0	0	1	1	0	0	0	1	3
17:00	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	1	0	0	0	1	2
Total Volume	0	4	0	0	4	0	0	0	0	0	0	10	0	0	10	2	0	0	0	2	16
% App Total	0.0%	100.0%	0.0%			0.0%	0.0%	0.0%			0.0%	100.0%	0.0%			100.0%	0.0%	0.0%			
PHF	.000	.500	.000		.500	.000	.000	.000		.000	.000	.417	.000		.417	.500	.000	.000		.500	.571

# ALL TRAFFIC DATA

City of Vallejo  
 All Vehicles on Unshifted  
 Peds & Bikes on Bank 1  
 Heavy Trucks on Bank 2

(916) 771-8700

[orders@atdtraffic.com](mailto:orders@atdtraffic.com)

File Name : 14-7219-004 Sonoma Boulevard (SR 29)-Winchester Street

Date : 4/8/2014

## Bank 1 Count = Peds & Bikes

START TIME	Sonoma Boulevard (SR 29) Southbound					Winchester Street Westbound					Sonoma Boulevard (SR 29) Northbound					Winchester Street Eastbound					Total	Ped Total
	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL		
07:00	0	0	0	0	0	0	0	0	2	0	0	3	0	0	3	0	0	0	1	0	3	3
07:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1
07:30	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	3	0	1	3
07:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
<b>Total</b>	0	1	0	0	1	0	0	0	2	0	0	3	0	0	3	0	0	0	5	0	4	7
08:00	0	1	0	0	1	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	2	0
08:15	0	2	1	0	3	0	0	0	1	0	0	0	0	0	0	0	0	0	3	0	3	4
08:30	0	0	0	0	0	0	1	0	2	1	0	1	0	1	1	0	0	0	0	0	2	3
08:45	0	0	0	0	0	0	0	0	0	0	0	1	0	1	1	0	0	0	3	0	1	4
<b>Total</b>	0	3	1	0	4	0	1	0	3	1	0	2	1	2	3	0	0	0	6	0	8	11
16:00	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	1	0
16:15	0	1	0	2	1	0	0	0	4	0	0	0	0	0	0	0	0	0	0	0	1	6
16:30	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	1	0	0	3
16:45	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	1	0
<b>Total</b>	0	1	0	2	1	0	0	0	6	0	0	2	0	0	2	0	0	0	1	0	3	9
17:00	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0
17:15	0	0	0	0	0	0	0	0	3	0	0	0	0	0	0	0	0	0	1	0	0	4
17:30	0	2	0	0	2	0	0	0	0	0	0	2	0	0	2	0	0	0	0	0	4	0
17:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
<b>Total</b>	0	3	0	0	3	0	0	0	3	0	0	2	0	0	2	0	0	0	1	0	5	4
<b>Grand Total</b>	0	8	1	2	9	0	1	0	14	1	0	9	1	2	10	0	0	0	13	0	20	31
Apprch %	0.0%	88.9%	11.1%			0.0%	100.0%	0.0%			0.0%	90.0%	10.0%			0.0%	0.0%	0.0%				
Total %	0.0%	40.0%	5.0%		45.0%	0.0%	5.0%	0.0%		5.0%	0.0%	45.0%	5.0%		50.0%	0.0%	0.0%	0.0%		0.0%	100.0%	

# ALL TRAFFIC DATA

City of Vallejo  
 All Vehicles on Unshifted  
 Peds & Bikes on Bank 1  
 Heavy Trucks on Bank 2

(916) 771-8700

[orders@atdtraffic.com](mailto:orders@atdtraffic.com)

File Name : 14-7219-004 Sonoma Boulevard (SR 29)-Winchester Street

Date : 4/8/2014

## Bank 1 Count = Peds & Bikes

AM PEAK HOUR	Sonoma Boulevard (SR 29) Southbound					Winchester Street Westbound					Sonoma Boulevard (SR 29) Northbound					Winchester Street Eastbound					Total	
	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL		
Peak Hour Analysis From 08:00 to 09:00																						
Peak Hour For Entire Intersection Begins at 08:00																						
08:00	0	1	0	0	1	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	0	2
08:15	0	2	1	0	3	0	0	0	1	0	0	0	0	0	0	0	0	0	3	0	0	3
08:30	0	0	0	0	0	0	1	0	2	1	0	1	0	1	1	0	0	0	0	0	0	2
08:45	0	0	0	0	0	0	0	0	0	0	0	1	0	1	1	0	0	0	3	0	0	1
Total Volume	0	3	1	0	4	0	1	0	3	1	0	2	1	2	3	0	0	0	6	0	0	8
% App Total	0.0%	75.0%	25.0%			0.0%	100.0%	0.0%			0.0%	66.7%	33.3%	0.0%		0.0%	0.0%	0.0%				
PHF	.000	.375	.250		.333	.000	.250	.000		.250	.000	.500	.250		.750	.000	.000	.000		.000		.667

PM PEAK HOUR	Sonoma Boulevard (SR 29) Southbound					Winchester Street Westbound					Sonoma Boulevard (SR 29) Northbound					Winchester Street Eastbound					Total	
	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL		
Peak Hour Analysis From 16:15 to 17:15																						
Peak Hour For Entire Intersection Begins at 16:15																						
16:15	0	1	0	2	1	0	0	0	4	0	0	0	0	0	0	0	0	0	0	0	0	1
16:30	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	1	0	0	0
16:45	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	1
17:00	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
Total Volume	0	2	0	2	2	0	0	0	6	0	0	1	0	0	1	0	0	0	1	0	0	3
% App Total	0.0%	100.0%	0.0%			0.0%	0.0%	0.0%			0.0%	100.0%	0.0%	0.0%		0.0%	0.0%	0.0%				
PHF	.000	.500	.000		.500	.000	.000	.000		.000	.000	.250	.000		.250	.000	.000	.000		.000		.750

# ALL TRAFFIC DATA

City of Vallejo  
 All Vehicles on Unshifted  
 Peds & Bikes on Bank 1  
 Heavy Trucks on Bank 2

(916) 771-8700

[orders@atdtraffic.com](mailto:orders@atdtraffic.com)

File Name : 14-7219-005 Sonoma Boulevard (SR 29)-Cherry Street.ppd

Date : 4/8/2014

## Unshifted Count = All Vehicles

START TIME	Sonoma Boulevard (SR 29) Southbound					Cherry Street Westbound					Sonoma Boulevard (SR 29) Northbound					Cherry Street Eastbound					Total	Utum Total
	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL		
07:00	2	48	5	0	55	0	0	0	0	0	1	57	0	0	58	4	0	0	0	4	117	0
07:15	0	64	3	0	67	0	0	3	0	3	0	65	1	0	66	5	1	3	0	9	145	0
07:30	0	58	4	0	62	0	0	0	0	0	0	69	0	0	69	13	1	1	0	15	146	0
07:45	0	60	5	0	65	1	1	1	0	3	1	76	0	0	77	2	0	0	0	2	147	0
<b>Total</b>	<b>2</b>	<b>230</b>	<b>17</b>	<b>0</b>	<b>249</b>	<b>1</b>	<b>1</b>	<b>4</b>	<b>0</b>	<b>6</b>	<b>2</b>	<b>267</b>	<b>1</b>	<b>0</b>	<b>270</b>	<b>24</b>	<b>2</b>	<b>4</b>	<b>0</b>	<b>30</b>	<b>555</b>	<b>0</b>
08:00	3	54	6	0	63	0	0	5	0	5	0	74	0	0	74	5	0	2	0	7	149	0
08:15	2	63	4	2	71	1	0	4	0	5	4	82	2	0	88	6	1	2	0	9	173	2
08:30	2	92	1	0	95	2	1	2	0	5	1	84	1	0	86	6	1	2	0	9	195	0
08:45	3	65	4	0	72	0	0	2	0	2	2	104	1	0	107	9	2	1	0	12	193	0
<b>Total</b>	<b>10</b>	<b>274</b>	<b>15</b>	<b>2</b>	<b>301</b>	<b>3</b>	<b>1</b>	<b>13</b>	<b>0</b>	<b>17</b>	<b>7</b>	<b>344</b>	<b>4</b>	<b>0</b>	<b>355</b>	<b>26</b>	<b>4</b>	<b>7</b>	<b>0</b>	<b>37</b>	<b>710</b>	<b>2</b>
16:00	4	71	7	0	82	1	0	2	0	3	2	107	0	0	109	4	0	1	0	5	199	0
16:15	4	79	11	0	94	2	0	2	0	4	2	104	0	0	106	4	1	3	0	8	212	0
16:30	3	87	7	0	97	0	0	2	0	2	1	102	0	0	103	11	0	1	0	12	214	0
16:45	3	75	10	0	88	1	0	5	0	6	0	102	2	0	104	9	0	2	0	11	209	0
<b>Total</b>	<b>14</b>	<b>312</b>	<b>35</b>	<b>0</b>	<b>361</b>	<b>4</b>	<b>0</b>	<b>11</b>	<b>0</b>	<b>15</b>	<b>5</b>	<b>415</b>	<b>2</b>	<b>0</b>	<b>422</b>	<b>28</b>	<b>1</b>	<b>7</b>	<b>0</b>	<b>36</b>	<b>834</b>	<b>0</b>
17:00	2	81	6	0	89	0	0	1	0	1	6	106	1	0	113	6	0	1	0	7	210	0
17:15	2	76	5	0	83	1	0	2	0	3	3	93	1	1	98	11	1	1	0	13	197	1
17:30	5	86	8	0	99	0	1	1	0	2	1	96	1	1	99	4	2	2	0	8	208	1
17:45	2	73	13	0	88	0	0	4	0	4	2	104	0	0	106	3	0	1	0	4	202	0
<b>Total</b>	<b>11</b>	<b>316</b>	<b>32</b>	<b>0</b>	<b>359</b>	<b>1</b>	<b>1</b>	<b>8</b>	<b>0</b>	<b>10</b>	<b>12</b>	<b>399</b>	<b>3</b>	<b>2</b>	<b>416</b>	<b>24</b>	<b>3</b>	<b>5</b>	<b>0</b>	<b>32</b>	<b>817</b>	<b>2</b>
<b>Grand Total</b>	<b>37</b>	<b>1132</b>	<b>99</b>	<b>2</b>	<b>1270</b>	<b>9</b>	<b>3</b>	<b>36</b>	<b>0</b>	<b>48</b>	<b>26</b>	<b>1425</b>	<b>10</b>	<b>2</b>	<b>1463</b>	<b>102</b>	<b>10</b>	<b>23</b>	<b>0</b>	<b>135</b>	<b>2916</b>	<b>4</b>
Apprch %	2.9%	89.1%	7.8%	0.2%		18.8%	6.3%	75.0%	0.0%		1.8%	97.4%	0.7%	0.1%		75.6%	7.4%	17.0%	0.0%			
Total %	1.3%	38.8%	3.4%	0.1%	43.6%	0.3%	0.1%	1.2%	0.0%	1.6%	0.9%	48.9%	0.3%	0.1%	50.2%	3.5%	0.3%	0.8%	0.0%	4.6%	100.0%	

# ALL TRAFFIC DATA

City of Vallejo  
 All Vehicles on Unshifted  
 Peds & Bikes on Bank 1  
 Heavy Trucks on Bank 2

(916) 771-8700

[orders@atdtraffic.com](mailto:orders@atdtraffic.com)

File Name : 14-7219-005 Sonoma Boulevard (SR 29)-Cherry Street.ppd

Date : 4/8/2014

## Unshifted Count = All Vehicles

AM PEAK HOUR	Sonoma Boulevard (SR 29) Southbound					Cherry Street Westbound					Sonoma Boulevard (SR 29) Northbound					Cherry Street Eastbound					Total
	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	
Peak Hour Analysis From 08:00 to 09:00																					
Peak Hour For Entire Intersection Begins at 08:00																					
08:00	3	54	6	0	63	0	0	5	0	5	0	74	0	0	74	5	0	2	0	7	149
08:15	2	63	4	2	71	1	0	4	0	5	4	82	2	0	88	6	1	2	0	9	173
08:30	2	92	1	0	95	2	1	2	0	5	1	84	1	0	86	6	1	2	0	9	195
08:45	3	65	4	0	72	0	0	2	0	2	2	104	1	0	107	9	2	1	0	12	193
Total Volume	10	274	15	2	301	3	1	13	0	17	7	344	4	0	355	26	4	7	0	37	710
% App Total	3.3%	91.0%	5.0%	0.7%		17.6%	5.9%	76.5%	0.0%		2.0%	96.9%	1.1%	0.0%		70.3%	10.8%	18.9%	0.0%		
PHF	.833	.745	.625	.250	.792	.375	.250	.650	.000	.850	.438	.827	.500	.000	.829	.722	.500	.875	.000	.771	.910

PM PEAK HOUR	Sonoma Boulevard (SR 29) Southbound					Cherry Street Westbound					Sonoma Boulevard (SR 29) Northbound					Cherry Street Eastbound					Total
	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	
Peak Hour Analysis From 16:15 to 17:15																					
Peak Hour For Entire Intersection Begins at 16:15																					
16:15	4	79	11	0	94	2	0	2	0	4	2	104	0	0	106	4	1	3	0	8	212
16:30	3	87	7	0	97	0	0	2	0	2	1	102	0	0	103	11	0	1	0	12	214
16:45	3	75	10	0	88	1	0	5	0	6	0	102	2	0	104	9	0	2	0	11	209
17:00	2	81	6	0	89	0	0	1	0	1	6	106	1	0	113	6	0	1	0	7	210
Total Volume	12	322	34	0	368	3	0	10	0	13	9	414	3	0	426	30	1	7	0	38	845
% App Total	3.3%	87.5%	9.2%	0.0%		23.1%	0.0%	76.9%	0.0%		2.1%	97.2%	0.7%	0.0%		78.9%	2.6%	18.4%	0.0%		
PHF	.750	.925	.773	.000	.948	.375	.000	.500	.000	.542	.375	.976	.375	.000	.942	.682	.250	.583	.000	.792	.987

# ALL TRAFFIC DATA

City of Vallejo  
 All Vehicles on Unshifted  
 Peds & Bikes on Bank 1  
 Heavy Trucks on Bank 2

(916) 771-8700

[orders@atdtraffic.com](mailto:orders@atdtraffic.com)

File Name : 14-7219-005 Sonoma Boulevard (SR 29)-Cherry Street.ppd

Date : 4/8/2014

## Bank 2 Count = Heavy Trucks

START TIME	Sonoma Boulevard (SR 29) Southbound					Cherry Street Westbound					Sonoma Boulevard (SR 29) Northbound					Cherry Street Eastbound					Total	Ped Total
	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL		
07:00	1	3	1	0	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	5	0
07:15	0	0	0	0	0	0	0	0	0	0	0	3	0	0	3	0	0	0	0	0	3	0
07:30	0	1	1	0	2	0	0	0	0	0	0	2	0	0	2	0	0	0	0	0	4	0
07:45	0	2	0	0	2	1	0	0	0	1	0	1	0	0	1	0	0	0	0	0	4	0
<b>Total</b>	1	6	2	0	9	1	0	0	0	1	0	6	0	0	6	0	0	0	0	0	16	0
08:00	0	4	0	0	4	0	0	1	0	1	0	2	0	0	2	0	0	0	0	0	7	0
08:15	0	6	0	0	6	0	0	0	0	0	0	2	0	0	2	0	0	0	0	0	8	0
08:30	0	3	0	0	3	0	0	1	0	1	0	3	0	0	3	0	0	0	0	0	7	0
08:45	1	3	0	0	4	0	0	0	0	0	0	2	0	0	2	0	0	0	0	0	6	0
<b>Total</b>	1	16	0	0	17	0	0	2	0	2	0	9	0	0	9	0	0	0	0	0	28	0
16:00	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	1	0
16:15	0	1	0	0	1	0	0	0	0	0	0	6	0	0	6	0	0	0	0	0	7	0
16:30	0	1	0	0	1	0	0	0	0	0	0	1	0	0	1	1	0	0	0	1	3	0
16:45	0	2	0	0	2	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	3	0
<b>Total</b>	0	4	0	0	4	0	0	0	0	0	0	9	0	0	9	1	0	0	0	1	14	0
17:00	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	1	0
17:15	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	1	0
17:30	0	1	0	0	1	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	2	0
17:45	0	0	0	0	0	0	0	0	0	0	0	2	0	0	2	0	0	0	0	0	2	0
<b>Total</b>	0	1	0	0	1	0	0	1	0	1	0	4	0	0	4	0	0	0	0	0	6	0
<b>Grand Total</b>	2	27	2	0	31	1	0	3	0	4	0	28	0	0	28	1	0	0	0	1	64	0
Apprch %	6.5%	87.1%	6.5%			25.0%	0.0%	75.0%			0.0%	100.0%	0.0%			100.0%	0.0%	0.0%				
Total %	3.1%	42.2%	3.1%		48.4%	1.6%	0.0%	4.7%		6.3%	0.0%	43.8%	0.0%		43.8%	1.6%	0.0%	0.0%		1.6%	100.0%	

# ALL TRAFFIC DATA

City of Vallejo  
 All Vehicles on Unshifted  
 Peds & Bikes on Bank 1  
 Heavy Trucks on Bank 2

(916) 771-8700

[orders@atdtraffic.com](mailto:orders@atdtraffic.com)

File Name : 14-7219-005 Sonoma Boulevard (SR 29)-Cherry Street.ppd

Date : 4/8/2014

## Bank 2 Count = Heavy Trucks

AM PEAK HOUR	Sonoma Boulevard (SR 29) Southbound					Cherry Street Westbound					Sonoma Boulevard (SR 29) Northbound					Cherry Street Eastbound					Total
	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	
Peak Hour Analysis From 08:00 to 09:00																					
Peak Hour For Entire Intersection Begins at 08:00																					
08:00	0	4	0	0	4	0	0	1	0	1	0	2	0	0	2	0	0	0	0	0	7
08:15	0	6	0	0	6	0	0	0	0	0	0	2	0	0	2	0	0	0	0	0	8
08:30	0	3	0	0	3	0	0	1	0	1	0	3	0	0	3	0	0	0	0	0	7
08:45	1	3	0	0	4	0	0	0	0	0	0	2	0	0	2	0	0	0	0	0	6
Total Volume	1	16	0	0	17	0	0	2	0	2	0	9	0	0	9	0	0	0	0	0	28
% App Total	5.9%	94.1%	0.0%			0.0%	0.0%	100.0%			0.0%	100.0%	0.0%			0.0%	0.0%	0.0%			
PHF	.250	.667	.000		.708	.000	.000	.500		.500	.000	.750	.000		.750	.000	.000	.000		.000	.875

PM PEAK HOUR	Sonoma Boulevard (SR 29) Southbound					Cherry Street Westbound					Sonoma Boulevard (SR 29) Northbound					Cherry Street Eastbound					Total
	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	
Peak Hour Analysis From 16:15 to 17:15																					
Peak Hour For Entire Intersection Begins at 16:15																					
16:15	0	1	0	0	1	0	0	0	0	0	0	6	0	0	6	0	0	0	0	0	7
16:30	0	1	0	0	1	0	0	0	0	0	0	1	0	0	1	1	0	0	0	1	3
16:45	0	2	0	0	2	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	3
17:00	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	1
Total Volume	0	4	0	0	4	0	0	0	0	0	0	9	0	0	9	1	0	0	0	1	14
% App Total	0.0%	100.0%	0.0%			0.0%	0.0%	0.0%			0.0%	100.0%	0.0%			100.0%	0.0%	0.0%			
PHF	.000	.500	.000		.500	.000	.000	.000		.000	.000	.375	.000		.375	.250	.000	.000		.250	.500

# ALL TRAFFIC DATA

City of Vallejo  
 All Vehicles on Unshifted  
 Peds & Bikes on Bank 1  
 Heavy Trucks on Bank 2

(916) 771-8700

[orders@atdtraffic.com](mailto:orders@atdtraffic.com)

File Name : 14-7219-005 Sonoma Boulevard (SR 29)-Cherry Street.ppd

Date : 4/8/2014

## Bank 1 Count = Peds & Bikes

START TIME	Sonoma Boulevard (SR 29) Southbound					Cherry Street Westbound					Sonoma Boulevard (SR 29) Northbound					Cherry Street Eastbound					Total	Ped Total
	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL		
07:00	0	0	0	0	0	0	0	1	0	1	0	2	0	0	2	0	1	0	1	1	4	1
07:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:30	0	1	0	0	1	0	0	0	1	0	0	0	0	1	0	0	0	0	4	0	1	6
07:45	0	0	0	3	0	0	0	0	1	0	0	0	0	0	0	0	0	0	5	0	0	9
<b>Total</b>	0	1	0	3	1	0	0	1	2	1	0	2	0	1	2	0	1	0	10	1	5	16
08:00	0	1	0	1	1	0	0	0	3	0	0	1	0	3	1	0	0	0	4	0	2	11
08:15	0	2	0	0	2	0	0	0	2	0	0	0	0	1	0	0	0	0	6	0	2	9
08:30	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	1	0	1	1
08:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	2
<b>Total</b>	0	3	0	1	3	0	0	0	5	0	0	2	0	4	2	0	0	0	13	0	5	23
16:00	0	0	0	0	0	0	0	0	1	0	0	1	0	0	1	0	0	0	0	0	1	1
16:15	0	1	0	0	1	0	0	0	0	0	1	0	0	0	1	0	0	0	0	0	2	0
16:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1
16:45	0	0	0	0	0	0	0	0	2	0	0	1	0	1	1	0	0	0	0	0	1	3
<b>Total</b>	0	1	0	0	1	0	0	0	3	0	1	2	0	1	3	0	0	0	1	0	4	5
17:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
17:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
17:30	1	1	0	0	2	0	0	0	1	0	0	2	0	0	2	0	0	0	0	0	4	1
17:45	0	0	0	0	0	0	0	0	3	0	0	0	0	1	0	0	0	0	0	0	0	4
<b>Total</b>	1	1	0	0	2	0	0	0	4	0	0	2	0	1	2	0	0	0	0	0	4	5
<b>Grand Total</b>	1	6	0	4	7	0	0	1	14	1	1	8	0	7	9	0	1	0	24	1	18	49
Apprch %	14.3%	85.7%	0.0%			0.0%	0.0%	100.0%			11.1%	88.9%	0.0%			0.0%	100.0%	0.0%				
Total %	5.6%	33.3%	0.0%		38.9%	0.0%	0.0%	5.6%		5.6%	5.6%	44.4%	0.0%		50.0%	0.0%	5.6%	0.0%		5.6%	100.0%	



# ALL TRAFFIC DATA

City of Vallejo  
 All Vehicles on Unshifted  
 Peds & Bikes on Bank 1  
 Heavy Trucks on Bank 2

(916) 771-8700

[orders@atdtraffic.com](mailto:orders@atdtraffic.com)

File Name : 14-7219-005 Sonoma Boulevard (SR 29)-Cherry Street.ppd

Date : 4/8/2014

## Bank 1 Count = Peds & Bikes

AM PEAK HOUR	Sonoma Boulevard (SR 29) Southbound					Cherry Street Westbound					Sonoma Boulevard (SR 29) Northbound					Cherry Street Eastbound					Total
	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	
Peak Hour Analysis From 08:00 to 09:00																					
Peak Hour For Entire Intersection Begins at 08:00																					
08:00	0	1	0	1	1	0	0	0	3	0	0	1	0	3	1	0	0	0	4	0	2
08:15	0	2	0	0	2	0	0	0	2	0	0	0	0	1	0	0	0	0	6	0	2
08:30	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	1	0	1
08:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0
Total Volume	0	3	0	1	3	0	0	0	5	0	0	2	0	4	2	0	0	0	13	0	5
% App Total	0.0%	100.0%	0.0%			0.0%	0.0%	0.0%			0.0%	100.0%	0.0%			0.0%	0.0%	0.0%			
PHF	.000	.375	.000		.375	.000	.000	.000		.000	.000	.500	.000		.500	.000	.000	.000		.000	.625

PM PEAK HOUR	Sonoma Boulevard (SR 29) Southbound					Cherry Street Westbound					Sonoma Boulevard (SR 29) Northbound					Cherry Street Eastbound					Total
	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	
Peak Hour Analysis From 16:15 to 17:15																					
Peak Hour For Entire Intersection Begins at 16:15																					
16:15	0	1	0	0	1	0	0	0	0	0	1	0	0	0	1	0	0	0	0	0	2
16:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0
16:45	0	0	0	0	0	0	0	0	2	0	0	1	0	1	1	0	0	0	0	0	1
17:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Volume	0	1	0	0	1	0	0	0	2	0	1	1	0	1	2	0	0	0	1	0	3
% App Total	0.0%	100.0%	0.0%			0.0%	0.0%	0.0%			50.0%	50.0%	0.0%			0.0%	0.0%	0.0%			
PHF	.000	.250	.000		.250	.000	.000	.000		.000	.250	.250	.000		.500	.000	.000	.000		.000	.375

# ALL TRAFFIC DATA

City of Vallejo  
 All Vehicles on Unshifted  
 Peds & Bikes on Bank 1  
 Heavy Trucks on Bank 2

(916) 771-8700

[orders@atdtraffic.com](mailto:orders@atdtraffic.com)

File Name : 14-7219-006 Sonoma Boulevard (SR 29)-Magazine Street.f

Date : 4/8/2014

## Unshifted Count = All Vehicles

START TIME	Sonoma Boulevard (SR 29) Southbound					Magazine Street Westbound					Sonoma Boulevard (SR 29) Northbound					Magazine Street Eastbound					Total	Utum Total
	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL		
07:00	4	45	1	0	50	0	2	21	0	23	0	29	13	0	42	5	13	0	0	18	133	0
07:15	16	49	1	0	66	7	7	14	0	28	2	45	14	0	61	6	18	2	0	26	181	0
07:30	15	41	4	0	60	12	0	11	0	23	0	54	23	0	77	8	32	3	0	43	203	0
07:45	8	51	1	0	60	13	11	23	0	47	1	46	15	0	62	5	17	3	0	25	194	0
<b>Total</b>	<b>43</b>	<b>186</b>	<b>7</b>	<b>0</b>	<b>236</b>	<b>32</b>	<b>20</b>	<b>69</b>	<b>0</b>	<b>121</b>	<b>3</b>	<b>174</b>	<b>65</b>	<b>0</b>	<b>242</b>	<b>24</b>	<b>80</b>	<b>8</b>	<b>0</b>	<b>112</b>	<b>711</b>	<b>0</b>
08:00	9	41	5	0	55	3	7	21	0	31	2	50	22	0	74	11	20	2	0	33	193	0
08:15	16	45	6	0	67	4	15	20	0	39	5	47	15	0	67	17	28	3	0	48	221	0
08:30	16	64	12	0	92	20	12	22	0	54	1	48	19	0	68	17	30	2	0	49	263	0
08:45	17	54	4	0	75	9	11	24	0	44	3	54	25	0	82	23	49	3	0	75	276	0
<b>Total</b>	<b>58</b>	<b>204</b>	<b>27</b>	<b>0</b>	<b>289</b>	<b>36</b>	<b>45</b>	<b>87</b>	<b>0</b>	<b>168</b>	<b>11</b>	<b>199</b>	<b>81</b>	<b>0</b>	<b>291</b>	<b>68</b>	<b>127</b>	<b>10</b>	<b>0</b>	<b>205</b>	<b>953</b>	<b>0</b>
16:00	18	46	7	0	71	5	7	28	0	40	7	81	32	0	120	4	23	1	0	28	259	0
16:15	30	40	8	0	78	0	15	23	0	38	4	71	34	0	109	6	8	1	0	15	240	0
16:30	15	70	6	0	91	4	16	22	0	42	1	74	29	0	104	9	11	2	0	22	259	0
16:45	15	46	8	0	69	5	12	25	0	42	3	73	25	0	101	4	13	0	0	17	229	0
<b>Total</b>	<b>78</b>	<b>202</b>	<b>29</b>	<b>0</b>	<b>309</b>	<b>14</b>	<b>50</b>	<b>98</b>	<b>0</b>	<b>162</b>	<b>15</b>	<b>299</b>	<b>120</b>	<b>0</b>	<b>434</b>	<b>23</b>	<b>55</b>	<b>4</b>	<b>0</b>	<b>82</b>	<b>987</b>	<b>0</b>
17:00	31	57	4	0	92	7	13	15	0	35	5	97	21	0	123	5	16	4	0	25	275	0
17:15	21	51	6	0	78	5	15	20	0	40	5	71	41	0	117	7	12	1	0	20	255	0
17:30	19	64	7	0	90	7	16	26	0	49	7	63	19	0	89	12	21	2	0	35	263	0
17:45	15	52	8	0	75	6	18	13	0	37	3	80	24	0	107	12	19	0	0	31	250	0
<b>Total</b>	<b>86</b>	<b>224</b>	<b>25</b>	<b>0</b>	<b>335</b>	<b>25</b>	<b>62</b>	<b>74</b>	<b>0</b>	<b>161</b>	<b>20</b>	<b>311</b>	<b>105</b>	<b>0</b>	<b>436</b>	<b>36</b>	<b>68</b>	<b>7</b>	<b>0</b>	<b>111</b>	<b>1043</b>	<b>0</b>
<b>Grand Total</b>	<b>265</b>	<b>816</b>	<b>88</b>	<b>0</b>	<b>1169</b>	<b>107</b>	<b>177</b>	<b>328</b>	<b>0</b>	<b>612</b>	<b>49</b>	<b>983</b>	<b>371</b>	<b>0</b>	<b>1403</b>	<b>151</b>	<b>330</b>	<b>29</b>	<b>0</b>	<b>510</b>	<b>3694</b>	<b>0</b>
<b>Apprch %</b>	<b>22.7%</b>	<b>69.8%</b>	<b>7.5%</b>	<b>0.0%</b>		<b>17.5%</b>	<b>28.9%</b>	<b>53.6%</b>	<b>0.0%</b>		<b>3.5%</b>	<b>70.1%</b>	<b>26.4%</b>	<b>0.0%</b>		<b>29.6%</b>	<b>64.7%</b>	<b>5.7%</b>	<b>0.0%</b>			
<b>Total %</b>	<b>7.2%</b>	<b>22.1%</b>	<b>2.4%</b>	<b>0.0%</b>	<b>31.6%</b>	<b>2.9%</b>	<b>4.8%</b>	<b>8.9%</b>	<b>0.0%</b>	<b>16.6%</b>	<b>1.3%</b>	<b>26.6%</b>	<b>10.0%</b>	<b>0.0%</b>	<b>38.0%</b>	<b>4.1%</b>	<b>8.9%</b>	<b>0.8%</b>	<b>0.0%</b>	<b>13.8%</b>	<b>100.0%</b>	

# ALL TRAFFIC DATA

City of Vallejo  
 All Vehicles on Unshifted  
 Peds & Bikes on Bank 1  
 Heavy Trucks on Bank 2

(916) 771-8700

[orders@atdtraffic.com](mailto:orders@atdtraffic.com)

File Name : 14-7219-006 Sonoma Boulevard (SR 29)-Magazine Street.p

Date : 4/8/2014

## Unshifted Count = All Vehicles

AM PEAK HOUR	Sonoma Boulevard (SR 29) Southbound					Magazine Street Westbound					Sonoma Boulevard (SR 29) Northbound					Magazine Street Eastbound					Total
	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	
Peak Hour Analysis From 08:00 to 09:00																					
Peak Hour For Entire Intersection Begins at 08:00																					
08:00	9	41	5	0	55	3	7	21	0	31	2	50	22	0	74	11	20	2	0	33	193
08:15	16	45	6	0	67	4	15	20	0	39	5	47	15	0	67	17	28	3	0	48	221
08:30	16	64	12	0	92	20	12	22	0	54	1	48	19	0	68	17	30	2	0	49	263
08:45	17	54	4	0	75	9	11	24	0	44	3	54	25	0	82	23	49	3	0	75	276
Total Volume	58	204	27	0	289	36	45	87	0	168	11	199	81	0	291	68	127	10	0	205	953
% App Total	20.1%	70.6%	9.3%	0.0%		21.4%	26.8%	51.8%	0.0%		3.8%	68.4%	27.8%	0.0%		33.2%	62.0%	4.9%	0.0%		
PHF	.853	.797	.563	.000	.785	.450	.750	.906	.000	.778	.550	.921	.810	.000	.887	.739	.648	.833	.000	.683	.863

PM PEAK HOUR	Sonoma Boulevard (SR 29) Southbound					Magazine Street Westbound					Sonoma Boulevard (SR 29) Northbound					Magazine Street Eastbound					Total
	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	
Peak Hour Analysis From 17:00 to 18:00																					
Peak Hour For Entire Intersection Begins at 17:00																					
17:00	31	57	4	0	92	7	13	15	0	35	5	97	21	0	123	5	16	4	0	25	275
17:15	21	51	6	0	78	5	15	20	0	40	5	71	41	0	117	7	12	1	0	20	255
17:30	19	64	7	0	90	7	16	26	0	49	7	63	19	0	89	12	21	2	0	35	263
17:45	15	52	8	0	75	6	18	13	0	37	3	80	24	0	107	12	19	0	0	31	250
Total Volume	86	224	25	0	335	25	62	74	0	161	20	311	105	0	436	36	68	7	0	111	1043
% App Total	25.7%	66.9%	7.5%	0.0%		15.5%	38.5%	46.0%	0.0%		4.6%	71.3%	24.1%	0.0%		32.4%	61.3%	6.3%	0.0%		
PHF	.694	.875	.781	.000	.910	.893	.861	.712	.000	.821	.714	.802	.640	.000	.886	.750	.810	.438	.000	.793	.948

# ALL TRAFFIC DATA

City of Vallejo  
 All Vehicles on Unshifted  
 Peds & Bikes on Bank 1  
 Heavy Trucks on Bank 2

(916) 771-8700  
[orders@atdtraffic.com](mailto:orders@atdtraffic.com)

File Name : 14-7219-006 Sonoma Boulevard (SR 29)-Magazine Street.p  
 Date : 4/8/2014

## Bank 2 Count = Heavy Trucks

START TIME	Sonoma Boulevard (SR 29) Southbound					Magazine Street Westbound					Sonoma Boulevard (SR 29) Northbound					Magazine Street Eastbound					Total	Ped Total
	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL		
07:00	2	1	0	0	3	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	4	0
07:15	0	0	0	0	0	0	0	0	0	0	0	2	0	0	2	1	0	0	0	1	3	0
07:30	0	1	0	0	1	0	0	0	0	0	0	2	0	0	2	0	1	0	0	1	4	0
07:45	0	2	0	0	2	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	3	0
<b>Total</b>	<b>2</b>	<b>4</b>	<b>0</b>	<b>0</b>	<b>6</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>5</b>	<b>0</b>	<b>0</b>	<b>5</b>	<b>1</b>	<b>2</b>	<b>0</b>	<b>0</b>	<b>3</b>	<b>14</b>	<b>0</b>
08:00	0	3	2	0	5	0	0	1	0	1	0	1	0	0	1	0	0	0	0	0	7	0
08:15	3	2	1	0	6	0	0	0	0	0	0	2	0	0	2	0	1	0	0	1	9	0
08:30	2	1	0	0	3	0	0	2	0	2	0	1	1	0	2	0	0	0	0	0	7	0
08:45	1	2	0	0	3	0	0	0	0	0	0	2	0	0	2	0	0	0	0	0	5	0
<b>Total</b>	<b>6</b>	<b>8</b>	<b>3</b>	<b>0</b>	<b>17</b>	<b>0</b>	<b>0</b>	<b>3</b>	<b>0</b>	<b>3</b>	<b>0</b>	<b>6</b>	<b>1</b>	<b>0</b>	<b>7</b>	<b>0</b>	<b>1</b>	<b>0</b>	<b>0</b>	<b>1</b>	<b>28</b>	<b>0</b>
16:00	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	1	0
16:15	1	0	0	0	1	0	0	1	0	1	0	5	0	0	5	0	0	0	0	0	7	0
16:30	0	1	0	0	1	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	2	0
16:45	0	2	0	0	2	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	3	0
<b>Total</b>	<b>1</b>	<b>3</b>	<b>0</b>	<b>0</b>	<b>4</b>	<b>0</b>	<b>0</b>	<b>2</b>	<b>0</b>	<b>2</b>	<b>0</b>	<b>7</b>	<b>0</b>	<b>0</b>	<b>7</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>13</b>	<b>0</b>
17:00	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	1	0
17:15	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	1	0
17:30	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0
17:45	0	0	0	0	0	0	0	0	0	0	0	2	0	0	2	0	0	0	0	0	2	0
<b>Total</b>	<b>0</b>	<b>1</b>	<b>0</b>	<b>0</b>	<b>1</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>4</b>	<b>0</b>	<b>0</b>	<b>4</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>5</b>	<b>0</b>
<b>Grand Total</b>	<b>9</b>	<b>16</b>	<b>3</b>	<b>0</b>	<b>28</b>	<b>0</b>	<b>0</b>	<b>5</b>	<b>0</b>	<b>5</b>	<b>0</b>	<b>22</b>	<b>1</b>	<b>0</b>	<b>23</b>	<b>1</b>	<b>3</b>	<b>0</b>	<b>0</b>	<b>4</b>	<b>60</b>	<b>0</b>
Apprch %	32.1%	57.1%	10.7%			0.0%	0.0%	100.0%			0.0%	95.7%	4.3%			25.0%	75.0%	0.0%				
Total %	15.0%	26.7%	5.0%		46.7%	0.0%	0.0%	8.3%		8.3%	0.0%	36.7%	1.7%		38.3%	1.7%	5.0%	0.0%		6.7%	100.0%	

# ALL TRAFFIC DATA

City of Vallejo  
 All Vehicles on Unshifted  
 Peds & Bikes on Bank 1  
 Heavy Trucks on Bank 2

(916) 771-8700

[orders@atdtraffic.com](mailto:orders@atdtraffic.com)

File Name : 14-7219-006 Sonoma Boulevard (SR 29)-Magazine Street.f

Date : 4/8/2014

## Bank 2 Count = Heavy Trucks

AM PEAK HOUR	Sonoma Boulevard (SR 29) Southbound					Magazine Street Westbound					Sonoma Boulevard (SR 29) Northbound					Magazine Street Eastbound					Total
	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	
Peak Hour Analysis From 08:00 to 09:00																					
Peak Hour For Entire Intersection Begins at 08:00																					
08:00	0	3	2	0	5	0	0	1	0	1	0	1	0	0	1	0	0	0	0	0	7
08:15	3	2	1	0	6	0	0	0	0	0	0	2	0	0	2	0	1	0	0	1	9
08:30	2	1	0	0	3	0	0	2	0	2	0	1	1	0	2	0	0	0	0	0	7
08:45	1	2	0	0	3	0	0	0	0	0	0	2	0	0	2	0	0	0	0	0	5
Total Volume	6	8	3	0	17	0	0	3	0	3	0	6	1	0	7	0	1	0	0	1	28
% App Total	35.3%	47.1%	17.6%			0.0%	0.0%	100.0%			0.0%	85.7%	14.3%			0.0%	100.0%	0.0%			
PHF	.500	.667	.375		.708	.000	.000	.375		.375	.000	.750	.250		.875	.000	.250	.000		.250	.778

PM PEAK HOUR	Sonoma Boulevard (SR 29) Southbound					Magazine Street Westbound					Sonoma Boulevard (SR 29) Northbound					Magazine Street Eastbound					Total
	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	
Peak Hour Analysis From 17:00 to 18:00																					
Peak Hour For Entire Intersection Begins at 17:00																					
17:00	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	1
17:15	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	1
17:30	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
17:45	0	0	0	0	0	0	0	0	0	0	0	2	0	0	2	0	0	0	0	0	2
Total Volume	0	1	0	0	1	0	0	0	0	0	0	4	0	0	4	0	0	0	0	0	5
% App Total	0.0%	100.0%	0.0%			0.0%	0.0%	0.0%			0.0%	100.0%	0.0%			0.0%	0.0%	0.0%			
PHF	.000	.250	.000		.250	.000	.000	.000		.000	.000	.500	.000		.500	.000	.000	.000		.000	.625

# ALL TRAFFIC DATA

City of Vallejo  
 All Vehicles on Unshifted  
 Peds & Bikes on Bank 1  
 Heavy Trucks on Bank 2

(916) 771-8700

[orders@atdtraffic.com](mailto:orders@atdtraffic.com)

File Name : 14-7219-006 Sonoma Boulevard (SR 29)-Magazine Street.p

Date : 4/8/2014

## Bank 1 Count = Peds & Bikes

START TIME	Sonoma Boulevard (SR 29) Southbound					Magazine Street Westbound					Sonoma Boulevard (SR 29) Northbound					Magazine Street Eastbound					Total	Ped Total
	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL		
07:00	0	0	0	0	0	0	0	0	0	0	0	2	0	0	2	0	0	0	0	0	2	0
07:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1
07:30	0	1	0	0	1	0	0	0	0	0	1	0	0	1	1	0	0	0	0	0	0	2
07:45	0	0	0	0	0	1	0	0	0	1	0	0	0	1	0	0	0	0	6	0	0	7
<b>Total</b>	0	1	0	0	1	1	0	0	0	1	1	2	0	2	3	0	0	0	7	0	5	9
08:00	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	1	0	1	1
08:15	0	2	0	3	2	0	0	0	0	0	0	0	0	2	0	0	0	0	9	0	2	14
08:30	0	0	0	2	0	0	0	0	0	0	0	1	0	10	1	0	0	0	3	0	1	15
08:45	0	0	0	6	0	0	0	0	1	0	0	0	0	9	0	0	1	0	8	1	1	24
<b>Total</b>	0	2	0	11	2	0	0	0	1	0	0	2	0	21	2	0	1	0	21	1	5	54
16:00	0	0	0	1	0	0	0	0	0	0	0	1	0	1	1	0	0	0	2	0	1	4
16:15	0	1	0	0	1	0	0	0	1	0	0	0	0	2	0	0	0	0	0	0	1	3
16:30	0	0	0	0	0	0	0	0	0	0	0	1	0	7	1	0	0	0	0	0	1	7
16:45	0	0	0	0	0	0	0	0	2	0	0	0	0	10	0	1	0	0	0	1	1	12
<b>Total</b>	0	1	0	1	1	0	0	0	3	0	0	2	0	20	2	1	0	0	2	1	4	26
17:00	0	0	0	1	0	0	0	0	0	0	0	0	0	4	0	0	0	0	2	0	0	7
17:15	0	0	0	0	0	0	0	0	2	0	0	0	0	2	0	0	0	0	0	0	0	4
17:30	0	1	1	2	2	0	0	0	0	0	0	2	0	2	2	0	0	0	0	0	4	4
17:45	0	1	0	0	1	0	0	0	0	0	0	0	0	3	0	0	0	0	4	0	1	7
<b>Total</b>	0	2	1	3	3	0	0	0	2	0	0	2	0	11	2	0	0	0	6	0	5	22
<b>Grand Total</b>	0	6	1	15	7	1	0	0	6	1	1	8	0	54	9	1	1	0	36	2	19	111
Apprch %	0.0%	85.7%	14.3%			100.0%	0.0%	0.0%			11.1%	88.9%	0.0%			50.0%	50.0%	0.0%				
Total %	0.0%	31.6%	5.3%		36.8%	5.3%	0.0%	0.0%		5.3%	5.3%	42.1%	0.0%		47.4%	5.3%	5.3%	0.0%		10.5%	100.0%	

# ALL TRAFFIC DATA

City of Vallejo  
 All Vehicles on Unshifted  
 Peds & Bikes on Bank 1  
 Heavy Trucks on Bank 2

(916) 771-8700

[orders@atdtraffic.com](mailto:orders@atdtraffic.com)

File Name : 14-7219-006 Sonoma Boulevard (SR 29)-Magazine Street.f

Date : 4/8/2014

## Bank 1 Count = Peds & Bikes

AM PEAK HOUR	Sonoma Boulevard (SR 29) Southbound					Magazine Street Westbound					Sonoma Boulevard (SR 29) Northbound					Magazine Street Eastbound					Total
	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	
Peak Hour Analysis From 08:00 to 09:00																					
Peak Hour For Entire Intersection Begins at 08:00																					
08:00	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	1	0	1
08:15	0	2	0	3	2	0	0	0	0	0	0	0	0	2	0	0	0	0	9	0	2
08:30	0	0	0	2	0	0	0	0	0	0	0	1	0	10	1	0	0	0	3	0	1
08:45	0	0	0	6	0	0	0	0	1	0	0	0	0	9	0	0	1	0	8	1	1
Total Volume	0	2	0	11	2	0	0	0	1	0	0	2	0	21	2	0	1	0	21	1	5
% App Total	0.0%	100.0%	0.0%			0.0%	0.0%	0.0%			0.0%	100.0%	0.0%			0.0%	100.0%	0.0%			
PHF	.000	.250	.000		.250	.000	.000	.000		.000	.000	.500	.000		.500	.000	.250	.000		.250	.625

PM PEAK HOUR	Sonoma Boulevard (SR 29) Southbound					Magazine Street Westbound					Sonoma Boulevard (SR 29) Northbound					Magazine Street Eastbound					Total
	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	
Peak Hour Analysis From 17:00 to 18:00																					
Peak Hour For Entire Intersection Begins at 17:00																					
17:00	0	0	0	1	0	0	0	0	0	0	0	0	0	4	0	0	0	0	2	0	0
17:15	0	0	0	0	0	0	0	0	2	0	0	0	0	2	0	0	0	0	0	0	0
17:30	0	1	1	2	2	0	0	0	0	0	0	2	0	2	2	0	0	0	0	0	4
17:45	0	1	0	0	1	0	0	0	0	0	0	0	0	3	0	0	0	0	4	0	1
Total Volume	0	2	1	3	3	0	0	0	2	0	0	2	0	11	2	0	0	0	6	0	5
% App Total	0.0%	66.7%	33.3%			0.0%	0.0%	0.0%			0.0%	100.0%	0.0%			0.0%	0.0%	0.0%			
PHF	.000	.500	.250		.375	.000	.000	.000		.000	.000	.250	.000		.250	.000	.000	.000		.000	.313

# ALL TRAFFIC DATA

City of Vallejo  
 All Vehicles on Unshifted  
 Peds & Bikes on Bank 1  
 Heavy Trucks on Bank 2

(916) 771-8700

[orders@atdtraffic.com](mailto:orders@atdtraffic.com)

File Name : 14-7219-007 Sonoma Boulevard (SR 29)-Sandy Beach Roa

Date : 4/8/2014

## Unshifted Count = All Vehicles

START TIME	Sonoma Boulevard (SR 29) Southbound					Westbound					Sonoma Boulevard (SR 29) Northbound					Sandy Beach Road Eastbound					Total	Utum Total
	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL		
07:00	0	46	1	0	47	0	0	0	0	0	6	26	0	0	32	12	0	10	0	22	101	0
07:15	0	56	1	0	57	0	0	0	0	0	4	38	0	0	42	22	0	13	0	35	134	0
07:30	0	53	6	0	59	0	0	0	0	0	9	48	0	0	57	29	0	8	0	37	153	0
07:45	0	53	9	0	62	0	0	0	0	0	16	44	0	0	60	18	0	13	0	31	153	0
<b>Total</b>	0	208	17	0	225	0	0	0	0	0	35	156	0	0	191	81	0	44	0	125	541	0
08:00	0	39	9	0	48	0	0	0	0	0	18	56	0	0	74	16	0	4	0	20	142	0
08:15	0	33	18	0	51	0	0	0	0	0	18	40	0	0	58	25	0	10	0	35	144	0
08:30	0	41	47	0	88	0	0	0	0	0	28	41	0	0	69	22	0	14	0	36	193	0
08:45	0	49	16	0	65	0	0	0	0	0	23	48	0	0	71	31	0	13	0	44	180	0
<b>Total</b>	0	162	90	0	252	0	0	0	0	0	87	185	0	0	272	94	0	41	0	135	659	0
16:00	0	44	7	0	51	0	0	0	0	0	21	95	0	0	116	21	0	11	0	32	199	0
16:15	0	38	6	0	44	0	0	0	0	0	22	91	0	0	113	16	0	7	0	23	180	0
16:30	0	63	7	0	70	0	0	0	0	0	17	104	0	0	121	8	0	3	0	11	202	0
16:45	0	53	4	0	57	0	0	0	0	0	27	94	0	1	122	9	0	4	0	13	192	1
<b>Total</b>	0	198	24	0	222	0	0	0	0	0	87	384	0	1	472	54	0	25	0	79	773	1
17:00	0	54	10	0	64	0	0	0	0	0	23	112	0	0	135	8	0	7	0	15	214	0
17:15	0	47	12	0	59	0	0	0	0	0	32	96	0	0	128	14	0	5	0	19	206	0
17:30	0	49	18	0	67	0	0	0	0	0	23	77	0	0	100	17	0	6	0	23	190	0
17:45	0	42	21	0	63	0	0	0	0	0	24	89	0	0	113	15	0	6	0	21	197	0
<b>Total</b>	0	192	61	0	253	0	0	0	0	0	102	374	0	0	476	54	0	24	0	78	807	0
<b>Grand Total</b>	0	760	192	0	952	0	0	0	0	0	311	1099	0	1	1411	283	0	134	0	417	2780	1
Apprch %	0.0%	79.8%	20.2%	0.0%		0.0%	0.0%	0.0%	0.0%		22.0%	77.9%	0.0%	0.1%		67.9%	0.0%	32.1%	0.0%			
Total %	0.0%	27.3%	6.9%	0.0%	34.2%	0.0%	0.0%	0.0%	0.0%	0.0%	11.2%	39.5%	0.0%	0.0%	50.8%	10.2%	0.0%	4.8%	0.0%	15.0%	100.0%	



# ALL TRAFFIC DATA

(916) 771-8700

[orders@atdtraffic.com](mailto:orders@atdtraffic.com)

File Name : 14-7219-007 Sonoma Boulevard (SR 29)-Sandy Beach Ro

Date : 4/8/2014

City of Vallejo  
All Vehicles on Unshifted  
Peds & Bikes on Bank 1  
Heavy Trucks on Bank 2

## Unshifted Count = All Vehicles

AM PEAK HOUR	Sonoma Boulevard (SR 29) Southbound					Westbound					Sonoma Boulevard (SR 29) Northbound					Sandy Beach Road Eastbound					Total
	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	
Peak Hour Analysis From 08:00 to 09:00																					
Peak Hour For Entire Intersection Begins at 08:00																					
08:00	0	39	9	0	48	0	0	0	0	0	18	56	0	0	74	16	0	4	0	20	142
08:15	0	33	18	0	51	0	0	0	0	0	18	40	0	0	58	25	0	10	0	35	144
08:30	0	41	47	0	88	0	0	0	0	0	28	41	0	0	69	22	0	14	0	36	193
08:45	0	49	16	0	65	0	0	0	0	0	23	48	0	0	71	31	0	13	0	44	180
Total Volume	0	162	90	0	252	0	0	0	0	0	87	185	0	0	272	94	0	41	0	135	659
% App Total	0.0%	64.3%	35.7%	0.0%		0.0%	0.0%	0.0%	0.0%		32.0%	68.0%	0.0%	0.0%		69.6%	0.0%	30.4%	0.0%		
PHF	.000	.827	.479	.000	.716	.000	.000	.000	.000	.000	.777	.826	.000	.000	.919	.758	.000	.732	.000	.767	.854

PM PEAK HOUR	Sonoma Boulevard (SR 29) Southbound					Westbound					Sonoma Boulevard (SR 29) Northbound					Sandy Beach Road Eastbound					Total
	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	
Peak Hour Analysis From 16:30 to 17:30																					
Peak Hour For Entire Intersection Begins at 16:30																					
16:30	0	63	7	0	70	0	0	0	0	0	17	104	0	0	121	8	0	3	0	11	202
16:45	0	53	4	0	57	0	0	0	0	0	27	94	0	1	122	9	0	4	0	13	192
17:00	0	54	10	0	64	0	0	0	0	0	23	112	0	0	135	8	0	7	0	15	214
17:15	0	47	12	0	59	0	0	0	0	0	32	96	0	0	128	14	0	5	0	19	206
Total Volume	0	217	33	0	250	0	0	0	0	0	99	406	0	1	506	39	0	19	0	58	814
% App Total	0.0%	86.8%	13.2%	0.0%		0.0%	0.0%	0.0%	0.0%		19.6%	80.2%	0.0%	0.2%		67.2%	0.0%	32.8%	0.0%		
PHF	.000	.861	.688	.000	.893	.000	.000	.000	.000	.000	.773	.906	.000	.250	.937	.696	.000	.679	.000	.763	.951

# ALL TRAFFIC DATA

City of Vallejo  
 All Vehicles on Unshifted  
 Peds & Bikes on Bank 1  
 Heavy Trucks on Bank 2

(916) 771-8700

[orders@atdtraffic.com](mailto:orders@atdtraffic.com)

File Name : 14-7219-007 Sonoma Boulevard (SR 29)-Sandy Beach Roa  
 Date : 4/8/2014

## Bank 2 Count = Heavy Trucks

START TIME	Sonoma Boulevard (SR 29) Southbound					Westbound					Sonoma Boulevard (SR 29) Northbound					Sandy Beach Road Eastbound					Total	Ped Total
	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL		
07:00	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0
07:15	0	0	0	0	0	0	0	0	0	0	0	2	0	0	2	0	0	0	0	0	2	0
07:30	0	1	0	0	1	0	0	0	0	0	0	2	0	0	2	0	0	0	0	0	3	0
07:45	0	2	0	0	2	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	3	0
<b>Total</b>	0	4	0	0	4	0	0	0	0	0	0	5	0	0	5	0	0	0	0	0	9	0
08:00	0	3	0	0	3	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	4	0
08:15	0	1	1	0	2	0	0	0	0	0	2	2	0	0	4	0	0	0	0	0	6	0
08:30	0	1	0	0	1	0	0	0	0	0	0	1	0	0	1	1	0	0	0	1	3	0
08:45	0	2	0	0	2	0	0	0	0	0	1	2	0	0	3	0	0	0	0	0	5	0
<b>Total</b>	0	7	1	0	8	0	0	0	0	0	3	6	0	0	9	1	0	0	0	1	18	0
16:00	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	1	0
16:15	0	0	0	0	0	0	0	0	0	0	0	3	0	0	3	2	0	0	0	2	5	0
16:30	0	1	0	0	1	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	2	0
16:45	0	2	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0
<b>Total</b>	0	3	0	0	3	0	0	0	0	0	0	5	0	0	5	2	0	0	0	2	10	0
17:00	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	1	0
17:15	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	1	0
17:30	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0
17:45	0	0	0	0	0	0	0	0	0	0	0	2	0	0	2	0	0	0	0	0	2	0
<b>Total</b>	0	1	0	0	1	0	0	0	0	0	0	4	0	0	4	0	0	0	0	0	5	0
<b>Grand Total</b>	0	15	1	0	16	0	0	0	0	0	3	20	0	0	23	3	0	0	0	3	42	0
Apprch %	0.0%	93.8%	6.3%			0.0%	0.0%	0.0%			13.0%	87.0%	0.0%			100.0%	0.0%	0.0%				
Total %	0.0%	35.7%	2.4%		38.1%	0.0%	0.0%	0.0%		0.0%	7.1%	47.6%	0.0%		54.8%	7.1%	0.0%	0.0%		7.1%	100.0%	

# ALL TRAFFIC DATA

City of Vallejo  
 All Vehicles on Unshifted  
 Peds & Bikes on Bank 1  
 Heavy Trucks on Bank 2

(916) 771-8700

[orders@atdtraffic.com](mailto:orders@atdtraffic.com)

File Name : 14-7219-007 Sonoma Boulevard (SR 29)-Sandy Beach Roa

Date : 4/8/2014

## Bank 2 Count = Heavy Trucks

AM PEAK HOUR	Sonoma Boulevard (SR 29) Southbound					Westbound					Sonoma Boulevard (SR 29) Northbound					Sandy Beach Road Eastbound					Total
	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	
Peak Hour Analysis From 08:00 to 09:00																					
Peak Hour For Entire Intersection Begins at 08:00																					
08:00	0	3	0	0	3	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	4
08:15	0	1	1	0	2	0	0	0	0	0	2	2	0	0	4	0	0	0	0	0	6
08:30	0	1	0	0	1	0	0	0	0	0	0	1	0	0	1	1	0	0	0	1	3
08:45	0	2	0	0	2	0	0	0	0	0	1	2	0	0	3	0	0	0	0	0	5
Total Volume	0	7	1	0	8	0	0	0	0	0	3	6	0	0	9	1	0	0	0	1	18
% App Total	0.0%	87.5%	12.5%			0.0%	0.0%	0.0%			33.3%	66.7%	0.0%			100.0%	0.0%	0.0%			
PHF	.000	.583	.250		.667	.000	.000	.000		.000	.375	.750	.000		.563	.250	.000	.000		.250	.750

PM PEAK HOUR	Sonoma Boulevard (SR 29) Southbound					Westbound					Sonoma Boulevard (SR 29) Northbound					Sandy Beach Road Eastbound					Total
	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	
Peak Hour Analysis From 16:30 to 17:30																					
Peak Hour For Entire Intersection Begins at 16:30																					
16:30	0	1	0	0	1	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	2
16:45	0	2	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2
17:00	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	1
17:15	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	1
Total Volume	0	3	0	0	3	0	0	0	0	0	0	3	0	0	3	0	0	0	0	0	6
% App Total	0.0%	100.0%	0.0%			0.0%	0.0%	0.0%			0.0%	100.0%	0.0%			0.0%	0.0%	0.0%			
PHF	.000	.375	.000		.375	.000	.000	.000		.000	.000	.750	.000		.750	.000	.000	.000		.000	.750

# ALL TRAFFIC DATA

City of Vallejo  
 All Vehicles on Unshifted  
 Peds & Bikes on Bank 1  
 Heavy Trucks on Bank 2

(916) 771-8700

[orders@atdtraffic.com](mailto:orders@atdtraffic.com)

File Name : 14-7219-007 Sonoma Boulevard (SR 29)-Sandy Beach Roa

Date : 4/8/2014

## Bank 1 Count = Peds & Bikes

START TIME	Sonoma Boulevard (SR 29) Southbound					Westbound					Sonoma Boulevard (SR 29) Northbound					Sandy Beach Road Eastbound					Total	Ped Total
	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL		
07:00	0	0	0	0	0	0	0	0	0	0	0	2	0	0	2	0	0	0	0	0	2	0
07:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:30	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	1	0
07:45	0	2	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0
<b>Total</b>	0	2	0	0	2	0	0	0	0	0	0	3	0	0	3	0	0	0	0	0	5	0
08:00	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	1	0
08:15	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	1
08:30	0	1	0	0	1	0	0	0	0	0	0	1	0	0	1	0	0	0	2	0	2	2
08:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	5	0	0	5
<b>Total</b>	0	2	0	0	2	0	0	0	0	0	0	2	0	0	2	0	0	0	8	0	4	8
16:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1
16:15	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0
16:30	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	1	0
16:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
<b>Total</b>	0	1	0	0	1	0	0	0	0	0	0	1	0	0	1	0	0	0	1	0	2	1
17:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	2
17:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
17:30	0	1	0	0	1	0	0	0	0	0	0	3	0	0	3	0	0	0	0	0	4	0
17:45	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0
<b>Total</b>	0	2	0	0	2	0	0	0	0	0	0	3	0	0	3	0	0	0	2	0	5	2
<b>Grand Total</b>	0	7	0	0	7	0	0	0	0	0	0	9	0	0	9	0	0	0	11	0	16	11
Apprch %	0.0%	100.0%	0.0%			0.0%	0.0%	0.0%			0.0%	100.0%	0.0%			0.0%	0.0%	0.0%				
Total %	0.0%	43.8%	0.0%		43.8%	0.0%	0.0%	0.0%		0.0%	0.0%	56.3%	0.0%		56.3%	0.0%	0.0%	0.0%		0.0%	100.0%	

# ALL TRAFFIC DATA

City of Vallejo  
 All Vehicles on Unshifted  
 Peds & Bikes on Bank 1  
 Heavy Trucks on Bank 2

(916) 771-8700

[orders@atdtraffic.com](mailto:orders@atdtraffic.com)

File Name : 14-7219-007 Sonoma Boulevard (SR 29)-Sandy Beach Roa

Date : 4/8/2014

## Bank 1 Count = Peds & Bikes

AM PEAK HOUR	Sonoma Boulevard (SR 29) Southbound					Westbound					Sonoma Boulevard (SR 29) Northbound					Sandy Beach Road Eastbound					Total
	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	
Peak Hour Analysis From 08:00 to 09:00																					
Peak Hour For Entire Intersection Begins at 08:00																					
08:00	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	1
08:15	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1
08:30	0	1	0	0	1	0	0	0	0	0	0	1	0	0	1	0	0	0	2	0	2
08:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	5	0	0
Total Volume	0	2	0	0	2	0	0	0	0	0	0	2	0	0	2	0	0	0	8	0	4
% App Total	0.0%	100.0%	0.0%			0.0%	0.0%	0.0%			0.0%	100.0%	0.0%			0.0%	0.0%	0.0%			
PHF	.000	.500	.000		.500	.000	.000	.000		.000	.000	.500	.000		.500	.000	.000	.000		.000	.500

PM PEAK HOUR	Sonoma Boulevard (SR 29) Southbound					Westbound					Sonoma Boulevard (SR 29) Northbound					Sandy Beach Road Eastbound					Total
	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	
Peak Hour Analysis From 16:30 to 17:30																					
Peak Hour For Entire Intersection Begins at 16:30																					
16:30	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	1
16:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
17:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0
17:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Volume	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	2	0	1
% App Total	0.0%	0.0%	0.0%			0.0%	0.0%	0.0%			0.0%	100.0%	0.0%			0.0%	0.0%	0.0%			
PHF	.000	.000	.000		.000	.000	.000	.000		.000	.250	.000		.250	.000	.000	.000	.000		.000	.250

# ALL TRAFFIC DATA

City of Vallejo  
 All Vehicles on Unshifted  
 Peds & Bikes on Bank 1  
 Heavy Trucks on Bank 2

(916) 771-8700

[orders@atdtraffic.com](mailto:orders@atdtraffic.com)

File Name : 14-7219-008 Sonoma Boulevard (SR 29)-Maritime Academ

Date : 4/8/2014

## Unshifted Count = All Vehicles

START TIME	Sonoma Boulevard (SR 29) Southbound					Sequoia Avenue Westbound					Sonoma Boulevard (SR 29) Northbound					Maritime Academy Drive Eastbound					Total	Utum Total
	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL		
07:00	0	49	7	0	56	3	8	6	0	17	1	20	4	0	25	4	2	1	0	7	105	0
07:15	7	53	9	0	69	5	18	7	0	30	2	29	0	0	31	7	5	0	0	12	142	0
07:30	3	48	9	0	60	1	24	10	0	35	8	39	2	0	49	7	1	1	0	9	153	0
07:45	3	49	16	0	68	5	30	15	0	50	10	41	4	0	55	7	2	0	0	9	182	0
<b>Total</b>	13	199	41	0	253	14	80	38	0	132	21	129	10	0	160	25	10	2	0	37	582	0
08:00	3	29	9	0	41	4	21	21	0	46	2	41	1	0	44	10	6	3	0	19	150	0
08:15	9	33	2	0	44	3	17	17	0	37	2	41	4	0	47	1	2	3	0	6	134	0
08:30	7	38	11	0	56	2	21	32	0	55	2	34	3	0	39	4	0	1	0	5	155	0
08:45	12	39	10	1	62	4	20	23	0	47	2	39	3	0	44	7	2	1	0	10	163	1
<b>Total</b>	31	139	32	1	203	13	79	93	0	185	8	155	11	0	174	22	10	8	0	40	602	1
16:00	8	37	6	0	51	4	10	25	0	39	4	65	14	0	83	24	4	7	0	35	208	0
16:15	4	40	3	1	48	0	22	29	0	51	3	44	13	0	60	44	8	6	0	58	217	1
16:30	6	47	6	0	59	2	11	25	0	38	2	68	16	0	86	26	6	0	0	32	215	0
16:45	7	47	12	0	66	3	11	32	0	46	6	69	12	0	87	22	5	2	0	29	228	0
<b>Total</b>	25	171	27	1	224	9	54	111	0	174	15	246	55	0	316	116	23	15	0	154	868	1
17:00	3	41	15	0	59	1	7	25	0	33	1	79	7	1	88	28	3	4	0	35	215	1
17:15	5	41	8	0	54	4	10	34	0	48	5	62	7	0	74	34	2	8	0	44	220	0
17:30	6	39	9	0	54	7	13	23	0	43	3	62	9	0	74	13	4	2	0	19	190	0
17:45	3	42	5	0	50	2	11	21	0	34	4	79	7	0	90	14	2	2	0	18	192	0
<b>Total</b>	17	163	37	0	217	14	41	103	0	158	13	282	30	1	326	89	11	16	0	116	817	1
<b>Grand Total</b>	86	672	137	2	897	50	254	345	0	649	57	812	106	1	976	252	54	41	0	347	2869	3
Apprch %	9.6%	74.9%	15.3%	0.2%		7.7%	39.1%	53.2%	0.0%		5.8%	83.2%	10.9%	0.1%		72.6%	15.6%	11.8%	0.0%			
Total %	3.0%	23.4%	4.8%	0.1%	31.3%	1.7%	8.9%	12.0%	0.0%	22.6%	2.0%	28.3%	3.7%	0.0%	34.0%	8.8%	1.9%	1.4%	0.0%	12.1%	100.0%	

# ALL TRAFFIC DATA

(916) 771-8700

[orders@atdtraffic.com](mailto:orders@atdtraffic.com)

File Name : 14-7219-008 Sonoma Boulevard (SR 29)-Maritime Academ

Date : 4/8/2014

City of Vallejo  
All Vehicles on Unshifted  
Peds & Bikes on Bank 1  
Heavy Trucks on Bank 2

## Unshifted Count = All Vehicles

AM PEAK HOUR	Sonoma Boulevard (SR 29) Southbound					Sequoia Avenue Westbound					Sonoma Boulevard (SR 29) Northbound					Maritime Academy Drive Eastbound					Total
	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	
Peak Hour Analysis From 07:15 to 08:15																					
Peak Hour For Entire Intersection Begins at 07:15																					
07:15	7	53	9	0	69	5	18	7	0	30	2	29	0	0	31	7	5	0	0	12	142
07:30	3	48	9	0	60	1	24	10	0	35	8	39	2	0	49	7	1	1	0	9	153
07:45	3	49	16	0	68	5	30	15	0	50	10	41	4	0	55	7	2	0	0	9	182
08:00	3	29	9	0	41	4	21	21	0	46	2	41	1	0	44	10	6	3	0	19	150
Total Volume	16	179	43	0	238	15	93	53	0	161	22	150	7	0	179	31	14	4	0	49	627
% App Total	6.7%	75.2%	18.1%	0.0%		9.3%	57.8%	32.9%	0.0%		12.3%	83.8%	3.9%	0.0%		63.3%	28.6%	8.2%	0.0%		
PHF	.571	.844	.672	.000	.862	.750	.775	.631	.000	.805	.550	.915	.438	.000	.814	.775	.583	.333	.000	.645	.861

PM PEAK HOUR	Sonoma Boulevard (SR 29) Southbound					Sequoia Avenue Westbound					Sonoma Boulevard (SR 29) Northbound					Maritime Academy Drive Eastbound					Total
	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	
Peak Hour Analysis From 16:30 to 17:30																					
Peak Hour For Entire Intersection Begins at 16:30																					
16:30	6	47	6	0	59	2	11	25	0	38	2	68	16	0	86	26	6	0	0	32	215
16:45	7	47	12	0	66	3	11	32	0	46	6	69	12	0	87	22	5	2	0	29	228
17:00	3	41	15	0	59	1	7	25	0	33	1	79	7	1	88	28	3	4	0	35	215
17:15	5	41	8	0	54	4	10	34	0	48	5	62	7	0	74	34	2	8	0	44	220
Total Volume	21	176	41	0	238	10	39	116	0	165	14	278	42	1	335	110	16	14	0	140	878
% App Total	8.8%	73.9%	17.2%	0.0%		6.1%	23.6%	70.3%	0.0%		4.2%	83.0%	12.5%	0.3%		78.6%	11.4%	10.0%	0.0%		
PHF	.750	.936	.683	.000	.902	.625	.886	.853	.000	.859	.583	.880	.656	.250	.952	.809	.667	.438	.000	.795	.963

# ALL TRAFFIC DATA

City of Vallejo  
 All Vehicles on Unshifted  
 Peds & Bikes on Bank 1  
 Heavy Trucks on Bank 2

(916) 771-8700

[orders@atdtraffic.com](mailto:orders@atdtraffic.com)

File Name : 14-7219-008 Sonoma Boulevard (SR 29)-Maritime Academ

Date : 4/8/2014

## Bank 2 Count = Heavy Trucks

START TIME	Sonoma Boulevard (SR 29) Southbound					Sequoia Avenue Westbound					Sonoma Boulevard (SR 29) Northbound					Maritime Academy Drive Eastbound					Total	Ped Total
	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL		
07:00	0	0	1	0	1	0	0	0	0	0	1	0	0	0	1	0	0	0	0	0	2	0
07:15	0	0	0	0	0	1	0	1	0	2	0	2	0	0	2	0	0	0	0	0	4	0
07:30	0	1	0	0	1	0	1	0	0	1	0	1	0	0	1	0	0	0	0	0	3	0
07:45	0	2	0	0	2	0	1	1	0	2	1	0	0	0	1	0	0	0	0	0	5	0
<b>Total</b>	0	3	1	0	4	1	2	2	0	5	2	3	0	0	5	0	0	0	0	0	14	0
08:00	0	2	1	0	3	0	1	0	0	1	0	1	0	0	1	0	0	1	0	1	6	0
08:15	0	0	1	0	1	1	0	2	0	3	0	2	0	0	2	0	0	2	0	2	8	0
08:30	0	1	0	0	1	1	1	0	0	2	0	0	0	0	0	1	0	0	0	1	4	0
08:45	0	2	0	0	2	0	2	0	0	2	0	3	0	0	3	0	0	0	0	0	7	0
<b>Total</b>	0	5	2	0	7	2	4	2	0	8	0	6	0	0	6	1	0	3	0	4	25	0
16:00	0	0	0	0	0	1	0	1	0	2	0	0	1	0	1	0	0	0	0	0	3	0
16:15	0	0	0	0	0	0	0	0	0	0	0	3	2	0	5	0	0	0	0	0	5	0
16:30	0	0	0	0	0	0	1	0	0	1	0	1	0	0	1	0	0	0	0	0	2	0
16:45	1	2	0	0	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	0
<b>Total</b>	1	2	0	0	3	1	1	1	0	3	0	4	3	0	7	0	0	0	0	0	13	0
17:00	0	0	0	0	0	0	1	0	0	1	0	1	0	0	1	0	0	0	0	0	2	0
17:15	0	0	0	0	0	1	0	0	0	1	0	1	1	0	2	0	0	0	0	0	3	0
17:30	0	1	0	0	1	0	1	0	0	1	0	0	1	0	1	0	0	0	0	0	3	0
17:45	0	0	0	0	0	0	0	0	0	0	0	2	1	0	3	0	0	0	0	0	3	0
<b>Total</b>	0	1	0	0	1	1	2	0	0	3	0	4	3	0	7	0	0	0	0	0	11	0
<b>Grand Total</b>	1	11	3	0	15	5	9	5	0	19	2	17	6	0	25	1	0	3	0	4	63	0
Apprch %	6.7%	73.3%	20.0%			26.3%	47.4%	26.3%			8.0%	68.0%	24.0%			25.0%	0.0%	75.0%				
Total %	1.6%	17.5%	4.8%		23.8%	7.9%	14.3%	7.9%		30.2%	3.2%	27.0%	9.5%		39.7%	1.6%	0.0%	4.8%		6.3%	100.0%	



# ALL TRAFFIC DATA

City of Vallejo  
 All Vehicles on Unshifted  
 Peds & Bikes on Bank 1  
 Heavy Trucks on Bank 2

(916) 771-8700

[orders@atdtraffic.com](mailto:orders@atdtraffic.com)

File Name : 14-7219-008 Sonoma Boulevard (SR 29)-Maritime Academ

Date : 4/8/2014

## Bank 2 Count = Heavy Trucks

AM PEAK HOUR	Sonoma Boulevard (SR 29) Southbound					Sequoia Avenue Westbound					Sonoma Boulevard (SR 29) Northbound					Maritime Academy Drive Eastbound					Total	
	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL		
Peak Hour Analysis From 07:15 to 08:15																						
Peak Hour For Entire Intersection Begins at 07:15																						
07:15	0	0	0	0	0	1	0	1	0	2	0	2	0	0	2	0	0	0	0	0	0	4
07:30	0	1	0	0	1	0	1	0	0	1	0	1	0	0	1	0	0	0	0	0	0	3
07:45	0	2	0	0	2	0	1	1	0	2	1	0	0	0	1	0	0	0	0	0	0	5
08:00	0	2	1	0	3	0	1	0	0	1	0	1	0	0	1	0	0	1	0	1	1	6
Total Volume	0	5	1	0	6	1	3	2	0	6	1	4	0	0	5	0	0	1	0	1	18	
% App Total	0.0%	83.3%	16.7%			16.7%	50.0%	33.3%			20.0%	80.0%	0.0%			0.0%	0.0%	100.0%				
PHF	.000	.625	.250		.500	.250	.750	.500		.750	.250	.500	.000		.625	.000	.000	.250		.250	.750	

PM PEAK HOUR	Sonoma Boulevard (SR 29) Southbound					Sequoia Avenue Westbound					Sonoma Boulevard (SR 29) Northbound					Maritime Academy Drive Eastbound					Total	
	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL		
Peak Hour Analysis From 16:30 to 17:30																						
Peak Hour For Entire Intersection Begins at 16:30																						
16:30	0	0	0	0	0	0	1	0	0	1	0	1	0	0	1	0	0	0	0	0	0	2
16:45	1	2	0	0	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3
17:00	0	0	0	0	0	0	1	0	0	1	0	1	0	0	1	0	0	0	0	0	0	2
17:15	0	0	0	0	0	1	0	0	0	1	0	1	1	0	2	0	0	0	0	0	0	3
Total Volume	1	2	0	0	3	1	2	0	0	3	0	3	1	0	4	0	0	0	0	0	10	
% App Total	33.3%	66.7%	0.0%			33.3%	66.7%	0.0%			0.0%	75.0%	25.0%			0.0%	0.0%	0.0%				
PHF	.250	.250	.000		.250	.250	.500	.000		.750	.000	.750	.250		.500	.000	.000	.000		.000	.833	

# ALL TRAFFIC DATA

City of Vallejo  
 All Vehicles on Unshifted  
 Peds & Bikes on Bank 1  
 Heavy Trucks on Bank 2

(916) 771-8700

[orders@atdtraffic.com](mailto:orders@atdtraffic.com)

File Name : 14-7219-008 Sonoma Boulevard (SR 29)-Maritime Academ

Date : 4/8/2014

## Bank 1 Count = Peds & Bikes

START TIME	Sonoma Boulevard (SR 29) Southbound					Sequoia Avenue Westbound					Sonoma Boulevard (SR 29) Northbound					Maritime Academy Drive Eastbound					Total	Ped Total
	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL		
07:00	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	2	2	1
07:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	1	0
07:45	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
<b>Total</b>	0	0	1	1	1	0	0	0	0	0	0	0	0	0	0	3	0	0	0	3	4	1
08:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	1	0
08:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08:30	0	0	1	0	1	0	0	0	1	0	0	0	0	0	0	1	0	0	1	1	2	2
08:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
<b>Total</b>	0	0	1	0	1	0	0	0	1	0	0	0	0	0	0	2	0	0	1	2	3	2
16:00	0	0	0	2	0	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	1	2
16:15	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2
16:30	0	0	0	4	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	1	4
16:45	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2
<b>Total</b>	0	0	0	10	0	0	1	0	0	1	0	0	0	0	0	1	0	0	0	1	2	10
17:00	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	1	0
17:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
17:30	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	2	0	0	0	2	3	0
17:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
<b>Total</b>	0	0	1	0	1	0	1	0	0	1	0	0	0	0	0	2	0	0	0	2	4	0
<b>Grand Total</b>	0	0	3	11	3	0	2	0	1	2	0	0	0	0	0	8	0	0	1	8	13	13
Apprch %	0.0%	0.0%	100.0%			0.0%	100.0%	0.0%			0.0%	0.0%	0.0%			100.0%	0.0%	0.0%				
Total %	0.0%	0.0%	23.1%		23.1%	0.0%	15.4%	0.0%		15.4%	0.0%	0.0%	0.0%		0.0%	61.5%	0.0%	0.0%		61.5%	100.0%	

# ALL TRAFFIC DATA

City of Vallejo  
 All Vehicles on Unshifted  
 Peds & Bikes on Bank 1  
 Heavy Trucks on Bank 2

(916) 771-8700

[orders@atdtraffic.com](mailto:orders@atdtraffic.com)

File Name : 14-7219-008 Sonoma Boulevard (SR 29)-Maritime Academ

Date : 4/8/2014

## Bank 1 Count = Peds & Bikes

AM PEAK HOUR	Sonoma Boulevard (SR 29) Southbound					Sequoia Avenue Westbound					Sonoma Boulevard (SR 29) Northbound					Maritime Academy Drive Eastbound					Total
	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	
Peak Hour Analysis From 07:15 to 08:15																					
Peak Hour For Entire Intersection Begins at 07:15																					
07:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	1
07:45	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	1
Total Volume	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	2
% App Total	0.0%	0.0%	100.0%			0.0%	0.0%	0.0%			0.0%	0.0%	0.0%			100.0%	0.0%	0.0%			
PHF	.000	.000	.250		.250	.000	.000	.000		.000	.000	.000	.000		.000	.500	.000	.000		.500	.750

PM PEAK HOUR	Sonoma Boulevard (SR 29) Southbound					Sequoia Avenue Westbound					Sonoma Boulevard (SR 29) Northbound					Maritime Academy Drive Eastbound					Total
	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	
Peak Hour Analysis From 16:30 to 17:30																					
Peak Hour For Entire Intersection Begins at 16:30																					
16:30	0	0	0	4	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	1
16:45	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
17:00	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0
17:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Volume	0	0	0	6	0	0	1	0	0	1	0	0	0	0	0	1	0	0	0	0	1
% App Total	0.0%	0.0%	0.0%			0.0%	100.0%	0.0%			0.0%	0.0%	0.0%			100.0%	0.0%	0.0%			
PHF	.000	.000	.000		.000	.000	.250	.000		.250	.000	.000	.000		.000	.250	.000	.000		.250	.500

# ALL TRAFFIC DATA

City of Vallejo  
 All Vehicles on Unshifted  
 Peds & Bikes on Bank 1  
 Heavy Trucks on Bank 2

(916) 771-8700

[orders@atdtraffic.com](mailto:orders@atdtraffic.com)

File Name : 14-7219-009 Third Street-Lemon Street.ppd

Date : 4/8/2014

## Unshifted Count = All Vehicles

START TIME	Third Street Southbound					Lemon Street Westbound					Third Street Northbound					Lemon Street Eastbound					Total	Uturm Total
	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL		
07:00	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	1	0
07:15	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	2	0	0	2	3	0
07:30	2	0	0	0	2	0	1	1	0	2	0	0	0	0	0	0	1	0	0	1	5	0
07:45	2	0	0	0	2	0	3	2	1	6	0	0	0	0	0	0	1	0	0	1	9	1
<b>Total</b>	5	0	0	0	5	0	5	3	1	9	0	0	0	0	0	0	4	0	0	4	18	1
08:00	1	0	0	0	1	0	1	1	0	2	0	0	0	0	0	0	2	0	0	2	5	0
08:15	1	0	0	0	1	0	1	1	2	4	0	0	0	0	0	0	1	0	0	1	6	2
08:30	1	0	1	0	2	0	3	1	0	4	0	0	0	0	0	0	1	0	0	1	7	0
08:45	0	0	0	0	0	0	0	1	1	2	0	0	0	0	0	0	3	0	0	3	5	1
<b>Total</b>	3	0	1	0	4	0	5	4	3	12	0	0	0	0	0	0	7	0	0	7	23	3
16:00	4	0	0	0	4	0	1	3	0	4	0	0	0	0	0	0	1	0	0	1	9	0
16:15	1	0	0	0	1	0	1	1	0	2	0	0	0	0	0	0	2	0	0	2	5	0
16:30	1	0	0	0	1	0	1	3	0	4	0	0	1	0	1	0	1	0	0	1	7	0
16:45	1	0	0	0	1	0	1	2	0	3	0	0	0	0	0	0	2	0	0	2	6	0
<b>Total</b>	7	0	0	0	7	0	4	9	0	13	0	0	1	0	1	0	6	0	0	6	27	0
17:00	0	0	0	0	0	1	1	1	0	3	0	0	0	0	0	0	3	0	0	3	6	0
17:15	2	0	0	0	2	0	2	5	0	7	0	0	0	0	0	0	1	0	0	1	10	0
17:30	4	0	0	0	4	0	1	3	0	4	0	0	0	0	0	0	2	0	0	2	10	0
17:45	2	0	0	0	2	0	1	0	0	1	0	0	0	0	0	1	0	0	0	1	4	0
<b>Total</b>	8	0	0	0	8	1	5	9	0	15	0	0	0	0	0	1	6	0	0	7	30	0
<b>Grand Total</b>	23	0	1	0	24	1	19	25	4	49	0	0	1	0	1	1	23	0	0	24	98	4
Apprch %	95.8%	0.0%	4.2%	0.0%		2.0%	38.8%	51.0%	8.2%		0.0%	0.0%	100.0%	0.0%		4.2%	95.8%	0.0%	0.0%			
Total %	23.5%	0.0%	1.0%	0.0%	24.5%	1.0%	19.4%	25.5%	4.1%	50.0%	0.0%	0.0%	1.0%	0.0%	1.0%	1.0%	23.5%	0.0%	0.0%	24.5%	100.0%	

# ALL TRAFFIC DATA

(916) 771-8700

[orders@atdtraffic.com](mailto:orders@atdtraffic.com)

File Name : 14-7219-009 Third Street-Lemon Street.ppd

Date : 4/8/2014

City of Vallejo  
 All Vehicles on Unshifted  
 Peds & Bikes on Bank 1  
 Heavy Trucks on Bank 2

## Unshifted Count = All Vehicles

AM PEAK HOUR	Third Street Southbound					Lemon Street Westbound					Third Street Northbound					Lemon Street Eastbound					Total
	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	
Peak Hour Analysis From 07:45 to 08:45																					
Peak Hour For Entire Intersection Begins at 07:45																					
07:45	2	0	0	0	2	0	3	2	1	6	0	0	0	0	0	0	1	0	0	1	9
08:00	1	0	0	0	1	0	1	1	0	2	0	0	0	0	0	0	2	0	0	2	5
08:15	1	0	0	0	1	0	1	1	2	4	0	0	0	0	0	0	1	0	0	1	6
08:30	1	0	1	0	2	0	3	1	0	4	0	0	0	0	0	0	1	0	0	1	7
Total Volume	5	0	1	0	6	0	8	5	3	16	0	0	0	0	0	0	5	0	0	5	27
% App Total	83.3%	0.0%	16.7%	0.0%		0.0%	50.0%	31.3%	18.8%		0.0%	0.0%	0.0%	0.0%		0.0%	100.0%	0.0%	0.0%		
PHF	.625	.000	.250	.000	.750	.000	.667	.625	.375	.667	.000	.000	.000	.000	.000	.000	.625	.000	.000	.625	.750

PM PEAK HOUR	Third Street Southbound					Lemon Street Westbound					Third Street Northbound					Lemon Street Eastbound					Total
	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	
Peak Hour Analysis From 16:45 to 17:45																					
Peak Hour For Entire Intersection Begins at 16:45																					
16:45	1	0	0	0	1	0	1	2	0	3	0	0	0	0	0	0	2	0	0	2	6
17:00	0	0	0	0	0	1	1	1	0	3	0	0	0	0	0	0	3	0	0	3	6
17:15	2	0	0	0	2	0	2	5	0	7	0	0	0	0	0	0	1	0	0	1	10
17:30	4	0	0	0	4	0	1	3	0	4	0	0	0	0	0	0	2	0	0	2	10
Total Volume	7	0	0	0	7	1	5	11	0	17	0	0	0	0	0	0	8	0	0	8	32
% App Total	100.0%	0.0%	0.0%	0.0%		5.9%	29.4%	64.7%	0.0%		0.0%	0.0%	0.0%	0.0%		0.0%	100.0%	0.0%	0.0%		
PHF	.438	.000	.000	.000	.438	.250	.625	.550	.000	.607	.000	.000	.000	.000	.000	.000	.667	.000	.000	.667	.800



# ALL TRAFFIC DATA

(916) 771-8700

[orders@atdtraffic.com](mailto:orders@atdtraffic.com)

File Name : 14-7219-009 Third Street-Lemon Street.ppd

Date : 4/8/2014

City of Vallejo  
 All Vehicles on Unshifted  
 Peds & Bikes on Bank 1  
 Heavy Trucks on Bank 2

## Bank 2 Count = Heavy Trucks

AM PEAK HOUR	Third Street Southbound					Lemon Street Westbound					Third Street Northbound					Lemon Street Eastbound					Total	
	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL		
Peak Hour Analysis From 07:45 to 08:45																						
Peak Hour For Entire Intersection Begins at 07:45																						
07:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Volume	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% App Total	0.0%	0.0%	0.0%			0.0%	0.0%	0.0%			0.0%	0.0%	0.0%			0.0%	0.0%	0.0%				
PHF	.000	.000	.000		.000	.000	.000	.000		.000	.000	.000	.000		.000	.000	.000	.000		.000	.000	.000

PM PEAK HOUR	Third Street Southbound					Lemon Street Westbound					Third Street Northbound					Lemon Street Eastbound					Total	
	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL		
Peak Hour Analysis From 16:45 to 17:45																						
Peak Hour For Entire Intersection Begins at 16:45																						
16:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
17:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
17:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
17:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Volume	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% App Total	0.0%	0.0%	0.0%			0.0%	0.0%	0.0%			0.0%	0.0%	0.0%			0.0%	0.0%	0.0%				
PHF	.000	.000	.000		.000	.000	.000	.000		.000	.000	.000	.000		.000	.000	.000	.000		.000	.000	.000

# ALL TRAFFIC DATA

City of Vallejo  
 All Vehicles on Unshifted  
 Peds & Bikes on Bank 1  
 Heavy Trucks on Bank 2

(916) 771-8700

[orders@atdtraffic.com](mailto:orders@atdtraffic.com)

File Name : 14-7219-009 Third Street-Lemon Street.ppd

Date : 4/8/2014

## Bank 1 Count = Peds & Bikes

START TIME	Third Street Southbound					Lemon Street Westbound					Third Street Northbound					Lemon Street Eastbound					Total	Ped Total					
	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL							
07:00	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1
07:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:30	0	0	0	1	0	0	0	0	0	0	1	0	0	2	1	0	0	0	0	0	0	0	0	0	0	1	3
07:45	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	0	1	0	0	1	0	1	1	1
Total	0	0	0	1	0	0	0	0	0	0	1	0	0	4	1	0	0	1	0	1	0	0	1	0	1	2	5
08:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
16:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
16:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	0	0	1	0	1	1	0
16:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
16:45	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
Total	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	0	0	1	0	1	1	1
17:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
17:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
17:30	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	1	0
17:45	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
Total	0	0	0	1	0	0	0	0	0	0	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	1	1
Grand Total	0	0	0	3	0	0	0	0	0	0	2	0	0	4	2	0	0	2	0	2	0	0	2	0	2	4	7
Apprch %	0.0%	0.0%	0.0%			0.0%	0.0%	0.0%			100.0%	0.0%	0.0%			0.0%	0.0%	100.0%			0.0%	0.0%	100.0%				
Total %	0.0%	0.0%	0.0%		0.0%	0.0%	0.0%	0.0%		0.0%	50.0%	0.0%	0.0%		50.0%	0.0%	0.0%	50.0%		50.0%	0.0%	0.0%	50.0%		100.0%		



# ALL TRAFFIC DATA

City of Vallejo  
 All Vehicles on Unshifted  
 Peds & Bikes on Bank 1  
 Heavy Trucks on Bank 2

(916) 771-8700

[orders@atdtraffic.com](mailto:orders@atdtraffic.com)

File Name : 14-7219-009 Third Street-Lemon Street.ppd

Date : 4/8/2014

## Bank 1 Count = Peds & Bikes

AM PEAK HOUR	Third Street Southbound					Lemon Street Westbound					Third Street Northbound					Lemon Street Eastbound					Total
	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	
Peak Hour Analysis From 07:45 to 08:45																					
Peak Hour For Entire Intersection Begins at 07:45																					
07:45	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	0	1	1
08:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Volume	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	0	1	1
% App Total	0.0%	0.0%	0.0%			0.0%	0.0%	0.0%			0.0%	0.0%	0.0%			0.0%	0.0%	100.0%			
PHF	.000	.000	.000		.000	.000	.000	.000		.000	.000	.000	.000		.000	.000	.000	.250		.250	.250

PM PEAK HOUR	Third Street Southbound					Lemon Street Westbound					Third Street Northbound					Lemon Street Eastbound					Total
	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	
Peak Hour Analysis From 16:45 to 17:45																					
Peak Hour For Entire Intersection Begins at 16:45																					
16:45	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
17:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
17:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
17:30	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	0	0	0	0	0	1
Total Volume	0	0	0	1	0	0	0	0	0	0	1	0	0	0	1	0	0	0	0	0	1
% App Total	0.0%	0.0%	0.0%			0.0%	0.0%	0.0%			100.0%	0.0%	0.0%			0.0%	0.0%	0.0%			
PHF	.000	.000	.000		.000	.000	.000	.000		.000	.250	.000	.000		.250	.000	.000	.000		.000	.250

# ALL TRAFFIC DATA

City of Vallejo  
 All Vehicles on Unshifted  
 Peds & Bikes on Bank 1  
 Heavy Trucks on Bank 2

(916) 771-8700

[orders@atdtraffic.com](mailto:orders@atdtraffic.com)

File Name : 14-7219-010 Porter Street-Lemon Street.ppd

Date : 4/8/2014

## Unshifted Count = All Vehicles

START TIME	Porter Street Southbound					Lemon Street Westbound					Porter Street Northbound					Lemon Street Eastbound					Total	Utum Total
	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL		
07:00	0	0	0	0	0	1	1	1	0	3	0	0	1	0	1	0	0	0	0	0	4	0
07:15	0	0	0	0	0	0	0	0	0	0	0	0	4	0	4	0	3	0	0	3	7	0
07:30	2	0	0	0	2	2	4	0	0	6	0	0	4	0	4	0	2	0	0	2	14	0
07:45	1	0	0	0	1	0	4	2	0	6	0	0	1	0	1	0	4	0	0	4	12	0
<b>Total</b>	3	0	0	0	3	3	9	3	0	15	0	0	10	0	10	0	9	0	0	9	37	0
08:00	2	0	0	0	2	3	2	1	0	6	0	1	2	0	3	1	2	0	0	3	14	0
08:15	0	0	0	0	0	1	4	1	1	7	1	1	1	0	3	0	3	0	0	3	13	1
08:30	0	0	0	0	0	0	5	2	0	7	0	2	4	0	6	1	1	0	0	2	15	0
08:45	1	0	0	0	1	1	1	1	0	3	0	0	2	0	2	1	4	0	0	5	11	0
<b>Total</b>	3	0	0	0	3	5	12	5	1	23	1	4	9	0	14	3	10	0	0	13	53	1
16:00	2	0	0	0	2	3	3	3	0	9	1	0	3	0	4	1	6	0	0	7	22	0
16:15	1	0	0	0	1	4	2	1	0	7	0	0	0	0	0	0	3	2	0	5	13	0
16:30	0	0	0	0	0	0	3	1	0	4	1	0	5	0	6	0	3	0	0	3	13	0
16:45	0	0	0	0	0	1	4	1	0	6	0	0	1	0	1	0	5	0	0	5	12	0
<b>Total</b>	3	0	0	0	3	8	12	6	0	26	2	0	9	0	11	1	17	2	0	20	60	0
17:00	0	0	0	0	0	3	4	2	0	9	0	0	3	0	3	0	3	0	0	3	15	0
17:15	0	1	0	0	1	2	8	3	0	13	0	0	3	0	3	0	3	0	0	3	20	0
17:30	3	0	0	0	3	6	3	2	0	11	0	0	2	0	2	0	6	0	0	6	22	0
17:45	2	0	0	0	2	1	1	1	0	3	0	0	2	0	2	0	2	0	0	2	9	0
<b>Total</b>	5	1	0	0	6	12	16	8	0	36	0	0	10	0	10	0	14	0	0	14	66	0
<b>Grand Total</b>	14	1	0	0	15	28	49	22	1	100	3	4	38	0	45	4	50	2	0	56	216	1
<b>Apprch %</b>	93.3%	6.7%	0.0%	0.0%		28.0%	49.0%	22.0%	1.0%		6.7%	8.9%	84.4%	0.0%		7.1%	89.3%	3.6%	0.0%			
<b>Total %</b>	6.5%	0.5%	0.0%	0.0%	6.9%	13.0%	22.7%	10.2%	0.5%	46.3%	1.4%	1.9%	17.6%	0.0%	20.8%	1.9%	23.1%	0.9%	0.0%	25.9%	100.0%	

# ALL TRAFFIC DATA

(916) 771-8700

[orders@atdtraffic.com](mailto:orders@atdtraffic.com)

File Name : 14-7219-010 Porter Street-Lemon Street.ppd

Date : 4/8/2014

City of Vallejo  
All Vehicles on Unshifted  
Peds & Bikes on Bank 1  
Heavy Trucks on Bank 2

## Unshifted Count = All Vehicles

AM PEAK HOUR	Porter Street Southbound					Lemon Street Westbound					Porter Street Northbound					Lemon Street Eastbound					Total
	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	
Peak Hour Analysis From 07:45 to 08:45																					
Peak Hour For Entire Intersection Begins at 07:45																					
07:45	1	0	0	0	1	0	4	2	0	6	0	0	1	0	1	0	4	0	0	4	12
08:00	2	0	0	0	2	3	2	1	0	6	0	1	2	0	3	1	2	0	0	3	14
08:15	0	0	0	0	0	1	4	1	1	7	1	1	1	0	3	0	3	0	0	3	13
08:30	0	0	0	0	0	0	5	2	0	7	0	2	4	0	6	1	1	0	0	2	15
Total Volume	3	0	0	0	3	4	15	6	1	26	1	4	8	0	13	2	10	0	0	12	54
% App Total	100.0%	0.0%	0.0%	0.0%		15.4%	57.7%	23.1%	3.8%		7.7%	30.8%	61.5%	0.0%		16.7%	83.3%	0.0%	0.0%		
PHF	.375	.000	.000	.000	.375	.333	.750	.750	.250	.929	.250	.500	.500	.000	.542	.500	.625	.000	.000	.750	.900

PM PEAK HOUR	Porter Street Southbound					Lemon Street Westbound					Porter Street Northbound					Lemon Street Eastbound					Total
	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	
Peak Hour Analysis From 16:45 to 17:45																					
Peak Hour For Entire Intersection Begins at 16:45																					
16:45	0	0	0	0	0	1	4	1	0	6	0	0	1	0	1	0	5	0	0	5	12
17:00	0	0	0	0	0	3	4	2	0	9	0	0	3	0	3	0	3	0	0	3	15
17:15	0	1	0	0	1	2	8	3	0	13	0	0	3	0	3	0	3	0	0	3	20
17:30	3	0	0	0	3	6	3	2	0	11	0	0	2	0	2	0	6	0	0	6	22
Total Volume	3	1	0	0	4	12	19	8	0	39	0	0	9	0	9	0	17	0	0	17	69
% App Total	75.0%	25.0%	0.0%	0.0%		30.8%	48.7%	20.5%	0.0%		0.0%	0.0%	100.0%	0.0%		0.0%	100.0%	0.0%	0.0%		
PHF	.250	.250	.000	.000	.333	.500	.594	.667	.000	.750	.000	.000	.750	.000	.750	.000	.708	.000	.000	.708	.784

# ALL TRAFFIC DATA

(916) 771-8700

[orders@atdtraffic.com](mailto:orders@atdtraffic.com)

File Name : 14-7219-010 Porter Street-Lemon Street.ppd

Date : 4/8/2014

City of Vallejo  
 All Vehicles on Unshifted  
 Peds & Bikes on Bank 1  
 Heavy Trucks on Bank 2

## Bank 2 Count = Heavy Trucks

START TIME	Porter Street Southbound					Lemon Street Westbound					Porter Street Northbound					Lemon Street Eastbound					Total	Ped Total				
	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL						
07:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
<b>Total</b>	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
<b>Total</b>	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
16:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
16:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
16:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
16:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
<b>Total</b>	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
17:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
17:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
17:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
17:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
<b>Total</b>	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
<b>Grand Total</b>	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
<b>Apprch %</b>	0.0%	0.0%	0.0%			0.0%	0.0%	0.0%			0.0%	0.0%	0.0%			0.0%	0.0%	0.0%			0.0%	0.0%	0.0%			
<b>Total %</b>	0.0%	0.0%	0.0%		0.0%	0.0%	0.0%	0.0%		0.0%	0.0%	0.0%		0.0%	0.0%	0.0%	0.0%	0.0%		0.0%	0.0%	0.0%		0.0%	0.0%	0.0%

# ALL TRAFFIC DATA

(916) 771-8700

[orders@atdtraffic.com](mailto:orders@atdtraffic.com)

File Name : 14-7219-010 Porter Street-Lemon Street.ppd

Date : 4/8/2014

City of Vallejo  
 All Vehicles on Unshifted  
 Peds & Bikes on Bank 1  
 Heavy Trucks on Bank 2

## Bank 2 Count = Heavy Trucks

AM PEAK HOUR	Porter Street Southbound					Lemon Street Westbound					Porter Street Northbound					Lemon Street Eastbound					Total	
	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL		
Peak Hour Analysis From 07:45 to 08:45																						
Peak Hour For Entire Intersection Begins at 07:45																						
07:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Volume	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% App Total	0.0%	0.0%	0.0%			0.0%	0.0%	0.0%			0.0%	0.0%	0.0%			0.0%	0.0%	0.0%				
PHF	.000	.000	.000		.000	.000	.000	.000		.000	.000	.000	.000		.000	.000	.000	.000		.000	.000	.000

PM PEAK HOUR	Porter Street Southbound					Lemon Street Westbound					Porter Street Northbound					Lemon Street Eastbound					Total	
	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL		
Peak Hour Analysis From 16:45 to 17:45																						
Peak Hour For Entire Intersection Begins at 16:45																						
16:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
17:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
17:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
17:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Volume	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% App Total	0.0%	0.0%	0.0%			0.0%	0.0%	0.0%			0.0%	0.0%	0.0%			0.0%	0.0%	0.0%				
PHF	.000	.000	.000		.000	.000	.000	.000		.000	.000	.000	.000		.000	.000	.000	.000		.000	.000	.000

# ALL TRAFFIC DATA

City of Vallejo  
 All Vehicles on Unshifted  
 Peds & Bikes on Bank 1  
 Heavy Trucks on Bank 2

(916) 771-8700

[orders@atdtraffic.com](mailto:orders@atdtraffic.com)

File Name : 14-7219-010 Porter Street-Lemon Street.ppd

Date : 4/8/2014

## Bank 1 Count = Peds & Bikes

START TIME	Porter Street Southbound					Lemon Street Westbound					Porter Street Northbound					Lemon Street Eastbound					Total	Ped Total				
	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL						
07:00	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
07:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:30	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	1	0	2
07:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
<b>Total</b>	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	1	0	3
08:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	2	0	2
08:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
<b>Total</b>	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	2	0	2
16:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
16:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
16:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
16:45	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	1
<b>Total</b>	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	1
17:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
17:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
17:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
17:45	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	2
<b>Total</b>	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	2
<b>Grand Total</b>	0	0	0	2	0	0	0	0	0	0	0	0	0	3	0	0	0	0	3	0	0	0	0	3	0	8
Apprch %	0.0%	0.0%	0.0%			0.0%	0.0%	0.0%			0.0%	0.0%	0.0%			0.0%	0.0%	0.0%			0.0%	0.0%	0.0%			
Total %	0.0%	0.0%	0.0%		0.0%	0.0%	0.0%	0.0%		0.0%	0.0%	0.0%	0.0%		0.0%	0.0%	0.0%	0.0%		0.0%	0.0%	0.0%	0.0%		0.0%	0.0%

# ALL TRAFFIC DATA

City of Vallejo  
 All Vehicles on Unshifted  
 Peds & Bikes on Bank 1  
 Heavy Trucks on Bank 2

(916) 771-8700

[orders@atdtraffic.com](mailto:orders@atdtraffic.com)

File Name : 14-7219-010 Porter Street-Lemon Street.ppd

Date : 4/8/2014

## Bank 1 Count = Peds & Bikes

AM PEAK HOUR	Porter Street Southbound					Lemon Street Westbound					Porter Street Northbound					Lemon Street Eastbound					Total	
	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL		
Peak Hour Analysis From 07:45 to 08:45																						
Peak Hour For Entire Intersection Begins at 07:45																						
07:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0
Total Volume	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0
% App Total	0.0%	0.0%	0.0%			0.0%	0.0%	0.0%			0.0%	0.0%	0.0%			0.0%	0.0%	0.0%				
PHF	.000	.000	.000		.000	.000	.000	.000		.000	.000	.000	.000		.000	.000	.000	.000		.000	.000	.000

PM PEAK HOUR	Porter Street Southbound					Lemon Street Westbound					Porter Street Northbound					Lemon Street Eastbound					Total	
	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL		
Peak Hour Analysis From 16:45 to 17:45																						
Peak Hour For Entire Intersection Begins at 16:45																						
16:45	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0
17:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
17:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
17:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Volume	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0
% App Total	0.0%	0.0%	0.0%			0.0%	0.0%	0.0%			0.0%	0.0%	0.0%			0.0%	0.0%	0.0%				
PHF	.000	.000	.000		.000	.000	.000	.000		.000	.000	.000	.000		.000	.000	.000	.000		.000	.000	.000

# ALL TRAFFIC DATA

City of Vallejo  
 All Vehicles on Unshifted  
 Peds & Bikes on Bank 1  
 Heavy Trucks on Bank 2

(916) 771-8700

[orders@atdtraffic.com](mailto:orders@atdtraffic.com)

File Name : 14-7219-011 Grant Street-Lemon Street.ppd

Date : 4/8/2014

## Unshifted Count = All Vehicles

START TIME	Grant Street Southbound					Lemon Street Westbound					Grant Street Northbound					Lemon Street Eastbound					Total	Uturm Total
	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL		
07:00	0	0	2	0	2	1	17	2	0	20	0	0	0	0	0	1	16	0	0	17	39	0
07:15	1	0	0	0	1	0	16	1	0	17	1	0	2	0	3	0	27	0	0	27	48	0
07:30	3	0	0	0	3	1	11	2	0	14	0	0	1	0	1	0	26	0	0	26	44	0
07:45	1	3	0	0	4	1	25	7	0	33	0	0	2	0	2	0	21	1	0	22	61	0
<b>Total</b>	5	3	2	0	10	3	69	12	0	84	1	0	5	0	6	1	90	1	0	92	192	0
08:00	2	1	1	0	4	1	21	0	0	22	0	1	0	0	1	1	14	0	1	16	43	1
08:15	0	0	1	0	1	3	22	0	0	25	2	0	0	0	2	1	19	0	0	20	48	0
08:30	2	1	2	0	5	1	29	3	0	33	0	1	0	0	1	2	21	0	0	23	62	0
08:45	3	1	1	0	5	1	16	1	0	18	1	1	4	0	6	1	32	1	1	35	64	1
<b>Total</b>	7	3	5	0	15	6	88	4	0	98	3	3	4	0	10	5	86	1	2	94	217	2
16:00	2	1	0	0	3	2	24	4	0	30	0	0	3	0	3	4	37	1	0	42	78	0
16:15	4	0	0	0	4	3	29	1	0	33	0	0	3	0	3	0	29	0	0	29	69	0
16:30	2	0	0	0	2	3	24	1	0	28	0	0	1	0	1	2	40	0	0	42	73	0
16:45	0	1	0	0	1	2	22	3	0	27	0	0	1	0	1	0	37	1	0	38	67	0
<b>Total</b>	8	2	0	0	10	10	99	9	0	118	0	0	8	0	8	6	143	2	0	151	287	0
17:00	1	0	1	0	2	4	18	1	0	23	2	0	2	0	4	1	55	1	0	57	86	0
17:15	1	1	3	0	5	1	28	2	0	31	0	1	0	0	1	0	40	1	0	41	78	0
17:30	1	0	0	0	1	1	26	0	0	27	0	1	5	0	6	0	33	2	0	35	69	0
17:45	0	1	1	0	2	0	24	2	0	26	1	0	1	0	2	1	31	1	0	33	63	0
<b>Total</b>	3	2	5	0	10	6	96	5	0	107	3	2	8	0	13	2	159	5	0	166	296	0
<b>Grand Total</b>	23	10	12	0	45	25	352	30	0	407	7	5	25	0	37	14	478	9	2	503	992	2
Apprch %	51.1%	22.2%	26.7%	0.0%		6.1%	86.5%	7.4%	0.0%		18.9%	13.5%	67.6%	0.0%		2.8%	95.0%	1.8%	0.4%			
Total %	2.3%	1.0%	1.2%	0.0%	4.5%	2.5%	35.5%	3.0%	0.0%	41.0%	0.7%	0.5%	2.5%	0.0%	3.7%	1.4%	48.2%	0.9%	0.2%	50.7%	100.0%	



# ALL TRAFFIC DATA

City of Vallejo  
 All Vehicles on Unshifted  
 Peds & Bikes on Bank 1  
 Heavy Trucks on Bank 2

(916) 771-8700

[orders@atdtraffic.com](mailto:orders@atdtraffic.com)

File Name : 14-7219-011 Grant Street-Lemon Street.ppd

Date : 4/8/2014

## Unshifted Count = All Vehicles

AM PEAK HOUR	Grant Street Southbound					Lemon Street Westbound					Grant Street Northbound					Lemon Street Eastbound					Total
	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	
Peak Hour Analysis From 08:00 to 09:00																					
Peak Hour For Entire Intersection Begins at 08:00																					
08:00	2	1	1	0	4	1	21	0	0	22	0	1	0	0	1	1	14	0	1	16	43
08:15	0	0	1	0	1	3	22	0	0	25	2	0	0	0	2	1	19	0	0	20	48
08:30	2	1	2	0	5	1	29	3	0	33	0	1	0	0	1	2	21	0	0	23	62
08:45	3	1	1	0	5	1	16	1	0	18	1	1	4	0	6	1	32	1	1	35	64
Total Volume	7	3	5	0	15	6	88	4	0	98	3	3	4	0	10	5	86	1	2	94	217
% App Total	46.7%	20.0%	33.3%	0.0%		6.1%	89.8%	4.1%	0.0%		30.0%	30.0%	40.0%	0.0%		5.3%	91.5%	1.1%	2.1%		
PHF	.583	.750	.625	.000	.750	.500	.759	.333	.000	.742	.375	.750	.250	.000	.417	.625	.672	.250	.500	.671	.848

PM PEAK HOUR	Grant Street Southbound					Lemon Street Westbound					Grant Street Northbound					Lemon Street Eastbound					Total
	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	
Peak Hour Analysis From 16:30 to 17:30																					
Peak Hour For Entire Intersection Begins at 16:30																					
16:30	2	0	0	0	2	3	24	1	0	28	0	0	1	0	1	2	40	0	0	42	73
16:45	0	1	0	0	1	2	22	3	0	27	0	0	1	0	1	0	37	1	0	38	67
17:00	1	0	1	0	2	4	18	1	0	23	2	0	2	0	4	1	55	1	0	57	86
17:15	1	1	3	0	5	1	28	2	0	31	0	1	0	0	1	0	40	1	0	41	78
Total Volume	4	2	4	0	10	10	92	7	0	109	2	1	4	0	7	3	172	3	0	178	304
% App Total	40.0%	20.0%	40.0%	0.0%		9.2%	84.4%	6.4%	0.0%		28.6%	14.3%	57.1%	0.0%		1.7%	96.6%	1.7%	0.0%		
PHF	.500	.500	.333	.000	.500	.625	.821	.583	.000	.879	.250	.250	.500	.000	.438	.375	.782	.750	.000	.781	.884

# ALL TRAFFIC DATA

City of Vallejo  
 All Vehicles on Unshifted  
 Peds & Bikes on Bank 1  
 Heavy Trucks on Bank 2

(916) 771-8700

[orders@atdtraffic.com](mailto:orders@atdtraffic.com)

File Name : 14-7219-011 Grant Street-Lemon Street.ppd

Date : 4/8/2014

## Bank 2 Count = Heavy Trucks

START TIME	Grant Street Southbound					Lemon Street Westbound					Grant Street Northbound					Lemon Street Eastbound					Total	Ped Total
	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL		
07:00	0	0	0	0	0	0	2	0	0	2	0	0	0	0	0	0	0	0	0	0	2	0
07:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	1	0
07:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	1	0
07:45	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	1	0
<b>Total</b>	0	0	0	0	0	0	3	0	0	3	0	0	0	0	0	0	2	0	0	2	5	0
08:00	0	0	0	0	0	0	2	0	0	2	0	0	0	0	0	0	1	0	0	1	3	0
08:15	0	0	0	0	0	1	2	0	0	3	0	0	0	0	0	0	2	0	0	2	5	0
08:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	1	0
08:45	0	0	0	0	0	0	2	0	0	2	0	0	1	0	1	0	0	0	0	0	3	0
<b>Total</b>	0	0	0	0	0	1	6	0	0	7	0	0	1	0	1	0	4	0	0	4	12	0
16:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
16:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
16:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	1	0
16:45	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	1	0
<b>Total</b>	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	1	0	0	1	2	0
17:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	1	0
17:15	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	1	0
17:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
17:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
<b>Total</b>	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	0	1	0	0	1	2	0
<b>Grand Total</b>	0	0	0	0	0	1	10	1	0	12	0	0	1	0	1	0	8	0	0	8	21	0
Apprch %	0.0%	0.0%	0.0%			8.3%	83.3%	8.3%			0.0%	0.0%	100.0%			0.0%	100.0%	0.0%				
Total %	0.0%	0.0%	0.0%		0.0%	4.8%	47.6%	4.8%		57.1%	0.0%	0.0%	4.8%		4.8%	0.0%	38.1%	0.0%		38.1%	100.0%	

# ALL TRAFFIC DATA

(916) 771-8700

[orders@atdtraffic.com](mailto:orders@atdtraffic.com)

File Name : 14-7219-011 Grant Street-Lemon Street.ppd

Date : 4/8/2014

City of Vallejo  
All Vehicles on Unshifted  
Peds & Bikes on Bank 1  
Heavy Trucks on Bank 2

## Bank 2 Count = Heavy Trucks

AM PEAK HOUR	Grant Street Southbound					Lemon Street Westbound					Grant Street Northbound					Lemon Street Eastbound					Total
	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	
Peak Hour Analysis From 08:00 to 09:00																					
Peak Hour For Entire Intersection Begins at 08:00																					
08:00	0	0	0	0	0	0	2	0	0	2	0	0	0	0	0	0	1	0	0	1	3
08:15	0	0	0	0	0	1	2	0	0	3	0	0	0	0	0	0	2	0	0	2	5
08:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	1
08:45	0	0	0	0	0	0	2	0	0	2	0	0	1	0	1	0	0	0	0	0	3
Total Volume	0	0	0	0	0	1	6	0	0	7	0	0	1	0	1	0	4	0	0	4	12
% App Total	0.0%	0.0%	0.0%			14.3%	85.7%	0.0%	0.0%		0.0%	0.0%	100.0%			0.0%	100.0%	0.0%			
PHF	.000	.000	.000		.000	.250	.750	.000		.583	.000	.000	.250		.250	.000	.500	.000		.500	.600

PM PEAK HOUR	Grant Street Southbound					Lemon Street Westbound					Grant Street Northbound					Lemon Street Eastbound					Total
	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	
Peak Hour Analysis From 16:30 to 17:30																					
Peak Hour For Entire Intersection Begins at 16:30																					
16:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	1
16:45	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	1
17:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	1
17:15	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	1
Total Volume	0	0	0	0	0	0	1	1	0	2	0	0	0	0	0	0	2	0	0	2	4
% App Total	0.0%	0.0%	0.0%			0.0%	50.0%	50.0%	0.0%		0.0%	0.0%	0.0%			0.0%	100.0%	0.0%			
PHF	.000	.000	.000		.000	.000	.250	.250		.500	.000	.000	.000		.000	.000	.500	.000		.500	1.000

# ALL TRAFFIC DATA

City of Vallejo  
 All Vehicles on Unshifted  
 Peds & Bikes on Bank 1  
 Heavy Trucks on Bank 2

(916) 771-8700

[orders@atdtraffic.com](mailto:orders@atdtraffic.com)

File Name : 14-7219-011 Grant Street-Lemon Street.ppd

Date : 4/8/2014

## Bank 1 Count = Peds & Bikes

START TIME	Grant Street Southbound					Lemon Street Westbound					Grant Street Northbound					Lemon Street Eastbound					Total	Ped Total
	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL		
07:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	1	0
07:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
<b>Total</b>	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	1	0
08:00	0	1	0	0	1	0	0	0	1	0	0	0	0	1	0	0	0	0	0	0	1	2
08:15	0	0	0	1	0	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	1	1
08:30	0	0	0	1	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	2
08:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
<b>Total</b>	0	1	0	2	1	0	0	1	1	1	0	0	0	2	0	0	0	0	0	0	2	5
16:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
16:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
16:30	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
16:45	0	0	0	1	0	0	0	0	0	0	0	0	0	1	0	1	0	0	1	1	1	3
<b>Total</b>	0	0	0	2	0	0	0	0	0	0	0	0	0	1	0	1	0	0	1	1	1	4
17:00	0	0	0	3	0	0	0	0	4	0	0	0	0	2	0	0	0	0	1	0	0	10
17:15	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	1	0	0	2
17:30	1	0	0	1	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	1	2
17:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
<b>Total</b>	1	0	0	4	1	0	0	0	5	0	0	0	0	3	0	0	0	0	2	0	1	14
<b>Grand Total</b>	1	1	0	8	2	0	0	1	6	1	0	0	0	6	0	1	1	0	3	2	5	23
Apprch %	50.0%	50.0%	0.0%			0.0%	0.0%	100.0%			0.0%	0.0%	0.0%			50.0%	50.0%	0.0%				
Total %	20.0%	20.0%	0.0%		40.0%	0.0%	0.0%	20.0%		20.0%	0.0%	0.0%	0.0%		0.0%	20.0%	20.0%	0.0%		40.0%	100.0%	

# ALL TRAFFIC DATA

City of Vallejo  
 All Vehicles on Unshifted  
 Peds & Bikes on Bank 1  
 Heavy Trucks on Bank 2

(916) 771-8700

[orders@atdtraffic.com](mailto:orders@atdtraffic.com)

File Name : 14-7219-011 Grant Street-Lemon Street.ppd

Date : 4/8/2014

## Bank 1 Count = Peds & Bikes

AM PEAK HOUR	Grant Street Southbound					Lemon Street Westbound					Grant Street Northbound					Lemon Street Eastbound					Total	
	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL		
Peak Hour Analysis From 08:00 to 09:00																						
Peak Hour For Entire Intersection Begins at 08:00																						
08:00	0	1	0	0	1	0	0	0	1	0	0	0	0	1	0	0	0	0	0	0	0	1
08:15	0	0	0	1	0	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	1
08:30	0	0	0	1	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0
08:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Volume	0	1	0	2	1	0	0	1	1	1	0	0	0	2	0	0	0	0	0	0	0	2
% App Total	0.0%	100.0%	0.0%			0.0%	0.0%	100.0%			0.0%	0.0%	0.0%			0.0%	0.0%	0.0%				
PHF	.000	.250	.000		.250	.000	.000	.250		.250	.000	.000	.000		.000	.000	.000	.000		.000	.500	

PM PEAK HOUR	Grant Street Southbound					Lemon Street Westbound					Grant Street Northbound					Lemon Street Eastbound					Total	
	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL		
Peak Hour Analysis From 16:30 to 17:30																						
Peak Hour For Entire Intersection Begins at 16:30																						
16:30	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
16:45	0	0	0	1	0	0	0	0	0	0	0	0	0	1	0	1	0	0	1	1	1	1
17:00	0	0	0	3	0	0	0	0	4	0	0	0	0	2	0	0	0	0	1	0	0	0
17:15	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	1	0	0	0
Total Volume	0	0	0	5	0	0	0	0	4	0	0	0	0	4	0	1	0	0	3	1	1	1
% App Total	0.0%	0.0%	0.0%			0.0%	0.0%	0.0%			0.0%	0.0%	0.0%			100.0%	0.0%	0.0%				
PHF	.000	.000	.000		.000	.000	.000	.000		.000	.000	.000	.000		.000	.250	.000	.000		.250	.250	

# ALL TRAFFIC DATA

City of Vallejo  
 All Vehicles on Unshifted  
 Peds & Bikes on Bank 1  
 Heavy Trucks on Bank 2

(916) 771-8700

[orders@atdtraffic.com](mailto:orders@atdtraffic.com)

File Name : 14-7219-012 5th Street-Lincoln Highway-Lemon Street.ppd

Date : 4/8/2014

## Unshifted Count = All Vehicles

START TIME	Lincoln Highway Southbound					Lemon Street Westbound					5th Street Northbound					Lemon Street Eastbound					Total	Utorn Total
	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL		
07:00	4	0	1	0	5	2	19	8	0	29	0	3	1	0	4	1	15	0	0	16	54	0
07:15	5	5	1	0	11	3	17	20	0	40	0	4	2	0	6	2	30	0	0	32	89	0
07:30	3	9	0	0	12	2	14	12	0	28	1	13	12	0	26	3	27	0	0	30	96	0
07:45	3	12	7	0	22	7	25	23	0	55	0	7	4	0	11	4	21	1	0	26	114	0
Total	15	26	9	0	50	14	75	63	0	152	1	27	19	0	47	10	93	1	0	104	353	0
08:00	4	8	2	0	14	2	17	4	0	23	3	3	6	0	12	3	13	0	0	16	65	0
08:15	7	9	3	0	19	4	22	5	0	31	0	6	3	0	9	2	16	1	0	19	78	0
08:30	1	5	6	0	12	4	26	5	0	35	1	8	7	0	16	2	21	1	0	24	87	0
08:45	3	2	3	0	8	3	14	3	0	20	1	8	8	0	17	5	33	1	0	39	84	0
Total	15	24	14	0	53	13	79	17	0	109	5	25	24	0	54	12	83	3	0	98	314	0
16:00	13	17	4	0	34	3	22	8	0	33	2	4	5	0	11	2	38	3	0	43	121	0
16:15	6	7	1	0	14	4	30	0	0	34	2	10	2	0	14	3	34	1	0	38	100	0
16:30	17	5	3	0	25	5	22	10	0	37	3	10	7	0	20	2	39	1	0	42	124	0
16:45	7	10	2	0	19	5	24	10	0	39	0	14	2	0	16	2	33	2	0	37	111	0
Total	43	39	10	0	92	17	98	28	0	143	7	38	16	0	61	9	144	7	0	160	456	0
17:00	16	8	3	0	27	4	21	7	0	32	0	9	5	0	14	3	52	1	0	56	129	0
17:15	9	11	2	0	22	5	29	8	0	42	0	11	4	0	15	2	36	4	0	42	121	0
17:30	7	10	3	0	20	6	24	9	0	39	2	7	8	0	17	4	33	2	0	39	115	0
17:45	5	8	2	0	15	2	22	7	0	31	1	6	9	0	16	1	28	0	0	29	91	0
Total	37	37	10	0	84	17	96	31	0	144	3	33	26	0	62	10	149	7	0	166	456	0
Grand Total	110	126	43	0	279	61	348	139	0	548	16	123	85	0	224	41	469	18	0	528	1579	0
Apprch %	39.4%	45.2%	15.4%	0.0%		11.1%	63.5%	25.4%	0.0%		7.1%	54.9%	37.9%	0.0%		7.8%	88.8%	3.4%	0.0%			
Total %	7.0%	8.0%	2.7%	0.0%	17.7%	3.9%	22.0%	8.8%	0.0%	34.7%	1.0%	7.8%	5.4%	0.0%	14.2%	2.6%	29.7%	1.1%	0.0%	33.4%	100.0%	

# ALL TRAFFIC DATA

City of Vallejo  
 All Vehicles on Unshifted  
 Peds & Bikes on Bank 1  
 Heavy Trucks on Bank 2

(916) 771-8700

[orders@atdtraffic.com](mailto:orders@atdtraffic.com)

File Name : 14-7219-012 5th Street-Lincoln Highway-Lemon Street.ppd

Date : 4/8/2014

## Unshifted Count = All Vehicles

AM PEAK HOUR	Lincoln Highway Southbound					Lemon Street Westbound					5th Street Northbound					Lemon Street Eastbound					Total
	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	
Peak Hour Analysis From 07:15 to 08:15																					
Peak Hour For Entire Intersection Begins at 07:15																					
07:15	5	5	1	0	11	3	17	20	0	40	0	4	2	0	6	2	30	0	0	32	89
07:30	3	9	0	0	12	2	14	12	0	28	1	13	12	0	26	3	27	0	0	30	96
07:45	3	12	7	0	22	7	25	23	0	55	0	7	4	0	11	4	21	1	0	26	114
08:00	4	8	2	0	14	2	17	4	0	23	3	3	6	0	12	3	13	0	0	16	65
Total Volume	15	34	10	0	59	14	73	59	0	146	4	27	24	0	55	12	91	1	0	104	364
% App Total	25.4%	57.6%	16.9%	0.0%		9.6%	50.0%	40.4%	0.0%		7.3%	49.1%	43.6%	0.0%		11.5%	87.5%	1.0%	0.0%		
PHF	.750	.708	.357	.000	.670	.500	.730	.641	.000	.664	.333	.519	.500	.000	.529	.750	.758	.250	.000	.813	.798

PM PEAK HOUR	Lincoln Highway Southbound					Lemon Street Westbound					5th Street Northbound					Lemon Street Eastbound					Total
	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	
Peak Hour Analysis From 16:30 to 17:30																					
Peak Hour For Entire Intersection Begins at 16:30																					
16:30	17	5	3	0	25	5	22	10	0	37	3	10	7	0	20	2	39	1	0	42	124
16:45	7	10	2	0	19	5	24	10	0	39	0	14	2	0	16	2	33	2	0	37	111
17:00	16	8	3	0	27	4	21	7	0	32	0	9	5	0	14	3	52	1	0	56	129
17:15	9	11	2	0	22	5	29	8	0	42	0	11	4	0	15	2	36	4	0	42	121
Total Volume	49	34	10	0	93	19	96	35	0	150	3	44	18	0	65	9	160	8	0	177	485
% App Total	52.7%	36.6%	10.8%	0.0%		12.7%	64.0%	23.3%	0.0%		4.6%	67.7%	27.7%	0.0%		5.1%	90.4%	4.5%	0.0%		
PHF	.721	.773	.833	.000	.861	.950	.828	.875	.000	.893	.250	.786	.643	.000	.813	.750	.769	.500	.000	.790	.940

# ALL TRAFFIC DATA

City of Vallejo  
 All Vehicles on Unshifted  
 Peds & Bikes on Bank 1  
 Heavy Trucks on Bank 2

(916) 771-8700

[orders@atdtraffic.com](mailto:orders@atdtraffic.com)

File Name : 14-7219-012 5th Street-Lincoln Highway-Lemon Street.ppd

Date : 4/8/2014

## Bank 2 Count = Heavy Trucks

START TIME	Lincoln Highway Southbound					Lemon Street Westbound					5th Street Northbound					Lemon Street Eastbound					Total	Ped Total	
	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL			
07:00	1	0	0	0	1	0	2	1	0	3	0	0	0	0	0	0	0	0	0	0	4	0	
07:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	0	
07:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	0	
07:45	0	0	0	0	0	1	1	1	0	3	0	0	0	0	0	0	0	0	0	0	3	0	
<b>Total</b>	1	0	0	0	1	1	3	2	0	6	0	0	0	0	0	0	2	0	0	0	2	9	0
08:00	0	0	1	0	1	0	2	0	0	2	0	0	0	0	0	0	1	0	0	0	1	4	0
08:15	0	1	0	0	1	0	2	0	0	2	0	1	0	0	1	0	2	0	0	0	2	6	0
08:30	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	1	0	0	0	0	1	2	0
08:45	0	0	0	0	0	0	2	0	0	2	0	0	0	0	0	0	0	0	0	0	0	2	0
<b>Total</b>	0	1	1	0	2	0	6	1	0	7	0	1	0	0	1	1	3	0	0	0	4	14	0
16:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
16:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
16:30	0	0	0	0	0	1	0	0	0	1	0	0	0	0	0	0	1	0	0	0	1	2	0
16:45	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	1	0
<b>Total</b>	0	0	0	0	0	1	1	0	0	2	0	0	0	0	0	0	1	0	0	0	1	3	0
17:00	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	0	1	0	0	0	1	2	0
17:15	1	0	0	0	1	0	1	1	0	2	0	0	0	0	0	0	0	0	0	0	0	3	0
17:30	0	0	0	0	0	1	0	0	0	1	0	0	1	0	1	0	0	0	0	0	0	2	0
17:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
<b>Total</b>	1	0	0	0	1	1	1	2	0	4	0	0	1	0	1	0	1	0	0	0	1	7	0
<b>Grand Total</b>	2	1	1	0	4	3	11	5	0	19	0	1	1	0	2	1	7	0	0	8	33	0	
Apprch %	50.0%	25.0%	25.0%			15.8%	57.9%	26.3%			0.0%	50.0%	50.0%			12.5%	87.5%	0.0%					
Total %	6.1%	3.0%	3.0%		12.1%	9.1%	33.3%	15.2%		57.6%	0.0%	3.0%	3.0%		6.1%	3.0%	21.2%	0.0%		24.2%	100.0%		



# ALL TRAFFIC DATA

City of Vallejo  
 All Vehicles on Unshifted  
 Peds & Bikes on Bank 1  
 Heavy Trucks on Bank 2

(916) 771-8700

[orders@atdtraffic.com](mailto:orders@atdtraffic.com)

File Name : 14-7219-012 5th Street-Lincoln Highway-Lemon Street.ppd

Date : 4/8/2014

## Bank 2 Count = Heavy Trucks

AM PEAK HOUR	Lincoln Highway Southbound					Lemon Street Westbound					5th Street Northbound					Lemon Street Eastbound					Total
	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	
Peak Hour Analysis From 07:15 to 08:15																					
Peak Hour For Entire Intersection Begins at 07:15																					
07:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	1
07:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	1
07:45	0	0	0	0	0	1	1	1	0	3	0	0	0	0	0	0	0	0	0	0	3
08:00	0	0	1	0	1	0	2	0	0	2	0	0	0	0	0	0	1	0	0	1	4
Total Volume	0	0	1	0	1	1	3	1	0	5	0	0	0	0	0	0	3	0	0	3	9
% App Total	0.0%	0.0%	100.0%			20.0%	60.0%	20.0%			0.0%	0.0%	0.0%			0.0%	100.0%	0.0%			
PHF	.000	.000	.250		.250	.250	.375	.250		.417	.000	.000	.000		.000	.000	.750	.000		.750	.563

PM PEAK HOUR	Lincoln Highway Southbound					Lemon Street Westbound					5th Street Northbound					Lemon Street Eastbound					Total
	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	
Peak Hour Analysis From 16:30 to 17:30																					
Peak Hour For Entire Intersection Begins at 16:30																					
16:30	0	0	0	0	0	1	0	0	0	1	0	0	0	0	0	0	1	0	0	1	2
16:45	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	1
17:00	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	0	1	0	0	1	2
17:15	1	0	0	0	1	0	1	1	0	2	0	0	0	0	0	0	0	0	0	0	3
Total Volume	1	0	0	0	1	1	2	2	0	5	0	0	0	0	0	0	2	0	0	2	8
% App Total	100.0%	0.0%	0.0%			20.0%	40.0%	40.0%			0.0%	0.0%	0.0%			0.0%	100.0%	0.0%			
PHF	.250	.000	.000		.250	.250	.500	.500		.625	.000	.000	.000		.000	.000	.500	.000		.500	.667

# ALL TRAFFIC DATA

City of Vallejo  
 All Vehicles on Unshifted  
 Peds & Bikes on Bank 1  
 Heavy Trucks on Bank 2

(916) 771-8700

[orders@atdtraffic.com](mailto:orders@atdtraffic.com)

File Name : 14-7219-012 5th Street-Lincoln Highway-Lemon Street.ppd

Date : 4/8/2014

## Bank 1 Count = Peds & Bikes

START TIME	Lincoln Highway Southbound					Lemon Street Westbound					5th Street Northbound					Lemon Street Eastbound					Total	Ped Total
	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL		
07:00	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	1	0	1	1	1	2
07:15	0	0	0	1	0	0	0	0	0	0	0	1	1	0	2	0	0	0	0	0	0	1
07:30	0	0	0	0	0	0	0	0	1	0	0	0	0	1	0	0	0	0	0	0	0	2
07:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
<b>Total</b>	0	0	0	1	0	0	0	0	2	0	0	1	1	1	2	0	1	0	1	1	3	5
08:00	0	0	0	1	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	2
08:15	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	1	0
08:30	0	0	0	0	0	0	0	0	0	0	0	2	0	3	2	0	0	0	1	0	2	4
08:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	1	0
<b>Total</b>	0	0	0	1	0	0	1	0	1	1	0	2	0	3	2	1	0	0	1	1	4	6
16:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	2
16:15	0	0	0	0	0	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	1	0
16:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1
16:45	0	0	0	2	0	0	0	0	2	0	0	0	0	0	0	0	1	0	0	1	1	4
<b>Total</b>	0	0	0	2	0	1	0	0	2	1	0	0	0	0	0	0	1	0	3	1	2	7
17:00	0	0	0	1	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	3
17:15	0	0	0	0	0	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	1	0
17:30	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	3
17:45	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	2	0	1	2
<b>Total</b>	0	0	0	2	0	1	0	0	2	1	0	1	0	0	1	0	0	0	4	0	2	8
<b>Grand Total</b>	0	0	0	6	0	2	1	0	7	3	0	4	1	4	5	1	2	0	9	3	11	26
Apprch %	0.0%	0.0%	0.0%			66.7%	33.3%	0.0%			0.0%	80.0%	20.0%			33.3%	66.7%	0.0%				
Total %	0.0%	0.0%	0.0%		0.0%	18.2%	9.1%	0.0%		27.3%	0.0%	36.4%	9.1%		45.5%	9.1%	18.2%	0.0%		27.3%	100.0%	

# ALL TRAFFIC DATA

City of Vallejo  
 All Vehicles on Unshifted  
 Peds & Bikes on Bank 1  
 Heavy Trucks on Bank 2

(916) 771-8700

[orders@atdtraffic.com](mailto:orders@atdtraffic.com)

File Name : 14-7219-012 5th Street-Lincoln Highway-Lemon Street.ppd

Date : 4/8/2014

## Bank 1 Count = Peds & Bikes

AM PEAK HOUR	Lincoln Highway Southbound					Lemon Street Westbound					5th Street Northbound					Lemon Street Eastbound					Total	
	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL		
Peak Hour Analysis From 07:15 to 08:15																						
Peak Hour For Entire Intersection Begins at 07:15																						
07:15	0	0	0	1	0	0	0	0	0	0	0	1	1	0	2	0	0	0	0	0	0	2
07:30	0	0	0	0	0	0	0	0	1	0	0	0	0	1	0	0	0	0	0	0	0	0
07:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08:00	0	0	0	1	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Volume	0	0	0	2	0	0	0	0	2	0	0	1	1	1	2	0	0	0	0	0	0	2
% App Total	0.0%	0.0%	0.0%			0.0%	0.0%	0.0%			0.0%	50.0%	50.0%	0.0%		0.0%	0.0%	0.0%				
PHF	.000	.000	.000		.000	.000	.000	.000		.000	.000	.250	.250		.250	.000	.000	.000		.000		.250

PM PEAK HOUR	Lincoln Highway Southbound					Lemon Street Westbound					5th Street Northbound					Lemon Street Eastbound					Total	
	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL		
Peak Hour Analysis From 16:30 to 17:30																						
Peak Hour For Entire Intersection Begins at 16:30																						
16:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0
16:45	0	0	0	2	0	0	0	0	2	0	0	0	0	0	0	0	1	0	0	1	0	1
17:00	0	0	0	1	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0
17:15	0	0	0	0	0	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	1
Total Volume	0	0	0	3	0	1	0	0	4	1	0	0	0	0	0	0	1	0	1	1	0	2
% App Total	0.0%	0.0%	0.0%			100.0%	0.0%	0.0%			0.0%	0.0%	0.0%			0.0%	100.0%	0.0%				
PHF	.000	.000	.000		.000	.250	.000	.000		.250	.000	.000	.000		.000	.000	.250	.000		.250		.500

# ALL TRAFFIC DATA

City of Vallejo  
 All Vehicles on Unshifted  
 Peds & Bikes on Bank 1  
 Heavy Trucks on Bank 2

(916) 771-8700

[orders@atdtraffic.com](mailto:orders@atdtraffic.com)

File Name : 14-7219-013 Sheridan Street-Lemon Street.ppd

Date : 4/8/2014

## Unshifted Count = All Vehicles

START TIME	Sheridan Street Southbound					Lemon Street Westbound					Sheridan Street Northbound					Lemon Street Eastbound					Total	Utum Total
	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL		
07:00	0	0	0	0	0	1	30	0	0	31	0	0	2	0	2	0	20	0	0	20	53	0
07:15	0	0	0	0	0	1	37	0	0	38	2	0	4	0	6	0	37	1	0	38	82	0
07:30	0	0	1	0	1	2	25	0	0	27	1	0	11	0	12	0	41	0	0	41	81	0
07:45	1	0	0	0	1	2	57	0	0	59	0	0	5	0	5	0	29	2	0	31	96	0
<b>Total</b>	1	0	1	0	2	6	149	0	0	155	3	0	22	0	25	0	127	3	0	130	312	0
08:00	0	1	0	0	1	2	20	0	0	22	1	0	4	0	5	1	20	0	0	21	49	0
08:15	0	0	0	0	0	3	30	1	0	34	2	0	4	0	6	0	26	1	0	27	67	0
08:30	0	0	1	0	1	3	31	2	0	36	1	0	2	0	3	0	28	0	0	28	68	0
08:45	2	0	2	0	4	5	18	0	0	23	1	0	11	0	12	1	41	1	0	43	82	0
<b>Total</b>	2	1	3	0	6	13	99	3	0	115	5	0	21	0	26	2	115	2	0	119	266	0
16:00	0	0	0	0	0	2	31	0	0	33	2	0	6	0	8	1	54	2	0	57	98	0
16:15	0	0	2	0	2	1	36	0	1	38	0	0	6	0	6	0	37	4	0	41	87	1
16:30	0	0	1	0	1	5	31	0	1	37	1	0	4	0	5	1	61	0	2	64	107	3
16:45	0	0	0	0	0	4	37	0	0	41	3	0	3	0	6	0	39	3	0	42	89	0
<b>Total</b>	0	0	3	0	3	12	135	0	2	149	6	0	19	0	25	2	191	9	2	204	381	4
17:00	0	0	0	0	0	4	31	0	0	35	1	0	4	0	5	0	71	2	0	73	113	0
17:15	0	0	0	0	0	3	39	0	1	43	1	0	7	0	8	0	49	0	0	49	100	1
17:30	0	0	0	0	0	6	38	0	0	44	1	0	6	0	7	0	46	1	0	47	98	0
17:45	1	0	0	0	1	6	30	1	0	37	0	0	5	0	5	1	40	1	0	42	85	0
<b>Total</b>	1	0	0	0	1	19	138	1	1	159	3	0	22	0	25	1	206	4	0	211	396	1
<b>Grand Total</b>	4	1	7	0	12	50	521	4	3	578	17	0	84	0	101	5	639	18	2	664	1355	5
<b>Apprch %</b>	33.3%	8.3%	58.3%	0.0%		8.7%	90.1%	0.7%	0.5%		16.8%	0.0%	83.2%	0.0%		0.8%	96.2%	2.7%	0.3%			
<b>Total %</b>	0.3%	0.1%	0.5%	0.0%	0.9%	3.7%	38.5%	0.3%	0.2%	42.7%	1.3%	0.0%	6.2%	0.0%	7.5%	0.4%	47.2%	1.3%	0.1%	49.0%	100.0%	

# ALL TRAFFIC DATA

(916) 771-8700

[orders@atdtraffic.com](mailto:orders@atdtraffic.com)

File Name : 14-7219-013 Sheridan Street-Lemon Street.ppd

Date : 4/8/2014

City of Vallejo  
 All Vehicles on Unshifted  
 Peds & Bikes on Bank 1  
 Heavy Trucks on Bank 2

## Unshifted Count = All Vehicles

AM PEAK HOUR	Sheridan Street Southbound					Lemon Street Westbound					Sheridan Street Northbound					Lemon Street Eastbound					Total
	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	
Peak Hour Analysis From 07:00 to 08:00																					
Peak Hour For Entire Intersection Begins at 07:00																					
07:00	0	0	0	0	0	1	30	0	0	31	0	0	2	0	2	0	20	0	0	20	53
07:15	0	0	0	0	0	1	37	0	0	38	2	0	4	0	6	0	37	1	0	38	82
07:30	0	0	1	0	1	2	25	0	0	27	1	0	11	0	12	0	41	0	0	41	81
07:45	1	0	0	0	1	2	57	0	0	59	0	0	5	0	5	0	29	2	0	31	96
Total Volume	1	0	1	0	2	6	149	0	0	155	3	0	22	0	25	0	127	3	0	130	312
% App Total	50.0%	0.0%	50.0%	0.0%		3.9%	96.1%	0.0%	0.0%		12.0%	0.0%	88.0%	0.0%		0.0%	97.7%	2.3%	0.0%		
PHF	.250	.000	.250	.000	.500	.750	.654	.000	.000	.657	.375	.000	.500	.000	.521	.000	.774	.375	.000	.793	.813

PM PEAK HOUR	Sheridan Street Southbound					Lemon Street Westbound					Sheridan Street Northbound					Lemon Street Eastbound					Total
	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	
Peak Hour Analysis From 16:30 to 17:30																					
Peak Hour For Entire Intersection Begins at 16:30																					
16:30	0	0	1	0	1	5	31	0	1	37	1	0	4	0	5	1	61	0	2	64	107
16:45	0	0	0	0	0	4	37	0	0	41	3	0	3	0	6	0	39	3	0	42	89
17:00	0	0	0	0	0	4	31	0	0	35	1	0	4	0	5	0	71	2	0	73	113
17:15	0	0	0	0	0	3	39	0	1	43	1	0	7	0	8	0	49	0	0	49	100
Total Volume	0	0	1	0	1	16	138	0	2	156	6	0	18	0	24	1	220	5	2	228	409
% App Total	0.0%	0.0%	100.0%	0.0%		10.3%	88.5%	0.0%	1.3%		25.0%	0.0%	75.0%	0.0%		0.4%	96.5%	2.2%	0.9%		
PHF	.000	.000	.250	.000	.250	.800	.885	.000	.500	.907	.500	.000	.643	.000	.750	.250	.775	.417	.250	.781	.905

# ALL TRAFFIC DATA

City of Vallejo  
 All Vehicles on Unshifted  
 Peds & Bikes on Bank 1  
 Heavy Trucks on Bank 2

(916) 771-8700

[orders@atdtraffic.com](mailto:orders@atdtraffic.com)

File Name : 14-7219-013 Sheridan Street-Lemon Street.ppd

Date : 4/8/2014

## Bank 2 Count = Heavy Trucks

START TIME	Sheridan Street Southbound					Lemon Street Westbound					Sheridan Street Northbound					Lemon Street Eastbound					Total	Ped Total
	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL		
07:00	0	0	0	0	0	0	3	0	0	3	0	0	0	0	0	0	1	0	0	1	4	0
07:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	1	0
07:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	1	0
07:45	0	0	0	0	0	0	3	0	0	3	0	0	0	0	0	0	0	0	0	0	3	0
<b>Total</b>	0	0	0	0	0	0	6	0	0	6	0	0	0	0	0	0	3	0	0	3	9	0
08:00	0	0	0	0	0	0	2	0	0	2	0	0	0	0	0	0	1	0	0	1	3	0
08:15	0	0	0	0	0	0	2	0	0	2	0	0	1	0	1	0	2	0	0	2	5	0
08:30	0	0	0	0	0	0	1	1	0	2	0	0	0	0	0	0	0	0	0	0	2	0
08:45	0	0	1	0	1	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	2	0
<b>Total</b>	0	0	1	0	1	0	6	1	0	7	0	0	1	0	1	0	3	0	0	3	12	0
16:00	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	1	0
16:15	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	1	0
16:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	1	0
16:45	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	1	0
<b>Total</b>	0	0	0	0	0	0	2	0	0	2	0	0	1	0	1	0	1	0	0	1	4	0
17:00	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	1	0	0	1	2	0
17:15	0	0	0	0	0	0	2	0	0	2	0	0	0	0	0	0	1	0	0	1	3	0
17:30	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	1	0	0	1	2	0
17:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
<b>Total</b>	0	0	0	0	0	0	4	0	0	4	0	0	0	0	0	0	3	0	0	3	7	0
<b>Grand Total</b>	0	0	1	0	1	0	18	1	0	19	0	0	2	0	2	0	10	0	0	10	32	0
Apprch %	0.0%	0.0%	100.0%			0.0%	94.7%	5.3%			0.0%	0.0%	100.0%			0.0%	100.0%	0.0%				
Total %	0.0%	0.0%	3.1%		3.1%	0.0%	56.3%	3.1%		59.4%	0.0%	0.0%	6.3%		6.3%	0.0%	31.3%	0.0%		31.3%	100.0%	

# ALL TRAFFIC DATA

City of Vallejo  
 All Vehicles on Unshifted  
 Peds & Bikes on Bank 1  
 Heavy Trucks on Bank 2

(916) 771-8700

[orders@atdtraffic.com](mailto:orders@atdtraffic.com)

File Name : 14-7219-013 Sheridan Street-Lemon Street.ppd

Date : 4/8/2014

## Bank 2 Count = Heavy Trucks

AM PEAK HOUR	Sheridan Street Southbound					Lemon Street Westbound					Sheridan Street Northbound					Lemon Street Eastbound					Total
	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	
Peak Hour Analysis From 07:00 to 08:00																					
Peak Hour For Entire Intersection Begins at 07:00																					
07:00	0	0	0	0	0	0	3	0	0	3	0	0	0	0	0	0	1	0	0	1	4
07:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	1
07:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	1
07:45	0	0	0	0	0	0	3	0	0	3	0	0	0	0	0	0	0	0	0	0	3
Total Volume	0	0	0	0	0	0	6	0	0	6	0	0	0	0	0	0	3	0	0	3	9
% App Total	0.0%	0.0%	0.0%			0.0%	100.0%	0.0%			0.0%	0.0%	0.0%			0.0%	100.0%	0.0%			
PHF	.000	.000	.000		.000	.000	.500	.000		.500	.000	.000	.000		.000	.000	.750	.000		.750	.563

PM PEAK HOUR	Sheridan Street Southbound					Lemon Street Westbound					Sheridan Street Northbound					Lemon Street Eastbound					Total
	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	
Peak Hour Analysis From 16:30 to 17:30																					
Peak Hour For Entire Intersection Begins at 16:30																					
16:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	1
16:45	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	1
17:00	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	1	0	0	1	2
17:15	0	0	0	0	0	0	2	0	0	2	0	0	0	0	0	0	1	0	0	1	3
Total Volume	0	0	0	0	0	0	4	0	0	4	0	0	0	0	0	0	3	0	0	3	7
% App Total	0.0%	0.0%	0.0%			0.0%	100.0%	0.0%			0.0%	0.0%	0.0%			0.0%	100.0%	0.0%			
PHF	.000	.000	.000		.000	.000	.500	.000		.500	.000	.000	.000		.000	.000	.750	.000		.750	.583

# ALL TRAFFIC DATA

City of Vallejo  
 All Vehicles on Unshifted  
 Peds & Bikes on Bank 1  
 Heavy Trucks on Bank 2

(916) 771-8700

[orders@atdtraffic.com](mailto:orders@atdtraffic.com)

File Name : 14-7219-013 Sheridan Street-Lemon Street.ppd

Date : 4/8/2014

## Bank 1 Count = Peds & Bikes

START TIME	Sheridan Street Southbound					Lemon Street Westbound					Sheridan Street Northbound					Lemon Street Eastbound					Total	Ped Total					
	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL							
07:00	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
07:15	0	0	0	1	0	0	0	0	0	0	0	0	1	0	1	0	1	0	1	1	0	0	0	1	1	2	2
07:30	0	0	0	2	0	0	0	0	1	0	0	0	1	1	1	0	0	0	1	0	0	0	0	1	0	1	5
07:45	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
<b>Total</b>	0	0	0	5	0	0	0	0	1	0	0	0	2	1	2	0	1	0	2	1	0	0	0	2	1	3	9
08:00	0	0	0	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	1	0	0	4
08:15	0	0	0	0	0	0	1	0	0	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	1	1
08:30	0	0	0	0	0	0	0	0	0	0	0	0	0	4	0	0	0	0	1	0	0	0	0	1	0	0	5
08:45	0	0	0	1	0	0	0	0	0	0	0	0	0	2	0	0	0	0	2	0	0	0	0	2	0	0	5
<b>Total</b>	0	0	0	4	0	0	1	0	0	1	0	0	0	7	0	0	0	0	4	0	0	0	0	4	0	1	15
16:00	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	1	0	0	3
16:15	0	0	0	0	0	0	1	0	1	1	0	0	0	0	0	0	0	0	3	0	0	0	0	3	0	1	4
16:30	0	0	0	0	0	1	0	0	0	1	1	0	0	1	1	0	0	0	2	0	0	0	0	2	0	2	3
16:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	0	0	1	0	1	1	0
<b>Total</b>	0	0	0	2	0	1	1	0	1	2	1	0	0	1	1	0	0	1	6	1	0	0	1	6	1	4	10
17:00	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	1	0	0	2
17:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	1	0	0	1
17:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	1	0	0	1
17:45	0	0	0	10	0	1	1	0	0	2	0	0	0	2	0	0	0	0	2	0	0	0	0	2	0	2	14
<b>Total</b>	0	0	0	11	0	1	1	0	0	2	0	0	0	2	0	0	0	0	5	0	0	0	0	5	0	2	18
<b>Grand Total</b>	0	0	0	22	0	2	3	0	2	5	1	0	2	11	3	0	1	1	17	2	0	0	0	17	2	10	52
Apprch %	0.0%	0.0%	0.0%			40.0%	60.0%	0.0%	0.0%		33.3%	0.0%	66.7%			0.0%	50.0%	50.0%			0.0%	10.0%	10.0%				
Total %	0.0%	0.0%	0.0%		0.0%	20.0%	30.0%	0.0%		50.0%	10.0%	0.0%	20.0%		30.0%	0.0%	10.0%	10.0%		20.0%				20.0%		100.0%	



# ALL TRAFFIC DATA

City of Vallejo  
 All Vehicles on Unshifted  
 Peds & Bikes on Bank 1  
 Heavy Trucks on Bank 2

(916) 771-8700

[orders@atdtraffic.com](mailto:orders@atdtraffic.com)

File Name : 14-7219-013 Sheridan Street-Lemon Street.ppd

Date : 4/8/2014

## Bank 1 Count = Peds & Bikes

AM PEAK HOUR	Sheridan Street Southbound					Lemon Street Westbound					Sheridan Street Northbound					Lemon Street Eastbound					Total	
	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL		
Peak Hour Analysis From 07:00 to 08:00																						
Peak Hour For Entire Intersection Begins at 07:00																						
07:00	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:15	0	0	0	1	0	0	0	0	0	0	0	0	1	0	1	0	1	0	1	1	1	2
07:30	0	0	0	2	0	0	0	0	1	0	0	0	1	1	1	0	0	0	1	0	1	1
07:45	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Volume	0	0	0	5	0	0	0	0	1	0	0	0	2	1	2	0	1	0	2	1	3	3
% App Total	0.0%	0.0%	0.0%			0.0%	0.0%	0.0%			0.0%	0.0%	100.0%	0.0%		0.0%	100.0%	0.0%				
PHF	.000	.000	.000		.000	.000	.000	.000		.000	.000	.000	.500		.500	.000	.250	.000		.250		.375

PM PEAK HOUR	Sheridan Street Southbound					Lemon Street Westbound					Sheridan Street Northbound					Lemon Street Eastbound					Total	
	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL		
Peak Hour Analysis From 16:30 to 17:30																						
Peak Hour For Entire Intersection Begins at 16:30																						
16:30	0	0	0	0	0	1	0	0	0	1	1	0	0	1	1	0	0	0	2	0	2	2
16:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	1	1
17:00	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0
17:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0
Total Volume	0	0	0	1	0	1	0	0	0	1	1	0	0	1	1	0	0	1	4	1	3	3
% App Total	0.0%	0.0%	0.0%			100.0%	0.0%	0.0%			100.0%	0.0%	0.0%			0.0%	0.0%	100.0%				
PHF	.000	.000	.000		.000	.250	.000	.000		.250	.250	.000	.000		.250	.000	.000	.250		.250		.375

# ALL TRAFFIC DATA

City of Vallejo  
 All Vehicles on Unshifted  
 Peds & Bikes on Bank 1  
 Heavy Trucks on Bank 2

(916) 771-8700

[orders@atdtraffic.com](mailto:orders@atdtraffic.com)

File Name : 14-7219-014 6th Street-Lemon Street.ppd

Date : 4/8/2014

## Unshifted Count = All Vehicles

START TIME	Driveway Southbound					Lemon Street Westbound					6th Street Northbound					Lemon Street Eastbound					Total	Uturm Total
	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL		
07:00	0	0	3	0	3	0	28	0	0	28	0	0	0	0	0	0	23	0	0	23	54	0
07:15	4	0	1	0	5	0	35	1	0	36	0	0	0	0	0	0	40	0	0	40	81	0
07:30	1	0	1	0	2	0	29	0	1	30	0	0	0	0	0	0	54	0	0	54	86	1
07:45	2	0	0	0	2	0	54	1	0	55	0	0	0	0	0	0	34	0	0	34	91	0
<b>Total</b>	7	0	5	0	12	0	146	2	1	149	0	0	0	0	0	0	151	0	0	151	312	1
08:00	0	0	0	0	0	0	26	0	1	27	0	0	0	0	0	0	27	0	0	27	54	1
08:15	0	0	0	0	0	0	35	0	1	36	0	0	0	0	0	0	30	0	0	30	66	1
08:30	0	0	0	0	0	0	36	0	2	38	1	0	0	0	1	0	30	0	0	30	69	2
08:45	2	0	0	0	2	0	22	1	1	24	0	0	0	0	0	0	55	0	0	55	81	1
<b>Total</b>	2	0	0	0	2	0	119	1	5	125	1	0	0	0	1	0	142	0	0	142	270	5
16:00	0	0	0	0	0	0	31	0	0	31	0	0	0	0	0	1	58	0	0	59	90	0
16:15	1	0	1	0	2	0	35	2	2	39	0	0	0	0	0	0	46	0	0	46	87	2
16:30	1	0	1	0	2	0	36	0	0	36	0	0	0	0	0	0	67	0	0	67	105	0
16:45	0	0	0	0	0	0	42	0	0	42	0	0	0	0	0	0	42	0	0	42	84	0
<b>Total</b>	2	0	2	0	4	0	144	2	2	148	0	0	0	0	0	1	213	0	0	214	366	2
17:00	0	0	0	0	0	0	39	3	0	42	0	0	0	0	0	0	75	0	0	75	117	0
17:15	0	0	1	0	1	0	42	1	0	43	0	0	0	0	0	0	55	1	0	56	100	0
17:30	1	0	0	0	1	0	42	1	0	43	0	0	0	0	0	0	52	1	0	53	97	0
17:45	1	0	1	0	2	1	38	0	0	39	0	0	1	0	1	0	45	0	0	45	87	0
<b>Total</b>	2	0	2	0	4	1	161	5	0	167	0	0	1	0	1	0	227	2	0	229	401	0
<b>Grand Total</b>	13	0	9	0	22	1	570	10	8	589	1	0	1	0	2	1	733	2	0	736	1349	8
Apprch %	59.1%	0.0%	40.9%	0.0%		0.2%	96.8%	1.7%	1.4%		50.0%	0.0%	50.0%	0.0%		0.1%	99.6%	0.3%	0.0%			
Total %	1.0%	0.0%	0.7%	0.0%	1.6%	0.1%	42.3%	0.7%	0.6%	43.7%	0.1%	0.0%	0.1%	0.0%	0.1%	0.1%	54.3%	0.1%	0.0%	54.6%	100.0%	

# ALL TRAFFIC DATA

City of Vallejo  
 All Vehicles on Unshifted  
 Peds & Bikes on Bank 1  
 Heavy Trucks on Bank 2

(916) 771-8700

[orders@atdtraffic.com](mailto:orders@atdtraffic.com)

File Name : 14-7219-014 6th Street-Lemon Street.ppd

Date : 4/8/2014

## Unshifted Count = All Vehicles

AM PEAK HOUR	Driveway Southbound					Lemon Street Westbound					6th Street Northbound					Lemon Street Eastbound					Total
	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	
Peak Hour Analysis From 07:00 to 08:00																					
Peak Hour For Entire Intersection Begins at 07:00																					
07:00	0	0	3	0	3	0	28	0	0	28	0	0	0	0	0	0	23	0	0	23	54
07:15	4	0	1	0	5	0	35	1	0	36	0	0	0	0	0	0	40	0	0	40	81
07:30	1	0	1	0	2	0	29	0	1	30	0	0	0	0	0	0	54	0	0	54	86
07:45	2	0	0	0	2	0	54	1	0	55	0	0	0	0	0	0	34	0	0	34	91
Total Volume	7	0	5	0	12	0	146	2	1	149	0	0	0	0	0	0	151	0	0	151	312
% App Total	58.3%	0.0%	41.7%	0.0%		0.0%	98.0%	1.3%	0.7%		0.0%	0.0%	0.0%	0.0%		0.0%	100.0%	0.0%	0.0%		
PHF	.438	.000	.417	.000	.600	.000	.676	.500	.250	.677	.000	.000	.000	.000	.000	.000	.699	.000	.000	.699	.857

PM PEAK HOUR	Driveway Southbound					Lemon Street Westbound					6th Street Northbound					Lemon Street Eastbound					Total
	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	
Peak Hour Analysis From 16:30 to 17:30																					
Peak Hour For Entire Intersection Begins at 16:30																					
16:30	1	0	1	0	2	0	36	0	0	36	0	0	0	0	0	0	67	0	0	67	105
16:45	0	0	0	0	0	0	42	0	0	42	0	0	0	0	0	0	42	0	0	42	84
17:00	0	0	0	0	0	0	39	3	0	42	0	0	0	0	0	0	75	0	0	75	117
17:15	0	0	1	0	1	0	42	1	0	43	0	0	0	0	0	0	55	1	0	56	100
Total Volume	1	0	2	0	3	0	159	4	0	163	0	0	0	0	0	0	239	1	0	240	406
% App Total	33.3%	0.0%	66.7%	0.0%		0.0%	97.5%	2.5%	0.0%		0.0%	0.0%	0.0%	0.0%		0.0%	99.6%	0.4%	0.0%		
PHF	.250	.000	.500	.000	.375	.000	.946	.333	.000	.948	.000	.000	.000	.000	.000	.000	.797	.250	.000	.800	.868

# ALL TRAFFIC DATA

City of Vallejo  
 All Vehicles on Unshifted  
 Peds & Bikes on Bank 1  
 Heavy Trucks on Bank 2

(916) 771-8700

[orders@atdtraffic.com](mailto:orders@atdtraffic.com)

File Name : 14-7219-014 6th Street-Lemon Street.ppd

Date : 4/8/2014

## Bank 2 Count = Heavy Trucks

START TIME	Driveway Southbound					Lemon Street Westbound					6th Street Northbound					Lemon Street Eastbound					Total	Ped Total
	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL		
07:00	0	0	0	0	0	0	3	0	0	3	0	0	0	0	0	0	1	0	0	1	4	0
07:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	1	0
07:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	1	0
07:45	0	0	0	0	0	0	3	0	0	3	0	0	0	0	0	0	0	0	0	0	3	0
Total	0	0	0	0	0	0	6	0	0	6	0	0	0	0	0	0	3	0	0	3	9	0
08:00	0	0	0	0	0	0	2	0	0	2	0	0	0	0	0	0	1	0	0	1	3	0
08:15	0	0	0	0	0	0	2	0	0	2	0	0	0	0	0	0	3	0	0	3	5	0
08:30	0	0	0	0	0	0	2	0	0	2	0	0	0	0	0	0	0	0	0	0	2	0
08:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	6	0	0	6	0	0	0	0	0	0	4	0	0	4	10	0
16:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	1	0
16:15	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	1	0
16:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	1	0
16:45	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	1	0
Total	0	0	0	0	0	0	2	0	0	2	0	0	0	0	0	0	2	0	0	2	4	0
17:00	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	1	0	0	1	2	0
17:15	0	0	0	0	0	0	2	0	0	2	0	0	0	0	0	0	1	0	0	1	3	0
17:30	0	0	0	0	0	0	1	1	0	2	0	0	0	0	0	0	1	0	0	1	3	0
17:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	4	1	0	5	0	0	0	0	0	0	3	0	0	3	8	0
Grand Total	0	0	0	0	0	0	18	1	0	19	0	0	0	0	0	0	12	0	0	12	31	0
Apprch %	0.0%	0.0%	0.0%			0.0%	94.7%	5.3%			0.0%	0.0%	0.0%			0.0%	100.0%	0.0%				
Total %	0.0%	0.0%	0.0%		0.0%	0.0%	58.1%	3.2%		61.3%	0.0%	0.0%	0.0%		0.0%	0.0%	38.7%	0.0%		38.7%	100.0%	

# ALL TRAFFIC DATA

(916) 771-8700

[orders@atdtraffic.com](mailto:orders@atdtraffic.com)

File Name : 14-7219-014 6th Street-Lemon Street.ppd

Date : 4/8/2014

City of Vallejo  
 All Vehicles on Unshifted  
 Peds & Bikes on Bank 1  
 Heavy Trucks on Bank 2

## Bank 2 Count = Heavy Trucks

AM PEAK HOUR	Driveway Southbound					Lemon Street Westbound					6th Street Northbound					Lemon Street Eastbound					Total
	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	
Peak Hour Analysis From 07:00 to 08:00																					
Peak Hour For Entire Intersection Begins at 07:00																					
07:00	0	0	0	0	0	0	3	0	0	3	0	0	0	0	0	0	1	0	0	1	4
07:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	1
07:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	1
07:45	0	0	0	0	0	0	3	0	0	3	0	0	0	0	0	0	0	0	0	0	3
Total Volume	0	0	0	0	0	0	6	0	0	6	0	0	0	0	0	0	3	0	0	3	9
% App Total	0.0%	0.0%	0.0%			0.0%	100.0%	0.0%			0.0%	0.0%	0.0%			0.0%	100.0%	0.0%			
PHF	.000	.000	.000		.000	.000	.500	.000		.500	.000	.000	.000		.000	.000	.750	.000		.750	.563

PM PEAK HOUR	Driveway Southbound					Lemon Street Westbound					6th Street Northbound					Lemon Street Eastbound					Total
	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	
Peak Hour Analysis From 16:30 to 17:30																					
Peak Hour For Entire Intersection Begins at 16:30																					
16:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	1
16:45	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	1
17:00	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	1	0	0	1	2
17:15	0	0	0	0	0	0	2	0	0	2	0	0	0	0	0	0	1	0	0	1	3
Total Volume	0	0	0	0	0	0	4	0	0	4	0	0	0	0	0	0	3	0	0	3	7
% App Total	0.0%	0.0%	0.0%			0.0%	100.0%	0.0%			0.0%	0.0%	0.0%			0.0%	100.0%	0.0%			
PHF	.000	.000	.000		.000	.000	.500	.000		.500	.000	.000	.000		.000	.000	.750	.000		.750	.583

# ALL TRAFFIC DATA

City of Vallejo  
 All Vehicles on Unshifted  
 Peds & Bikes on Bank 1  
 Heavy Trucks on Bank 2

(916) 771-8700

[orders@atdtraffic.com](mailto:orders@atdtraffic.com)

File Name : 14-7219-014 6th Street-Lemon Street.ppd

Date : 4/8/2014

## Bank 1 Count = Peds & Bikes

START TIME	Driveway Southbound					Lemon Street Westbound					6th Street Northbound					Lemon Street Eastbound					Total	Ped Total								
	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL										
07:00	0	0	0	1	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	2
07:15	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	2	0	0	0	0	2	0	0	0	0	0	2	0	2
07:30	0	0	0	1	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	1	0	0	0	0	0	1	0	2
07:45	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
Total	0	0	0	3	0	0	0	0	0	0	0	0	0	4	0	0	3	0	0	0	0	3	0	0	0	0	0	3	0	7
08:00	0	0	0	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3
08:15	0	0	0	3	0	0	1	0	0	1	0	0	0	1	0	0	0	0	3	0	0	1	0	0	0	0	0	7		
08:30	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1		
08:45	0	0	0	1	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	2		
Total	0	0	0	7	0	0	1	0	0	1	0	0	0	3	0	0	0	0	3	0	0	1	0	0	0	0	0	13		
16:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
16:15	0	0	0	1	0	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	1		
16:30	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
16:45	0	0	0	1	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	2		
Total	0	0	0	2	0	0	2	0	0	2	0	0	0	1	0	0	0	0	0	0	0	2	0	0	0	0	0	3		
17:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
17:15	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1		
17:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
17:45	0	0	0	9	0	0	2	0	0	2	0	0	0	1	0	0	0	0	0	0	0	2	0	0	0	0	0	10		
Total	0	0	0	9	0	0	2	0	0	2	0	0	0	2	0	0	0	0	0	0	0	2	0	0	0	0	0	11		
Grand Total	0	0	0	21	0	0	5	0	0	5	0	0	0	10	0	0	3	0	3	3	0	8	0	0	0	3	0	34		
Apprch %	0.0%	0.0%	0.0%			0.0%	100.0%	0.0%			0.0%	0.0%	0.0%			0.0%	100.0%	0.0%			0.0%		0.0%		0.0%		0.0%			
Total %	0.0%	0.0%	0.0%		0.0%	0.0%	62.5%	0.0%		62.5%	0.0%	0.0%	0.0%		0.0%	0.0%	37.5%	0.0%		37.5%	0.0%	100.0%	0.0%		0.0%		0.0%	100.0%		

# ALL TRAFFIC DATA

City of Vallejo  
 All Vehicles on Unshifted  
 Peds & Bikes on Bank 1  
 Heavy Trucks on Bank 2

(916) 771-8700

[orders@atdtraffic.com](mailto:orders@atdtraffic.com)

File Name : 14-7219-014 6th Street-Lemon Street.ppd

Date : 4/8/2014

## Bank 1 Count = Peds & Bikes

AM PEAK HOUR	Driveway Southbound					Lemon Street Westbound					6th Street Northbound					Lemon Street Eastbound					Total	
	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL		
Peak Hour Analysis From 07:00 to 08:00																						
Peak Hour For Entire Intersection Begins at 07:00																						
07:00	0	0	0	1	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0
07:15	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	2	0	0	0	2	2
07:30	0	0	0	1	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	1	1
07:45	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Volume	0	0	0	3	0	0	0	0	0	0	0	0	0	4	0	0	3	0	0	0	3	3
% App Total	0.0%	0.0%	0.0%			0.0%	0.0%	0.0%			0.0%	0.0%	0.0%			0.0%	100.0%	0.0%				
PHF	.000	.000	.000		.000	.000	.000	.000		.000	.000	.000	.000		.000	.000	.375	.000		.375	.375	.375

PM PEAK HOUR	Driveway Southbound					Lemon Street Westbound					6th Street Northbound					Lemon Street Eastbound					Total	
	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL		
Peak Hour Analysis From 16:30 to 17:30																						
Peak Hour For Entire Intersection Begins at 16:30																						
16:30	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	1
16:45	0	0	0	1	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0
17:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
17:15	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0
Total Volume	0	0	0	1	0	0	1	0	0	1	0	0	0	2	0	0	0	0	0	0	0	1
% App Total	0.0%	0.0%	0.0%			0.0%	100.0%	0.0%			0.0%	0.0%	0.0%			0.0%	0.0%	0.0%				
PHF	.000	.000	.000		.000	.000	.250	.000		.250	.000	.000	.000		.000	.000	.000	.000		.000	.250	.250

# ALL TRAFFIC DATA

City of Vallejo  
 All Vehicles on Unshifted  
 Peds & Bikes on Bank 1  
 Heavy Trucks on Bank 2

(916) 771-8700

[orders@atdtraffic.com](mailto:orders@atdtraffic.com)

File Name : 14-7219-015 Union Street-Lemon Street.ppd

Date : 4/8/2014

## Unshifted Count = All Vehicles

START TIME	Driveway Southbound					Lemon Street Westbound					Union Street Northbound					Lemon Street Eastbound					Total	Utum Total
	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL		
07:00	1	0	0	0	1	7	29	0	0	36	1	0	2	0	3	0	20	1	0	21	61	0
07:15	0	0	0	0	0	6	38	2	0	46	2	0	9	0	11	0	45	2	0	47	104	0
07:30	0	0	0	0	0	9	30	0	0	39	0	0	4	0	4	0	57	0	0	57	100	0
07:45	2	0	0	0	2	4	55	1	0	60	2	0	5	0	7	0	34	1	0	35	104	0
<b>Total</b>	3	0	0	0	3	26	152	3	0	181	5	0	20	0	25	0	156	4	0	160	369	0
08:00	0	0	0	0	0	6	30	1	1	38	0	0	2	0	2	0	28	0	0	28	68	1
08:15	1	0	0	0	1	2	35	0	0	37	0	0	5	0	5	0	28	0	0	28	71	0
08:30	0	0	0	0	0	4	36	0	1	41	2	0	2	0	4	0	30	1	0	31	76	1
08:45	0	0	0	0	0	3	26	1	0	30	0	0	1	0	1	0	55	0	0	55	86	0
<b>Total</b>	1	0	0	0	1	15	127	2	2	146	2	0	10	0	12	0	141	1	0	142	301	2
16:00	1	0	0	0	1	6	35	1	0	42	0	0	2	0	2	1	55	2	0	58	103	0
16:15	0	0	0	0	0	7	38	0	0	45	0	0	4	0	4	0	48	1	0	49	98	0
16:30	2	0	0	0	2	5	37	0	0	42	1	0	8	0	9	0	70	1	0	71	124	0
16:45	0	0	0	0	0	1	41	1	0	43	2	0	7	0	9	0	42	1	0	43	95	0
<b>Total</b>	3	0	0	0	3	19	151	2	0	172	3	0	21	0	24	1	215	5	0	221	420	0
17:00	2	0	0	0	2	2	42	0	0	44	0	0	13	0	13	0	79	3	0	82	141	0
17:15	0	0	0	0	0	7	43	0	0	50	2	0	4	0	6	0	59	1	0	60	116	0
17:30	0	0	0	0	0	1	41	1	0	43	3	0	6	0	9	0	57	0	0	57	109	0
17:45	0	0	0	0	0	3	36	0	0	39	2	0	6	0	8	0	49	0	0	49	96	0
<b>Total</b>	2	0	0	0	2	13	162	1	0	176	7	0	29	0	36	0	244	4	0	248	462	0
<b>Grand Total</b>	9	0	0	0	9	73	592	8	2	675	17	0	80	0	97	1	756	14	0	771	1552	2
<b>Apprch %</b>	100.0%	0.0%	0.0%	0.0%		10.8%	87.7%	1.2%	0.3%		17.5%	0.0%	82.5%	0.0%		0.1%	98.1%	1.8%	0.0%			
<b>Total %</b>	0.6%	0.0%	0.0%	0.0%	0.6%	4.7%	38.1%	0.5%	0.1%	43.5%	1.1%	0.0%	5.2%	0.0%	6.3%	0.1%	48.7%	0.9%	0.0%	49.7%	100.0%	



# ALL TRAFFIC DATA

City of Vallejo  
 All Vehicles on Unshifted  
 Peds & Bikes on Bank 1  
 Heavy Trucks on Bank 2

(916) 771-8700

[orders@atdtraffic.com](mailto:orders@atdtraffic.com)

File Name : 14-7219-015 Union Street-Lemon Street.ppd

Date : 4/8/2014

## Unshifted Count = All Vehicles

AM PEAK HOUR	Driveway Southbound					Lemon Street Westbound					Union Street Northbound					Lemon Street Eastbound					Total
	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	
Peak Hour Analysis From 07:15 to 08:15																					
Peak Hour For Entire Intersection Begins at 07:15																					
07:15	0	0	0	0	0	6	38	2	0	46	2	0	9	0	11	0	45	2	0	47	104
07:30	0	0	0	0	0	9	30	0	0	39	0	0	4	0	4	0	57	0	0	57	100
07:45	2	0	0	0	2	4	55	1	0	60	2	0	5	0	7	0	34	1	0	35	104
08:00	0	0	0	0	0	6	30	1	1	38	0	0	2	0	2	0	28	0	0	28	68
Total Volume	2	0	0	0	2	25	153	4	1	183	4	0	20	0	24	0	164	3	0	167	376
% App Total	100.0%	0.0%	0.0%	0.0%		13.7%	83.6%	2.2%	0.5%		16.7%	0.0%	83.3%	0.0%		0.0%	98.2%	1.8%	0.0%		
PHF	.250	.000	.000	.000	.250	.694	.695	.500	.250	.763	.500	.000	.556	.000	.545	.000	.719	.375	.000	.732	.904

PM PEAK HOUR	Driveway Southbound					Lemon Street Westbound					Union Street Northbound					Lemon Street Eastbound					Total
	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	
Peak Hour Analysis From 16:30 to 17:30																					
Peak Hour For Entire Intersection Begins at 16:30																					
16:30	2	0	0	0	2	5	37	0	0	42	1	0	8	0	9	0	70	1	0	71	124
16:45	0	0	0	0	0	1	41	1	0	43	2	0	7	0	9	0	42	1	0	43	95
17:00	2	0	0	0	2	2	42	0	0	44	0	0	13	0	13	0	79	3	0	82	141
17:15	0	0	0	0	0	7	43	0	0	50	2	0	4	0	6	0	59	1	0	60	116
Total Volume	4	0	0	0	4	15	163	1	0	179	5	0	32	0	37	0	250	6	0	256	476
% App Total	100.0%	0.0%	0.0%	0.0%		8.4%	91.1%	0.6%	0.0%		13.5%	0.0%	86.5%	0.0%		0.0%	97.7%	2.3%	0.0%		
PHF	.500	.000	.000	.000	.500	.536	.948	.250	.000	.895	.625	.000	.615	.000	.712	.000	.791	.500	.000	.780	.844

# ALL TRAFFIC DATA

City of Vallejo  
 All Vehicles on Unshifted  
 Peds & Bikes on Bank 1  
 Heavy Trucks on Bank 2

(916) 771-8700

[orders@atdtraffic.com](mailto:orders@atdtraffic.com)

File Name : 14-7219-015 Union Street-Lemon Street.ppd

Date : 4/8/2014

## Bank 2 Count = Heavy Trucks

START TIME	Driveway Southbound					Lemon Street Westbound					Union Street Northbound					Lemon Street Eastbound					Total	Ped Total
	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL		
07:00	0	0	0	0	0	0	2	0	0	2	1	0	2	0	3	0	1	0	0	1	6	0
07:15	0	0	0	0	0	0	0	0	0	0	0	0	5	0	5	0	2	0	0	2	7	0
07:30	0	0	0	0	0	0	0	0	0	0	0	0	3	0	3	0	1	0	0	1	4	0
07:45	0	0	0	0	0	0	2	0	0	2	1	0	4	0	5	0	0	0	0	0	7	0
Total	0	0	0	0	0	0	4	0	0	4	2	0	14	0	16	0	4	0	0	4	24	0
08:00	0	0	0	0	0	1	2	0	0	3	0	0	2	0	2	0	1	0	0	1	6	0
08:15	0	0	0	0	0	0	2	0	0	2	0	0	1	0	1	0	3	0	0	3	6	0
08:30	0	0	0	0	0	1	1	0	0	2	0	0	1	0	1	0	0	0	0	0	3	0
08:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	2	5	0	0	7	0	0	4	0	4	0	4	0	0	4	15	0
16:00	0	0	0	0	0	3	0	0	0	3	0	0	1	0	1	0	1	0	0	1	5	0
16:15	0	0	0	0	0	2	0	0	0	2	0	0	0	0	0	0	0	0	0	0	2	0
16:30	0	0	0	0	0	1	0	0	0	1	0	0	0	0	0	0	1	0	0	1	2	0
16:45	0	0	0	0	0	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	1	0
Total	0	0	0	0	0	7	0	0	0	7	0	0	1	0	1	0	2	0	0	2	10	0
17:00	0	0	0	0	0	2	1	0	0	3	0	0	0	0	0	0	0	1	0	1	4	0
17:15	0	0	0	0	0	1	4	0	0	5	0	0	0	0	0	0	0	0	0	0	5	0
17:30	0	0	0	0	0	0	2	0	0	2	0	0	0	0	0	0	0	0	0	0	2	0
17:45	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	1	0
Total	0	0	0	0	0	3	7	0	0	10	0	0	1	0	1	0	0	1	0	1	12	0
Grand Total	0	0	0	0	0	12	16	0	0	28	2	0	20	0	22	0	10	1	0	11	61	0
Apprch %	0.0%	0.0%	0.0%			42.9%	57.1%	0.0%			9.1%	0.0%	90.9%			0.0%	90.9%	9.1%				
Total %	0.0%	0.0%	0.0%		0.0%	19.7%	26.2%	0.0%		45.9%	3.3%	0.0%	32.8%		36.1%	0.0%	16.4%	1.6%		18.0%	100.0%	

# ALL TRAFFIC DATA

City of Vallejo  
 All Vehicles on Unshifted  
 Peds & Bikes on Bank 1  
 Heavy Trucks on Bank 2

(916) 771-8700

[orders@atdtraffic.com](mailto:orders@atdtraffic.com)

File Name : 14-7219-015 Union Street-Lemon Street.ppd

Date : 4/8/2014

## Bank 2 Count = Heavy Trucks

AM PEAK HOUR	Driveway Southbound					Lemon Street Westbound					Union Street Northbound					Lemon Street Eastbound					Total
	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	
Peak Hour Analysis From 07:15 to 08:15																					
Peak Hour For Entire Intersection Begins at 07:15																					
07:15	0	0	0	0	0	0	0	0	0	0	0	0	5	0	5	0	2	0	0	2	7
07:30	0	0	0	0	0	0	0	0	0	0	0	0	3	0	3	0	1	0	0	1	4
07:45	0	0	0	0	0	0	2	0	0	2	1	0	4	0	5	0	0	0	0	0	7
08:00	0	0	0	0	0	1	2	0	0	3	0	0	2	0	2	0	1	0	0	1	6
Total Volume	0	0	0	0	0	1	4	0	0	5	1	0	14	0	15	0	4	0	0	4	24
% App Total	0.0%	0.0%	0.0%			20.0%	80.0%	0.0%	0.0%		6.7%	0.0%	93.3%	0.0%		0.0%	100.0%	0.0%			
PHF	.000	.000	.000		.000	.250	.500	.000		.417	.250	.000	.700		.750	.000	.500	.000		.500	.857

PM PEAK HOUR	Driveway Southbound					Lemon Street Westbound					Union Street Northbound					Lemon Street Eastbound					Total
	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	
Peak Hour Analysis From 16:30 to 17:30																					
Peak Hour For Entire Intersection Begins at 16:30																					
16:30	0	0	0	0	0	1	0	0	0	1	0	0	0	0	0	0	1	0	0	1	2
16:45	0	0	0	0	0	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	1
17:00	0	0	0	0	0	2	1	0	0	3	0	0	0	0	0	0	0	1	0	1	4
17:15	0	0	0	0	0	1	4	0	0	5	0	0	0	0	0	0	0	0	0	0	5
Total Volume	0	0	0	0	0	5	5	0	0	10	0	0	0	0	0	0	1	1	0	2	12
% App Total	0.0%	0.0%	0.0%			50.0%	50.0%	0.0%	0.0%		0.0%	0.0%	0.0%	0.0%		0.0%	50.0%	50.0%			
PHF	.000	.000	.000		.000	.625	.313	.000		.500	.000	.000	.000		.000	.000	.250	.250		.500	.600

# ALL TRAFFIC DATA

City of Vallejo  
 All Vehicles on Unshifted  
 Peds & Bikes on Bank 1  
 Heavy Trucks on Bank 2

(916) 771-8700

[orders@atdtraffic.com](mailto:orders@atdtraffic.com)

File Name : 14-7219-015 Union Street-Lemon Street.ppd

Date : 4/8/2014

## Bank 1 Count = Peds & Bikes

START TIME	Driveway Southbound					Lemon Street Westbound					Union Street Northbound					Lemon Street Eastbound					Total	Ped Total
	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL		
07:00	0	0	0	0	0	0	0	0	4	0	0	0	0	5	0	0	0	0	1	0	0	10
07:15	0	0	0	0	0	0	0	0	2	0	0	0	0	2	0	0	2	0	0	2	2	4
07:30	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	1	0	0	1	1	1
07:45	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	1
<b>Total</b>	0	0	0	0	0	0	0	0	7	0	0	0	0	8	0	0	3	0	1	3	3	16
08:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08:15	0	0	0	0	0	0	1	0	0	1	0	0	0	3	0	0	0	0	0	0	1	3
08:30	0	0	0	0	0	0	0	0	1	0	0	0	0	1	0	0	0	0	0	0	0	2
08:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
<b>Total</b>	0	0	0	0	0	0	1	0	1	1	0	0	0	4	0	0	0	0	0	0	1	5
16:00	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	1	0	0	2
16:15	0	0	0	0	0	0	2	0	0	2	0	0	0	2	0	0	0	0	0	0	2	2
16:30	0	0	0	0	0	0	0	0	1	0	0	0	0	1	0	0	0	0	0	0	0	2
16:45	0	0	0	0	0	0	0	0	1	0	0	0	0	2	0	0	0	0	0	0	0	3
<b>Total</b>	0	0	0	0	0	0	2	0	2	2	0	0	0	6	0	0	0	0	1	0	2	9
17:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
17:15	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	2
17:30	0	0	0	0	0	0	0	0	0	0	0	0	1	4	1	0	0	0	0	0	1	4
17:45	0	0	0	0	0	0	1	0	0	1	0	0	0	1	0	0	0	0	0	0	1	1
<b>Total</b>	0	0	0	0	0	0	1	0	0	1	0	0	1	7	1	0	0	0	0	0	2	7
<b>Grand Total</b>	0	0	0	0	0	0	4	0	10	4	0	0	1	25	1	0	3	0	2	3	8	37
Apprch %	0.0%	0.0%	0.0%			0.0%	100.0%	0.0%			0.0%	0.0%	100.0%			0.0%	100.0%	0.0%				
Total %	0.0%	0.0%	0.0%		0.0%	0.0%	50.0%	0.0%		50.0%	0.0%	0.0%	12.5%		12.5%	0.0%	37.5%	0.0%		37.5%	100.0%	

# ALL TRAFFIC DATA

City of Vallejo  
 All Vehicles on Unshifted  
 Peds & Bikes on Bank 1  
 Heavy Trucks on Bank 2

(916) 771-8700

[orders@atdtraffic.com](mailto:orders@atdtraffic.com)

File Name : 14-7219-015 Union Street-Lemon Street.ppd

Date : 4/8/2014

## Bank 1 Count = Peds & Bikes

AM PEAK HOUR	Driveway Southbound					Lemon Street Westbound					Union Street Northbound					Lemon Street Eastbound					Total
	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	
Peak Hour Analysis From 07:15 to 08:15																					
Peak Hour For Entire Intersection Begins at 07:15																					
07:15	0	0	0	0	0	0	0	0	2	0	0	0	0	2	0	0	2	0	0	2	2
07:30	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	1	0	0	1	1
07:45	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0
08:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Volume	0	0	0	0	0	0	0	0	3	0	0	0	0	3	0	0	3	0	0	3	3
% App Total	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	0.0%	0.0%	0.0%	0.0%
PHF	.000	.000	.000		.000	.000	.000	.000		.000	.000	.000	.000		.000	.000	.375	.000		.375	.375

PM PEAK HOUR	Driveway Southbound					Lemon Street Westbound					Union Street Northbound					Lemon Street Eastbound					Total
	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	
Peak Hour Analysis From 16:30 to 17:30																					
Peak Hour For Entire Intersection Begins at 16:30																					
16:30	0	0	0	0	0	0	0	0	1	0	0	0	0	1	0	0	0	0	0	0	0
16:45	0	0	0	0	0	0	0	0	1	0	0	0	0	2	0	0	0	0	0	0	0
17:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
17:15	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0
Total Volume	0	0	0	0	0	0	0	0	2	0	0	0	0	5	0	0	0	0	0	0	0
% App Total	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
PHF	.000	.000	.000		.000	.000	.000	.000		.000	.000	.000	.000		.000	.000	.000	.000		.000	.000

# ALL TRAFFIC DATA

(916) 771-8700

[orders@atdtraffic.com](mailto:orders@atdtraffic.com)

File Name : 14-7219-016 Carlson Street-Lemon Street.ppd

Date : 4/8/2014

City of Vallejo  
All Vehicles on Unshifted  
Peds & Bikes on Bank 1  
Heavy Trucks on Bank 2

## Unshifted Count = All Vehicles

START TIME	Carlson Street Southbound					Lemon Street Westbound					Carlson Street Northbound					Lemon Street Eastbound					Total	Utum Total
	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL		
07:00	56	1	3	0	60	10	38	56	0	104	0	1	5	0	6	3	20	0	0	23	193	0
07:15	46	0	2	0	48	8	44	54	2	108	3	0	2	0	5	2	50	2	0	54	215	2
07:30	44	0	2	0	46	4	39	35	1	79	1	0	8	0	9	2	61	2	1	66	200	2
07:45	34	0	1	0	35	4	63	40	1	108	1	0	2	0	3	1	41	1	0	43	189	1
<b>Total</b>	180	1	8	0	189	26	184	185	4	399	5	1	17	0	23	8	172	5	1	186	797	5
08:00	51	0	5	0	56	3	38	50	0	91	0	0	4	0	4	0	29	1	0	30	181	0
08:15	35	0	0	0	35	3	39	32	0	74	0	0	0	0	0	2	30	2	0	34	143	0
08:30	30	0	2	0	32	1	40	35	0	76	2	2	3	0	7	0	32	2	0	34	149	0
08:45	20	1	0	0	21	4	28	22	0	54	1	0	9	0	10	0	56	0	0	56	141	0
<b>Total</b>	136	1	7	0	144	11	145	139	0	295	3	2	16	0	21	2	147	5	0	154	614	0
16:00	48	0	4	0	52	2	38	13	5	58	1	0	1	0	2	2	64	0	0	66	178	5
16:15	45	1	3	0	49	3	48	19	9	79	0	0	5	0	5	2	58	1	0	61	194	9
16:30	53	0	1	0	54	3	41	17	3	64	0	0	4	0	4	1	82	1	0	84	206	3
16:45	62	0	4	0	66	5	43	15	6	69	0	0	10	0	10	1	55	1	0	57	202	6
<b>Total</b>	208	1	12	0	221	13	170	64	23	270	1	0	20	0	21	6	259	3	0	268	780	23
17:00	42	0	4	0	46	2	43	17	7	69	0	0	6	0	6	4	92	2	0	98	219	7
17:15	38	0	2	0	40	5	50	16	5	76	0	0	9	0	9	2	65	0	0	67	192	5
17:30	38	0	3	0	41	3	38	18	7	66	2	1	2	0	5	0	66	1	0	67	179	7
17:45	34	0	3	0	37	4	39	23	3	69	1	0	10	0	11	1	62	1	0	64	181	3
<b>Total</b>	152	0	12	0	164	14	170	74	22	280	3	1	27	0	31	7	285	4	0	296	771	22
<b>Grand Total</b>	676	3	39	0	718	64	669	462	49	1244	12	4	80	0	96	23	863	17	1	904	2962	50
Apprch %	94.2%	0.4%	5.4%	0.0%		5.1%	53.8%	37.1%	3.9%		12.5%	4.2%	83.3%	0.0%	3.9%	2.5%	95.5%	1.9%	0.1%			
Total %	22.8%	0.1%	1.3%	0.0%	24.2%	2.2%	22.6%	15.6%	1.7%	42.0%	0.4%	0.1%	2.7%	0.0%	3.2%	0.8%	29.1%	0.6%	0.0%	30.5%	100.0%	

# ALL TRAFFIC DATA

(916) 771-8700

[orders@atdtraffic.com](mailto:orders@atdtraffic.com)

File Name : 14-7219-016 Carlson Street-Lemon Street.ppd

Date : 4/8/2014

City of Vallejo  
 All Vehicles on Unshifted  
 Peds & Bikes on Bank 1  
 Heavy Trucks on Bank 2

## Unshifted Count = All Vehicles

AM PEAK HOUR	Carlson Street Southbound					Lemon Street Westbound					Carlson Street Northbound					Lemon Street Eastbound					Total	
	START TIME	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS		APP.TOTAL
Peak Hour Analysis From 07:00 to 08:00																						
Peak Hour For Entire Intersection Begins at 07:00																						
07:00	56	1	3	0	60	10	38	56	0	104	0	1	5	0	6	3	20	0	0	23	193	
07:15	46	0	2	0	48	8	44	54	2	108	3	0	2	0	5	2	50	2	0	54	215	
07:30	44	0	2	0	46	4	39	35	1	79	1	0	8	0	9	2	61	2	1	66	200	
07:45	34	0	1	0	35	4	63	40	1	108	1	0	2	0	3	1	41	1	0	43	189	
Total Volume	180	1	8	0	189	26	184	185	4	399	5	1	17	0	23	8	172	5	1	186	797	
% App Total	95.2%	0.5%	4.2%	0.0%		6.5%	46.1%	46.4%	1.0%		21.7%	4.3%	73.9%	0.0%		4.3%	92.5%	2.7%	0.5%			
PHF	.804	.250	.667	.000	.788	.650	.730	.826	.500	.924	.417	.250	.531	.000	.639	.667	.705	.625	.250	.705	.927	

PM PEAK HOUR	Carlson Street Southbound					Lemon Street Westbound					Carlson Street Northbound					Lemon Street Eastbound					Total	
	START TIME	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS		APP.TOTAL
Peak Hour Analysis From 16:15 to 17:15																						
Peak Hour For Entire Intersection Begins at 16:15																						
16:15	45	1	3	0	49	3	48	19	9	79	0	0	5	0	5	2	58	1	0	61	194	
16:30	53	0	1	0	54	3	41	17	3	64	0	0	4	0	4	1	82	1	0	84	206	
16:45	62	0	4	0	66	5	43	15	6	69	0	0	10	0	10	1	55	1	0	57	202	
17:00	42	0	4	0	46	2	43	17	7	69	0	0	6	0	6	4	92	2	0	98	219	
Total Volume	202	1	12	0	215	13	175	68	25	281	0	0	25	0	25	8	287	5	0	300	821	
% App Total	94.0%	0.5%	5.6%	0.0%		4.6%	62.3%	24.2%	8.9%		0.0%	0.0%	100.0%	0.0%		2.7%	95.7%	1.7%	0.0%			
PHF	.815	.250	.750	.000	.814	.650	.911	.895	.694	.889	.000	.000	.625	.000	.625	.500	.780	.625	.000	.765	.937	

# ALL TRAFFIC DATA

City of Vallejo  
 All Vehicles on Unshifted  
 Peds & Bikes on Bank 1  
 Heavy Trucks on Bank 2

(916) 771-8700

[orders@atdtraffic.com](mailto:orders@atdtraffic.com)

File Name : 14-7219-016 Carlson Street-Lemon Street.ppd

Date : 4/8/2014

## Bank 2 Count = Heavy Trucks

START TIME	Carlson Street Southbound					Lemon Street Westbound					Carlson Street Northbound					Lemon Street Eastbound					Total	Ped Total
	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL		
07:00	1	0	0	0	1	0	2	0	0	2	0	0	0	0	0	0	3	0	0	3	6	0
07:15	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	7	0	0	7	8	0
07:30	2	0	0	0	2	0	0	1	0	1	0	0	0	0	0	0	5	0	0	5	8	0
07:45	0	0	0	0	0	1	2	0	0	3	0	0	0	0	0	0	4	0	0	4	7	0
Total	4	0	0	0	4	1	4	1	0	6	0	0	0	0	0	0	19	0	0	19	29	0
08:00	0	0	0	0	0	0	3	0	0	3	0	0	0	0	0	0	3	0	0	3	6	0
08:15	1	0	0	0	1	0	2	0	0	2	0	0	0	0	0	0	3	1	0	4	7	0
08:30	0	0	0	0	0	0	2	0	0	2	0	1	0	0	1	0	1	0	0	1	4	0
08:45	1	0	0	0	1	1	0	0	0	1	0	0	2	0	2	0	0	0	0	0	4	0
Total	2	0	0	0	2	1	7	0	0	8	0	1	2	0	3	0	7	1	0	8	21	0
16:00	1	0	0	0	1	0	2	1	0	3	0	0	0	0	0	0	3	0	0	3	7	0
16:15	1	0	0	0	1	0	5	1	0	6	0	0	0	0	0	0	0	0	0	0	7	0
16:30	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	2	0	0	2	3	0
16:45	2	0	0	0	2	0	2	3	0	5	0	0	0	0	0	0	0	0	0	0	7	0
Total	4	0	0	0	4	0	10	5	0	15	0	0	0	0	0	0	5	0	0	5	24	0
17:00	1	0	0	0	1	0	3	1	0	4	0	0	0	0	0	0	0	0	0	0	5	0
17:15	1	0	0	0	1	0	5	1	0	6	0	0	0	0	0	0	1	0	0	1	8	0
17:30	1	0	0	0	1	1	2	1	0	4	0	0	0	0	0	0	0	0	0	0	5	0
17:45	2	0	0	0	2	0	0	5	0	5	0	0	0	0	0	0	1	0	0	1	8	0
Total	5	0	0	0	5	1	10	8	0	19	0	0	0	0	0	0	2	0	0	2	26	0
Grand Total	15	0	0	0	15	3	31	14	0	48	0	1	2	0	3	0	33	1	0	34	100	0
Apprch %	100.0%	0.0%	0.0%			6.3%	64.6%	29.2%	0.0%		0.0%	33.3%	66.7%			0.0%	97.1%	2.9%				
Total %	15.0%	0.0%	0.0%		15.0%	3.0%	31.0%	14.0%		48.0%	0.0%	1.0%	2.0%		3.0%	0.0%	33.0%	1.0%		34.0%	100.0%	



# ALL TRAFFIC DATA

City of Vallejo  
 All Vehicles on Unshifted  
 Peds & Bikes on Bank 1  
 Heavy Trucks on Bank 2

(916) 771-8700

[orders@atdtraffic.com](mailto:orders@atdtraffic.com)

File Name : 14-7219-016 Carlson Street-Lemon Street.ppd

Date : 4/8/2014

## Bank 2 Count = Heavy Trucks

AM PEAK HOUR	Carlson Street Southbound					Lemon Street Westbound					Carlson Street Northbound					Lemon Street Eastbound					Total
	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	
Peak Hour Analysis From 07:00 to 08:00																					
Peak Hour For Entire Intersection Begins at 07:00																					
07:00	1	0	0	0	1	0	2	0	0	2	0	0	0	0	0	0	3	0	0	3	6
07:15	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	7	0	0	7	8
07:30	2	0	0	0	2	0	0	1	0	1	0	0	0	0	0	0	5	0	0	5	8
07:45	0	0	0	0	0	1	2	0	0	3	0	0	0	0	0	0	4	0	0	4	7
Total Volume	4	0	0	0	4	1	4	1	0	6	0	0	0	0	0	0	19	0	0	19	29
% App Total	100.0%	0.0%	0.0%	0.0%		16.7%	66.7%	16.7%	0.0%		0.0%	0.0%	0.0%	0.0%		0.0%	100.0%	0.0%	0.0%		
PHF	.500	.000	.000		.500	.250	.500	.250		.500	.000	.000	.000		.000	.000	.679	.000		.679	.906

PM PEAK HOUR	Carlson Street Southbound					Lemon Street Westbound					Carlson Street Northbound					Lemon Street Eastbound					Total
	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	
Peak Hour Analysis From 16:15 to 17:15																					
Peak Hour For Entire Intersection Begins at 16:15																					
16:15	1	0	0	0	1	0	5	1	0	6	0	0	0	0	0	0	0	0	0	0	7
16:30	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	2	0	0	2	3
16:45	2	0	0	0	2	0	2	3	0	5	0	0	0	0	0	0	0	0	0	0	7
17:00	1	0	0	0	1	0	3	1	0	4	0	0	0	0	0	0	0	0	0	0	5
Total Volume	4	0	0	0	4	0	11	5	0	16	0	0	0	0	0	0	2	0	0	2	22
% App Total	100.0%	0.0%	0.0%	0.0%		0.0%	68.8%	31.3%	0.0%		0.0%	0.0%	0.0%	0.0%		0.0%	100.0%	0.0%	0.0%		
PHF	.500	.000	.000		.500	.000	.550	.417		.667	.000	.000	.000		.000	.000	.250	.000		.250	.786

# ALL TRAFFIC DATA

City of Vallejo  
 All Vehicles on Unshifted  
 Peds & Bikes on Bank 1  
 Heavy Trucks on Bank 2

(916) 771-8700

[orders@atdtraffic.com](mailto:orders@atdtraffic.com)

File Name : 14-7219-016 Carlson Street-Lemon Street.ppd

Date : 4/8/2014

## Bank 1 Count = Peds & Bikes

START TIME	Carlson Street Southbound					Lemon Street Westbound					Carlson Street Northbound					Lemon Street Eastbound					Total	Ped Total					
	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL							
07:00	0	0	0	7	0	0	0	0	2	0	0	0	0	0	0	0	0	0	2	0	0	0	0	2	0	0	11
07:15	0	0	0	7	0	0	0	0	5	0	0	0	0	0	0	0	2	0	5	2	0	0	0	5	2	2	17
07:30	0	0	0	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	0	0	0	0	3	0	0	7
07:45	0	0	0	4	0	0	0	0	1	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	1	1	5
<b>Total</b>	0	0	0	22	0	0	0	0	8	0	0	0	0	0	0	0	3	0	10	3	0	0	0	10	3	3	40
08:00	0	0	0	3	0	0	0	0	1	0	0	0	0	0	0	0	0	0	1	0	0	0	0	1	0	0	5
08:15	0	0	0	5	0	0	1	1	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	5
08:30	0	0	0	5	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	6
08:45	0	0	0	2	0	0	1	0	0	1	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	2	2
<b>Total</b>	0	0	0	15	0	0	2	1	2	3	0	0	1	0	1	0	0	0	1	0	0	0	0	1	0	4	18
16:00	0	0	0	11	0	0	0	0	1	0	0	0	0	6	0	0	0	0	13	0	0	0	0	13	0	0	31
16:15	0	0	0	3	0	0	1	0	2	1	0	0	0	2	0	0	0	0	7	0	0	0	0	7	0	1	14
16:30	0	0	0	8	0	0	0	0	2	0	0	0	0	5	0	0	0	0	10	0	0	0	0	10	0	0	25
16:45	0	0	0	17	0	0	0	0	1	0	0	0	0	1	0	0	0	0	12	0	0	0	0	12	0	0	31
<b>Total</b>	0	0	0	39	0	0	1	0	6	1	0	0	0	14	0	0	0	0	42	0	0	0	0	42	0	1	101
17:00	0	0	0	10	0	0	0	0	0	0	0	0	1	7	1	0	0	0	11	0	0	0	0	11	0	1	28
17:15	0	0	0	5	0	0	0	0	2	0	0	0	0	3	0	0	0	0	6	0	0	0	0	6	0	0	16
17:30	0	0	0	18	0	0	1	0	1	1	0	0	0	2	0	0	1	0	12	1	0	0	0	12	1	2	33
17:45	0	0	0	12	0	0	1	0	0	1	0	0	0	2	0	0	0	0	11	0	0	0	0	11	0	1	25
<b>Total</b>	0	0	0	45	0	0	2	0	3	2	0	0	1	14	1	0	1	0	40	1	0	0	0	40	1	4	102
<b>Grand Total</b>	0	0	0	121	0	0	5	1	19	6	0	0	2	28	2	0	4	0	93	4	0	0	0	93	4	12	261
Apprch %	0.0%	0.0%	0.0%			0.0%	83.3%	16.7%			0.0%	0.0%	100.0%			0.0%	100.0%	0.0%			0.0%	0.0%	0.0%				
Total %	0.0%	0.0%	0.0%		0.0%	0.0%	41.7%	8.3%		50.0%	0.0%	0.0%	16.7%		16.7%	0.0%	33.3%	0.0%		33.3%	0.0%	0.0%	0.0%		33.3%	100.0%	

# ALL TRAFFIC DATA

City of Vallejo  
 All Vehicles on Unshifted  
 Peds & Bikes on Bank 1  
 Heavy Trucks on Bank 2

(916) 771-8700

[orders@atdtraffic.com](mailto:orders@atdtraffic.com)

File Name : 14-7219-016 Carlson Street-Lemon Street.ppd

Date : 4/8/2014

## Bank 1 Count = Peds & Bikes

AM PEAK HOUR	Carlson Street Southbound					Lemon Street Westbound					Carlson Street Northbound					Lemon Street Eastbound					Total
	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	
Peak Hour Analysis From 07:00 to 08:00																					
Peak Hour For Entire Intersection Begins at 07:00																					
07:00	0	0	0	7	0	0	0	0	2	0	0	0	0	0	0	0	0	0	2	0	0
07:15	0	0	0	7	0	0	0	0	5	0	0	0	0	0	0	0	2	0	5	2	2
07:30	0	0	0	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	0	0
07:45	0	0	0	4	0	0	0	0	1	0	0	0	0	0	0	0	1	0	0	1	1
Total Volume	0	0	0	22	0	0	0	0	8	0	0	0	0	0	0	0	3	0	10	3	3
% App Total	0.0%	0.0%	0.0%			0.0%	0.0%	0.0%			0.0%	0.0%	0.0%			0.0%	100.0%	0.0%			
PHF	.000	.000	.000		.000	.000	.000	.000		.000	.000	.000	.000		.000	.000	.375	.000		.375	.375

PM PEAK HOUR	Carlson Street Southbound					Lemon Street Westbound					Carlson Street Northbound					Lemon Street Eastbound					Total
	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	
Peak Hour Analysis From 16:15 to 17:15																					
Peak Hour For Entire Intersection Begins at 16:15																					
16:15	0	0	0	3	0	0	1	0	2	1	0	0	0	2	0	0	0	0	7	0	1
16:30	0	0	0	8	0	0	0	0	2	0	0	0	0	5	0	0	0	0	10	0	0
16:45	0	0	0	17	0	0	0	0	1	0	0	0	0	1	0	0	0	0	12	0	0
17:00	0	0	0	10	0	0	0	0	0	0	0	0	1	7	1	0	0	0	11	0	1
Total Volume	0	0	0	38	0	0	1	0	5	1	0	0	1	15	1	0	0	0	40	0	2
% App Total	0.0%	0.0%	0.0%			0.0%	100.0%	0.0%			0.0%	0.0%	100.0%			0.0%	0.0%	0.0%			
PHF	.000	.000	.000		.000	.000	.250	.000		.250	.000	.000	.250		.250	.000	.000	.000		.000	.500

# ALL TRAFFIC DATA

(916) 771-8700

[orders@atdtraffic.com](mailto:orders@atdtraffic.com)

File Name : 14-7219-017 Curtola Parkway-Lemon Street.ppd

Date : 4/8/2014

City of Vallejo  
All Vehicles on Unshifted  
Peds & Bikes on Bank 1  
Heavy Trucks on Bank 2

## Unshifted Count = All Vehicles

START TIME	Curtola Parkway Southbound					Lemon Street Westbound					Curtola Parkway Northbound					Lemon Street Eastbound					Total	Utum Total
	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL		
07:00	6	102	5	0	113	32	17	1	0	50	86	132	24	0	242	5	15	54	0	74	479	0
07:15	3	85	4	0	92	35	21	8	0	64	78	150	28	0	256	4	28	71	0	103	515	0
07:30	5	122	2	0	129	49	27	5	0	81	56	181	24	0	261	1	43	64	0	108	579	0
07:45	3	106	5	0	114	40	31	8	0	79	66	220	29	0	315	7	21	52	0	80	588	0
<b>Total</b>	<b>17</b>	<b>415</b>	<b>16</b>	<b>0</b>	<b>448</b>	<b>156</b>	<b>96</b>	<b>22</b>	<b>0</b>	<b>274</b>	<b>286</b>	<b>683</b>	<b>105</b>	<b>0</b>	<b>1074</b>	<b>17</b>	<b>107</b>	<b>241</b>	<b>0</b>	<b>365</b>	<b>2161</b>	<b>0</b>
08:00	7	111	10	0	128	26	24	5	0	55	63	197	33	0	293	7	14	65	0	86	562	0
08:15	6	96	8	0	110	34	22	9	0	65	45	182	19	0	246	8	14	44	0	66	487	0
08:30	3	100	9	0	112	28	22	9	0	59	47	200	24	0	271	4	17	42	0	63	505	0
08:45	7	105	3	0	115	32	22	2	0	56	32	151	30	0	213	7	25	51	0	83	467	0
<b>Total</b>	<b>23</b>	<b>412</b>	<b>30</b>	<b>0</b>	<b>465</b>	<b>120</b>	<b>90</b>	<b>25</b>	<b>0</b>	<b>235</b>	<b>187</b>	<b>730</b>	<b>106</b>	<b>0</b>	<b>1023</b>	<b>26</b>	<b>70</b>	<b>202</b>	<b>0</b>	<b>298</b>	<b>2021</b>	<b>0</b>
16:00	10	137	5	0	152	26	20	6	0	52	46	116	49	0	211	14	27	90	0	131	546	0
16:15	7	157	8	0	172	29	23	6	0	58	54	160	31	0	245	8	27	89	0	124	599	0
16:30	12	192	4	0	208	17	20	8	0	45	43	153	37	0	233	12	36	118	0	166	652	0
16:45	8	167	4	0	179	23	20	4	0	47	52	150	47	0	249	14	34	101	0	149	624	0
<b>Total</b>	<b>37</b>	<b>653</b>	<b>21</b>	<b>0</b>	<b>711</b>	<b>95</b>	<b>83</b>	<b>24</b>	<b>0</b>	<b>202</b>	<b>195</b>	<b>579</b>	<b>164</b>	<b>0</b>	<b>938</b>	<b>48</b>	<b>124</b>	<b>398</b>	<b>0</b>	<b>570</b>	<b>2421</b>	<b>0</b>
17:00	9	206	9	0	224	31	17	4	0	52	45	136	42	0	223	14	40	106	0	160	659	0
17:15	9	219	7	0	235	31	28	6	0	65	48	130	29	0	207	13	35	78	0	126	633	0
17:30	10	208	6	0	224	32	28	7	0	67	40	108	38	0	186	18	40	68	0	126	603	0
17:45	12	141	4	0	157	47	30	7	0	84	46	104	32	0	182	14	33	76	0	123	546	0
<b>Total</b>	<b>40</b>	<b>774</b>	<b>26</b>	<b>0</b>	<b>840</b>	<b>141</b>	<b>103</b>	<b>24</b>	<b>0</b>	<b>268</b>	<b>179</b>	<b>478</b>	<b>141</b>	<b>0</b>	<b>798</b>	<b>59</b>	<b>148</b>	<b>328</b>	<b>0</b>	<b>535</b>	<b>2441</b>	<b>0</b>
<b>Grand Total</b>	<b>117</b>	<b>2254</b>	<b>93</b>	<b>0</b>	<b>2464</b>	<b>512</b>	<b>372</b>	<b>95</b>	<b>0</b>	<b>979</b>	<b>847</b>	<b>2470</b>	<b>516</b>	<b>0</b>	<b>3833</b>	<b>150</b>	<b>449</b>	<b>1169</b>	<b>0</b>	<b>1768</b>	<b>9044</b>	<b>0</b>
<b>Apprch %</b>	<b>4.7%</b>	<b>91.5%</b>	<b>3.8%</b>	<b>0.0%</b>		<b>52.3%</b>	<b>38.0%</b>	<b>9.7%</b>	<b>0.0%</b>		<b>22.1%</b>	<b>64.4%</b>	<b>13.5%</b>	<b>0.0%</b>		<b>8.5%</b>	<b>25.4%</b>	<b>66.1%</b>	<b>0.0%</b>			
<b>Total %</b>	<b>1.3%</b>	<b>24.9%</b>	<b>1.0%</b>	<b>0.0%</b>	<b>27.2%</b>	<b>5.7%</b>	<b>4.1%</b>	<b>1.1%</b>	<b>0.0%</b>	<b>10.8%</b>	<b>9.4%</b>	<b>27.3%</b>	<b>5.7%</b>	<b>0.0%</b>	<b>42.4%</b>	<b>1.7%</b>	<b>5.0%</b>	<b>12.9%</b>	<b>0.0%</b>	<b>19.5%</b>	<b>100.0%</b>	

# ALL TRAFFIC DATA

(916) 771-8700

[orders@atdtraffic.com](mailto:orders@atdtraffic.com)

File Name : 14-7219-017 Curtola Parkway-Lemon Street.ppd

Date : 4/8/2014

City of Vallejo  
 All Vehicles on Unshifted  
 Peds & Bikes on Bank 1  
 Heavy Trucks on Bank 2

## Unshifted Count = All Vehicles

AM PEAK HOUR	Curtola Parkway Southbound					Lemon Street Westbound					Curtola Parkway Northbound					Lemon Street Eastbound					Total
	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	
Peak Hour Analysis From 07:15 to 08:15																					
Peak Hour For Entire Intersection Begins at 07:15																					
07:15	3	85	4	0	92	35	21	8	0	64	78	150	28	0	256	4	28	71	0	103	515
07:30	5	122	2	0	129	49	27	5	0	81	56	181	24	0	261	1	43	64	0	108	579
07:45	3	106	5	0	114	40	31	8	0	79	66	220	29	0	315	7	21	52	0	80	588
08:00	7	111	10	0	128	26	24	5	0	55	63	197	33	0	293	7	14	65	0	86	562
Total Volume	18	424	21	0	463	150	103	26	0	279	263	748	114	0	1125	19	106	252	0	377	2244
% App Total	3.9%	91.6%	4.5%	0.0%		53.8%	36.9%	9.3%	0.0%		23.4%	66.5%	10.1%	0.0%		5.0%	28.1%	66.8%	0.0%		
PHF	.643	.869	.525	.000	.897	.765	.831	.813	.000	.861	.843	.850	.864	.000	.893	.679	.616	.887	.000	.873	.954

PM PEAK HOUR	Curtola Parkway Southbound					Lemon Street Westbound					Curtola Parkway Northbound					Lemon Street Eastbound					Total
	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	
Peak Hour Analysis From 16:30 to 17:30																					
Peak Hour For Entire Intersection Begins at 16:30																					
16:30	12	192	4	0	208	17	20	8	0	45	43	153	37	0	233	12	36	118	0	166	652
16:45	8	167	4	0	179	23	20	4	0	47	52	150	47	0	249	14	34	101	0	149	624
17:00	9	206	9	0	224	31	17	4	0	52	45	136	42	0	223	14	40	106	0	160	659
17:15	9	219	7	0	235	31	28	6	0	65	48	130	29	0	207	13	35	78	0	126	633
Total Volume	38	784	24	0	846	102	85	22	0	209	188	569	155	0	912	53	145	403	0	601	2568
% App Total	4.5%	92.7%	2.8%	0.0%		48.8%	40.7%	10.5%	0.0%		20.6%	62.4%	17.0%	0.0%		8.8%	24.1%	67.1%	0.0%		
PHF	.792	.895	.667	.000	.900	.823	.759	.688	.000	.804	.904	.930	.824	.000	.916	.946	.906	.854	.000	.905	.974

# ALL TRAFFIC DATA

City of Vallejo  
 All Vehicles on Unshifted  
 Peds & Bikes on Bank 1  
 Heavy Trucks on Bank 2

(916) 771-8700

[orders@atdtraffic.com](mailto:orders@atdtraffic.com)

File Name : 14-7219-017 Curtola Parkway-Lemon Street.ppd

Date : 4/8/2014

## Bank 2 Count = Heavy Trucks

START TIME	Curtola Parkway Southbound					Lemon Street Westbound					Curtola Parkway Northbound					Lemon Street Eastbound					Total	Ped Total
	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL		
07:00	0	6	0	0	6	3	2	0	0	5	0	4	0	0	4	1	0	2	0	3	18	0
07:15	0	4	0	0	4	1	1	0	0	2	0	5	0	0	5	1	2	6	0	9	20	0
07:30	0	7	0	0	7	1	0	0	0	1	0	4	2	0	6	0	0	7	0	7	21	0
07:45	0	2	0	0	2	0	2	0	0	2	1	5	0	0	6	0	0	4	0	4	14	0
<b>Total</b>	0	19	0	0	19	5	5	0	0	10	1	18	2	0	21	2	2	19	0	23	73	0
08:00	0	4	0	0	4	1	2	0	0	3	1	8	0	0	9	1	0	2	0	3	19	0
08:15	1	3	0	0	4	1	2	0	0	3	0	4	0	0	4	2	0	2	0	4	15	0
08:30	0	4	1	0	5	2	0	0	0	2	1	6	1	0	8	0	0	1	0	1	16	0
08:45	0	2	0	0	2	1	0	0	0	1	1	6	0	0	7	0	0	2	0	2	12	0
<b>Total</b>	1	13	1	0	15	5	4	0	0	9	3	24	1	0	28	3	0	7	0	10	62	0
16:00	0	5	0	0	5	0	0	0	0	0	2	1	1	0	4	1	1	0	0	2	11	0
16:15	0	7	0	0	7	1	0	0	0	1	6	5	1	0	12	1	1	1	0	3	23	0
16:30	0	8	0	0	8	0	0	0	0	0	2	0	2	0	4	1	1	1	0	3	15	0
16:45	0	6	0	0	6	0	0	0	0	0	4	2	0	0	6	2	0	0	0	2	14	0
<b>Total</b>	0	26	0	0	26	1	0	0	0	1	14	8	4	0	26	5	3	2	0	10	63	0
17:00	0	3	0	0	3	1	1	0	0	2	3	2	0	0	5	1	0	0	0	1	11	0
17:15	0	3	0	0	3	0	1	0	0	1	5	2	0	0	7	0	0	1	0	1	12	0
17:30	0	7	0	0	7	0	0	0	0	0	4	2	0	0	6	2	0	0	0	2	15	0
17:45	0	1	0	0	1	1	0	0	0	1	5	0	0	0	5	2	0	0	0	2	9	0
<b>Total</b>	0	14	0	0	14	2	2	0	0	4	17	6	0	0	23	5	0	1	0	6	47	0
<b>Grand Total</b>	1	72	1	0	74	13	11	0	0	24	35	56	7	0	98	15	5	29	0	49	245	0
Apprch %	1.4%	97.3%	1.4%			54.2%	45.8%	0.0%			35.7%	57.1%	7.1%			30.6%	10.2%	59.2%				
Total %	0.4%	29.4%	0.4%		30.2%	5.3%	4.5%	0.0%		9.8%	14.3%	22.9%	2.9%		40.0%	6.1%	2.0%	11.8%		20.0%	100.0%	

# ALL TRAFFIC DATA

City of Vallejo  
 All Vehicles on Unshifted  
 Peds & Bikes on Bank 1  
 Heavy Trucks on Bank 2

(916) 771-8700

[orders@atdtraffic.com](mailto:orders@atdtraffic.com)

File Name : 14-7219-017 Curtola Parkway-Lemon Street.ppd

Date : 4/8/2014

## Bank 2 Count = Heavy Trucks

AM PEAK HOUR	Curtola Parkway Southbound					Lemon Street Westbound					Curtola Parkway Northbound					Lemon Street Eastbound					Total
	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	
Peak Hour Analysis From 07:15 to 08:15																					
Peak Hour For Entire Intersection Begins at 07:15																					
07:15	0	4	0	0	4	1	1	0	0	2	0	5	0	0	5	1	2	6	0	9	20
07:30	0	7	0	0	7	1	0	0	0	1	0	4	2	0	6	0	0	7	0	7	21
07:45	0	2	0	0	2	0	2	0	0	2	1	5	0	0	6	0	0	4	0	4	14
08:00	0	4	0	0	4	1	2	0	0	3	1	8	0	0	9	1	0	2	0	3	19
Total Volume	0	17	0	0	17	3	5	0	0	8	2	22	2	0	26	2	2	19	0	23	74
% App Total	0.0%	100.0%	0.0%			37.5%	62.5%	0.0%	0.0%		7.7%	84.6%	7.7%			8.7%	8.7%	82.6%			
PHF	.000	.607	.000		.607	.750	.625	.000		.667	.500	.688	.250		.722	.500	.250	.679		.639	.881

PM PEAK HOUR	Curtola Parkway Southbound					Lemon Street Westbound					Curtola Parkway Northbound					Lemon Street Eastbound					Total
	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	
Peak Hour Analysis From 16:30 to 17:30																					
Peak Hour For Entire Intersection Begins at 16:30																					
16:30	0	8	0	0	8	0	0	0	0	0	2	0	2	0	4	1	1	1	0	3	15
16:45	0	6	0	0	6	0	0	0	0	0	4	2	0	0	6	2	0	0	0	2	14
17:00	0	3	0	0	3	1	1	0	0	2	3	2	0	0	5	1	0	0	0	1	11
17:15	0	3	0	0	3	0	1	0	0	1	5	2	0	0	7	0	0	1	0	1	12
Total Volume	0	20	0	0	20	1	2	0	0	3	14	6	2	0	22	4	1	2	0	7	52
% App Total	0.0%	100.0%	0.0%			33.3%	66.7%	0.0%	0.0%		63.6%	27.3%	9.1%			57.1%	14.3%	28.6%			
PHF	.000	.625	.000		.625	.250	.500	.000		.375	.700	.750	.250		.786	.500	.250	.500		.583	.867

# ALL TRAFFIC DATA

City of Vallejo  
 All Vehicles on Unshifted  
 Peds & Bikes on Bank 1  
 Heavy Trucks on Bank 2

(916) 771-8700

[orders@atdtraffic.com](mailto:orders@atdtraffic.com)

File Name : 14-7219-017 Curtola Parkway-Lemon Street.ppd

Date : 4/8/2014

## Bank 1 Count = Peds & Bikes

START TIME	Curtola Parkway Southbound					Lemon Street Westbound					Curtola Parkway Northbound					Lemon Street Eastbound					Total	Ped Total					
	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL							
07:00	0	0	0	18	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	18
07:15	0	0	0	18	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	1	0	0	1	1	18
07:30	0	0	0	12	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	12
07:45	0	0	0	10	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	1	0	0	1	1	10
<b>Total</b>	0	0	0	58	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	2	0	0	2	2	58
08:00	0	0	0	12	0	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	12
08:15	0	0	0	10	0	0	2	0	0	2	0	0	0	0	0	0	1	0	0	0	0	1	0	0	1	3	10
08:30	0	0	0	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4
08:45	0	0	0	9	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	9
<b>Total</b>	0	0	0	35	0	0	2	1	0	3	0	0	0	0	0	0	1	0	0	0	0	1	0	0	1	4	35
16:00	0	0	0	13	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	13
16:15	0	0	0	13	0	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	13
16:30	0	0	0	14	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	14
16:45	0	0	0	12	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	12
<b>Total</b>	0	0	0	52	0	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	52
17:00	1	0	0	12	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	12
17:15	0	0	0	14	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	1	0	0	1	1	14
17:30	0	0	0	15	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	1	0	0	1	1	15
17:45	0	0	0	16	0	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	16
<b>Total</b>	1	0	0	57	1	0	1	0	0	1	0	0	0	0	0	0	2	0	0	0	0	2	0	0	2	4	57
<b>Grand Total</b>	1	0	0	202	1	0	4	1	0	5	0	0	0	0	0	0	5	0	0	5	0	5	0	0	5	11	202
Apprch %	100.0%	0.0%	0.0%			0.0%	80.0%	20.0%	0.0%		0.0%	0.0%	0.0%			0.0%	100.0%	0.0%			0.0%	45.5%	0.0%		45.5%	100.0%	
Total %	9.1%	0.0%	0.0%		9.1%	0.0%	36.4%	9.1%		45.5%	0.0%	0.0%	0.0%		0.0%	0.0%	45.5%	0.0%		45.5%	0.0%	45.5%	0.0%		100.0%		



# ALL TRAFFIC DATA

(916) 771-8700

[orders@atdtraffic.com](mailto:orders@atdtraffic.com)

File Name : 14-7219-017 Curtola Parkway-Lemon Street.ppd

Date : 4/8/2014

City of Vallejo  
 All Vehicles on Unshifted  
 Peds & Bikes on Bank 1  
 Heavy Trucks on Bank 2

## Bank 1 Count = Peds & Bikes

AM PEAK HOUR	Curtola Parkway Southbound					Lemon Street Westbound					Curtola Parkway Northbound					Lemon Street Eastbound					Total
	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	
Peak Hour Analysis From 07:15 to 08:15																					
Peak Hour For Entire Intersection Begins at 07:15																					
07:15	0	0	0	18	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	1
07:30	0	0	0	12	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:45	0	0	0	10	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	1
08:00	0	0	0	12	0	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	1
Total Volume	0	0	0	52	0	0	0	1	0	1	0	0	0	0	0	0	2	0	0	2	3
% App Total	0.0%	0.0%	0.0%			0.0%	0.0%	100.0%			0.0%	0.0%	0.0%			0.0%	100.0%	0.0%			
PHF	.000	.000	.000		.000	.000	.000	.250		.250	.000	.000	.000		.000	.000	.500	.000		.500	.750

PM PEAK HOUR	Curtola Parkway Southbound					Lemon Street Westbound					Curtola Parkway Northbound					Lemon Street Eastbound					Total
	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	
Peak Hour Analysis From 16:30 to 17:30																					
Peak Hour For Entire Intersection Begins at 16:30																					
16:30	0	0	0	14	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
16:45	0	0	0	12	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
17:00	1	0	0	12	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
17:15	0	0	0	14	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	1
Total Volume	1	0	0	52	1	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	2
% App Total	100.0%	0.0%	0.0%			0.0%	0.0%	0.0%			0.0%	0.0%	0.0%			0.0%	100.0%	0.0%			
PHF	.250	.000	.000		.250	.000	.000	.000		.000	.000	.000	.000		.000	.250	.000		.250	.500	



**APPENDIX L.2:  
ROADWAY COUNTS**



Prepared by NDS/ATD

Volumes for: Tuesday, April 08, 2014

City: Vallejo

Project #: 14-7220-001

Location: Lemon Street west of Sonoma Boulevard

Start Time	Eastbound		Hour Totals		Westbound		Hour Totals		Combined Totals	
	Morning	Afternoon	Morning	Afternoon	Morning	Afternoon	Morning	Afternoon	Morning	Afternoon
12:00	0	4			2	6				
12:15	3	7			4	6				
12:30	1	5			2	6				
12:45	0	10	4	26	3	9	11	27	15	53
1:00	0	11			0	7				
1:15	1	5			3	10				
1:30	1	5			1	4				
1:45	0	6	2	27	0	8	4	29	6	56
2:00	1	9			0	5				
2:15	0	5			0	6				
2:30	0	7			0	11				
2:45	0	13	1	34	0	8	0	30	1	64
3:00	1	10			0	9				
3:15	1	10			0	7				
3:30	2	9			1	12				
3:45	1	5	5	34	0	9	1	37	6	71
4:00	1	10			0	8				
4:15	0	5			0	8				
4:30	0	8			0	4				
4:45	0	6	1	29	0	6	0	26	1	55
5:00	0	6			0	9				
5:15	1	6			2	13				
5:30	1	11			1	12				
5:45	2	6	4	29	0	3	3	37	7	66
6:00	2	9			1	8				
6:15	5	12			1	6				
6:30	1	10			1	9				
6:45	0	3	8	34	3	5	6	28	14	62
7:00	2	8			3	5				
7:15	7	4			0	7				
7:30	8	8			5	5				
7:45	6	3	23	23	7	2	15	19	38	42
8:00	6	4			6	6				
8:15	2	2			5	5				
8:30	7	5			9	7				
8:45	7	3	22	14	3	3	23	21	45	35
9:00	8	3			9	3				
9:15	6	3			3	3				
9:30	2	4			10	4				
9:45	5	3	21	13	6	3	28	13	49	26
10:00	5	1			2	2				
10:15	7	5			8	3				
10:30	5	0			9	1				
10:45	8	2	25	8	5	3	24	9	49	17
11:00	7	2			6	3				
11:15	7	6			9	5				
11:30	6	2			7	3				
11:45	6	0	26	10	8	1	30	12	56	22
<b>Total</b>	<b>142</b>	<b>281</b>	<b>142</b>	<b>281</b>	<b>145</b>	<b>288</b>	<b>145</b>	<b>288</b>	<b>287</b>	<b>569</b>
<b>Combined Total</b>	<b>423</b>		<b>423</b>		<b>433</b>		<b>433</b>		<b>856</b>	
AM Peak	8:30 AM				11:00 AM					
Vol.	28				30					
P.H.F.	0.875				0.833					
PM Peak	2:45 PM				4:45 PM					
Vol.	42				40					
P.H.F.	0.808				0.769					
Percentage	33.6%	66.4%			33.5%	66.5%				





















Volumes for: Tuesday, April 08, 2014

City: Vallejo

Project #: 14-7220-002

Location: Lemon Street west of Curtola Parkway

Start Time	Eastbound		Hour Totals		Westbound		Hour Totals		Combined Totals	
	Morning	Afternoon	Morning	Afternoon	Morning	Afternoon	Morning	Afternoon	Morning	Afternoon
12:00	5	44			3	33				
12:15	5	44			4	41				
12:30	6	34			8	33				
12:45	7	48	23	170	7	43	22	150	45	320
1:00	4	34			2	43				
1:15	0	43			4	40				
1:30	4	30			4	43				
1:45	5	45	13	152	6	44	16	170	29	322
2:00	3	68			1	41				
2:15	2	60			6	46				
2:30	3	46			1	49				
2:45	1	67	9	241	5	59	13	195	22	436
3:00	2	99			3	54				
3:15	4	92			6	67				
3:30	3	91			3	54				
3:45	3	124	12	406	1	61	13	236	25	642
4:00	4	122			12	60				
4:15	4	113			20	72				
4:30	20	146			45	68				
4:45	29	130	57	511	67	64	144	264	201	775
5:00	56	145			109	64				
5:15	42	119			120	77				
5:30	82	110			181	63				
5:45	104	113	284	487	151	74	561	278	845	765
6:00	84	104			145	64				
6:15	78	104			154	62				
6:30	104	84			112	64				
6:45	112	102	378	394	121	53	532	243	910	637
7:00	79	93			106	53				
7:15	102	83			105	57				
7:30	112	50			83	45				
7:45	80	53	373	279	105	39	399	194	772	473
8:00	84	50			93	38				
8:15	63	45			77	35				
8:30	67	28			79	21				
8:45	84	27	298	150	54	27	303	121	601	271
9:00	45	19			60	26				
9:15	47	25			48	26				
9:30	42	27			40	21				
9:45	45	21	179	92	29	30	177	103	356	195
10:00	29	25			31	15				
10:15	31	19			30	14				
10:30	30	23			33	26				
10:45	41	20	131	87	37	12	131	67	262	154
11:00	45	19			27	6				
11:15	38	10			30	17				
11:30	52	10			40	3				
11:45	35	8	170	47	35	4	132	30	302	77
<b>Total</b>	<b>1927</b>	<b>3016</b>	<b>1927</b>	<b>3016</b>	<b>2443</b>	<b>2051</b>	<b>2443</b>	<b>2051</b>	<b>4370</b>	<b>5067</b>
<b>Combined Total</b>	<b>4943</b>		<b>4943</b>		<b>4494</b>		<b>4494</b>		<b>9437</b>	
AM Peak	6:45 AM				5:30 AM					
Vol.	405				631					
P.H.F.	0.904				0.872					
PM Peak	4:30 PM				5:00 PM					
Vol.	540				278					
P.H.F.	0.925				0.903					
Percentage	39.0%	61.0%			54.4%	45.6%				



8:00 AM	0	65	25	0	3	0	0	0	0	0	0	0	0	93
8:15 AM	0	57	18	0	1	1	0	0	0	0	0	0	0	77
8:30 AM	0	59	18	0	2	0	0	0	0	0	0	0	0	79
8:45 AM	0	45	8	0	1	0	0	0	0	0	0	0	0	54
Hour Total	0	226	69	0	7	1	0	0	0	0	0	0	0	303
9:00 AM	0	42	16	0	1	1	0	0	0	0	0	0	0	60
9:15 AM	0	30	13	0	1	0	0	3	1	0	0	0	0	48
9:30 AM	0	22	14	0	3	0	0	1	0	0	0	0	0	40
9:45 AM	0	17	7	1	2	0	0	1	1	0	0	0	0	29
Hour Total	0	111	50	1	7	1	0	5	2	0	0	0	0	177
10:00 AM	0	17	12	0	2	0	0	0	0	0	0	0	0	31
10:15 AM	0	17	9	1	3	0	0	0	0	0	0	0	0	30
10:30 AM	0	28	5	0	0	0	0	0	0	0	0	0	0	33
10:45 AM	0	19	15	2	0	0	0	0	1	0	0	0	0	37
Hour Total	0	81	41	3	5	0	0	0	1	0	0	0	0	131
11:00 AM	0	20	4	0	1	2	0	0	0	0	0	0	0	27
11:15 AM	1	19	6	1	0	0	0	1	2	0	0	0	0	30
11:30 AM	0	24	16	0	0	0	0	0	0	0	0	0	0	40
11:45 AM	0	22	7	1	4	0	0	1	0	0	0	0	0	35
Hour Total	1	85	33	2	5	2	0	2	2	0	0	0	0	132
12:00 PM	0	25	8	0	0	0	0	0	0	0	0	0	0	33
12:15 PM	0	23	15	1	2	0	0	0	0	0	0	0	0	41
12:30 PM	1	18	12	0	0	2	0	0	0	0	0	0	0	33
12:45 PM	0	30	11	1	0	0	0	1	0	0	0	0	0	43
Hour Total	1	96	46	2	2	2	0	1	0	0	0	0	0	150
1:00 PM	0	32	11	0	0	0	0	0	0	0	0	0	0	43
1:15 PM	0	22	14	2	2	0	0	0	0	0	0	0	0	40
1:30 PM	0	28	13	1	0	0	0	1	0	0	0	0	0	43
1:45 PM	1	27	11	1	3	0	0	1	0	0	0	0	0	44
Hour Total	1	109	49	4	5	0	0	2	0	0	0	0	0	170
2:00 PM	0	26	12	0	1	1	0	0	1	0	0	0	0	41
2:15 PM	0	28	13	2	0	1	0	0	1	0	1	0	0	46
2:30 PM	0	36	11	1	0	0	0	0	1	0	0	0	0	49
2:45 PM	0	42	14	0	0	0	0	0	3	0	0	0	0	59
Hour Total	0	132	50	3	1	2	0	0	6	0	1	0	0	195
3:00 PM	1	40	9	2	0	0	0	1	1	0	0	0	0	54
3:15 PM	1	49	14	1	1	0	0	1	0	0	0	0	0	67
3:30 PM	1	34	16	2	1	0	0	0	0	0	0	0	0	54
3:45 PM	1	45	12	1	0	0	0	1	0	0	1	0	0	61
Hour Total	4	168	51	6	2	0	0	3	1	0	1	0	0	236

4:00 PM	0	41	16	1	1	1	0	0	0	0	0	0	0	60
4:15 PM	1	47	18	1	3	1	1	0	0	0	0	0	0	72
4:30 PM	1	40	25	1	0	0	0	1	0	0	0	0	0	68
4:45 PM	1	45	14	1	2	0	0	1	0	0	0	0	0	64
Hour Total	3	173	73	4	6	2	1	2	0	0	0	0	0	264
5:00 PM	1	47	12	0	2	0	0	2	0	0	0	0	0	64
5:15 PM	1	52	18	0	3	1	0	1	1	0	0	0	0	77
5:30 PM	1	45	13	1	1	1	0	0	1	0	0	0	0	63
5:45 PM	2	53	14	2	1	1	0	1	0	0	0	0	0	74
Hour Total	5	197	57	3	7	3	0	4	2	0	0	0	0	278
6:00 PM	0	44	11	2	1	1	0	4	1	0	0	0	0	64
6:15 PM	0	44	14	1	1	0	1	0	1	0	0	0	0	62
6:30 PM	0	50	9	1	1	0	0	1	1	0	1	0	0	64
6:45 PM	1	38	9	0	0	1	0	2	1	0	1	0	0	53
Hour Total	1	176	43	4	3	2	1	7	4	0	2	0	0	243
7:00 PM	0	38	14	0	1	0	0	0	0	0	0	0	0	53
7:15 PM	1	41	9	1	1	0	2	0	2	0	0	0	0	57
7:30 PM	0	32	8	2	2	0	0	1	0	0	0	0	0	45
7:45 PM	0	27	11	1	0	0	0	0	0	0	0	0	0	39
Hour Total	1	138	42	4	4	0	2	1	2	0	0	0	0	194
8:00 PM	0	34	3	1	0	0	0	0	0	0	0	0	0	38
8:15 PM	0	28	4	1	2	0	0	0	0	0	0	0	0	35
8:30 PM	0	18	2	0	0	0	0	1	0	0	0	0	0	21
8:45 PM	0	20	5	1	1	0	0	0	0	0	0	0	0	27
Hour Total	0	100	14	3	3	0	0	1	0	0	0	0	0	121
9:00 PM	0	20	6	0	0	0	0	0	0	0	0	0	0	26
9:15 PM	0	22	3	1	0	0	0	0	0	0	0	0	0	26
9:30 PM	0	19	2	0	0	0	0	0	0	0	0	0	0	21
9:45 PM	0	26	3	1	0	0	0	0	0	0	0	0	0	30
Hour Total	0	87	14	2	0	0	0	0	0	0	0	0	0	103
10:00 PM	0	13	2	0	0	0	0	0	0	0	0	0	0	15
10:15 PM	0	11	3	0	0	0	0	0	0	0	0	0	0	14
10:30 PM	0	22	3	1	0	0	0	0	0	0	0	0	0	26
10:45 PM	0	10	2	0	0	0	0	0	0	0	0	0	0	12
Hour Total	0	56	10	1	0	0	0	0	0	0	0	0	0	67
11:00 PM	0	5	0	1	0	0	0	0	0	0	0	0	0	6
11:15 PM	0	14	3	0	0	0	0	0	0	0	0	0	0	17
11:30 PM	0	2	1	0	0	0	0	0	0	0	0	0	0	3
11:45 PM	0	4	0	0	0	0	0	0	0	0	0	0	0	4
Hour Total	0	25	4	1	0	0	0	0	0	0	0	0	0	30
Totals	19	3332	954	45	66	17	5	30	21	0	5	0	0	4494
Percent	0.4%	74.1%	21.2%	1.0%	1.5%	0.4%	0.1%	0.7%	0.5%	0.0%	0.1%	0.0%	0.0%	



Class Report - Prepared by: NDS/ATD

Lemon Street west of Curtola Parkway  
 Vallejo  
 Project #:14-7220-002e

Date: 4/8/2014 TUESDAY

Begin Time	East Bound													Total	
	Cars & 2 Axle		Long	Buses	2 Axle		3 Axle	4 Axle	<5 Axle		5 Axle	>5 Axle	<6 Axle		6 Axle
	Bikes	Pasngr					6 Tire	Single	Single	Double	Double	Double	Multi	Multi	Multi
12:00 AM	0	4	1	0	0	0	0	0	0	0	0	0	0	0	5
12:15 AM	0	5	0	0	0	0	0	0	0	0	0	0	0	0	5
12:30 AM	0	4	2	0	0	0	0	0	0	0	0	0	0	0	6
12:45 AM	0	7	0	0	0	0	0	0	0	0	0	0	0	0	7
Hour Total	0	20	3	0	0	0	0	0	0	0	0	0	0	0	23
1:00 AM	0	3	1	0	0	0	0	0	0	0	0	0	0	0	4
1:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1:30 AM	0	4	0	0	0	0	0	0	0	0	0	0	0	0	4
1:45 AM	0	5	0	0	0	0	0	0	0	0	0	0	0	0	5
Hour Total	0	12	1	0	0	0	0	0	0	0	0	0	0	0	13
2:00 AM	0	2	1	0	0	0	0	0	0	0	0	0	0	0	3
2:15 AM	0	1	1	0	0	0	0	0	0	0	0	0	0	0	2
2:30 AM	0	0	2	0	0	0	0	0	1	0	0	0	0	0	3
2:45 AM	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1
Hour Total	0	4	4	0	0	0	0	0	1	0	0	0	0	0	9
3:00 AM	0	2	0	0	0	0	0	0	0	0	0	0	0	0	2
3:15 AM	0	4	0	0	0	0	0	0	0	0	0	0	0	0	4
3:30 AM	0	3	0	0	0	0	0	0	0	0	0	0	0	0	3
3:45 AM	0	1	2	0	0	0	0	0	0	0	0	0	0	0	3
Hour Total	0	10	2	0	0	0	0	0	0	0	0	0	0	0	12
4:00 AM	0	3	1	0	0	0	0	0	0	0	0	0	0	0	4
4:15 AM	0	3	1	0	0	0	0	0	0	0	0	0	0	0	4
4:30 AM	0	16	3	0	1	0	0	0	0	0	0	0	0	0	20
4:45 AM	0	24	5	0	0	0	0	0	0	0	0	0	0	0	29
Hour Total	0	46	10	0	1	0	0	0	0	0	0	0	0	0	57
5:00 AM	0	49	7	0	0	0	0	0	0	0	0	0	0	0	56
5:15 AM	0	37	4	0	1	0	0	0	0	0	0	0	0	0	42
5:30 AM	0	68	14	0	0	0	0	0	0	0	0	0	0	0	82
5:45 AM	1	89	11	0	3	0	0	0	0	0	0	0	0	0	104
Hour Total	1	243	36	0	4	0	0	0	0	0	0	0	0	0	284
6:00 AM	0	68	15	0	0	0	0	1	0	0	0	0	0	0	84
6:15 AM	0	60	15	2	1	0	0	0	0	0	0	0	0	0	78
6:30 AM	0	91	11	0	2	0	0	0	0	0	0	0	0	0	104
6:45 AM	0	94	11	0	3	2	0	2	0	0	0	0	0	0	112
Hour Total	0	313	52	2	6	2	0	3	0	0	0	0	0	0	378
7:00 AM	0	62	14	0	3	0	0	0	0	0	0	0	0	0	79
7:15 AM	0	74	19	3	4	1	0	1	0	0	0	0	0	0	102
7:30 AM	1	80	24	0	5	0	0	0	2	0	0	0	0	0	112
7:45 AM	1	64	11	0	4	0	0	0	0	0	0	0	0	0	80
Hour Total	2	280	68	3	16	1	0	1	2	0	0	0	0	0	373

8:00 AM	0	65	16	0	1	1	0	1	0	0	0	0	0	84
8:15 AM	0	45	14	0	2	0	0	2	0	0	0	0	0	63
8:30 AM	0	50	16	0	1	0	0	0	0	0	0	0	0	67
8:45 AM	0	60	22	0	2	0	0	0	0	0	0	0	0	84
Hour Total	0	220	68	0	6	1	0	3	0	0	0	0	0	298
9:00 AM	0	34	9	0	2	0	0	0	0	0	0	0	0	45
9:15 AM	0	34	10	0	2	1	0	0	0	0	0	0	0	47
9:30 AM	0	27	14	0	1	0	0	0	0	0	0	0	0	42
9:45 AM	0	32	8	1	2	0	0	2	0	0	0	0	0	45
Hour Total	0	127	41	1	7	1	0	2	0	0	0	0	0	179
10:00 AM	0	14	13	0	2	0	0	0	0	0	0	0	0	29
10:15 AM	0	19	9	1	1	0	0	1	0	0	0	0	0	31
10:30 AM	0	20	9	0	1	0	0	0	0	0	0	0	0	30
10:45 AM	0	28	9	1	0	0	0	1	1	0	1	0	0	41
Hour Total	0	81	40	2	4	0	0	2	1	0	1	0	0	131
11:00 AM	0	25	12	1	3	0	0	2	2	0	0	0	0	45
11:15 AM	0	27	8	1	2	0	0	0	0	0	0	0	0	38
11:30 AM	0	36	15	0	0	1	0	0	0	0	0	0	0	52
11:45 AM	0	30	3	1	1	0	0	0	0	0	0	0	0	35
Hour Total	0	118	38	3	6	1	0	2	2	0	0	0	0	170
12:00 PM	0	32	11	0	1	0	0	0	0	0	0	0	0	44
12:15 PM	0	35	8	1	0	0	0	0	0	0	0	0	0	44
12:30 PM	0	22	7	0	2	1	0	0	2	0	0	0	0	34
12:45 PM	0	33	13	1	1	0	0	0	0	0	0	0	0	48
Hour Total	0	122	39	2	4	1	0	0	2	0	0	0	0	170
1:00 PM	0	24	9	0	1	0	0	0	0	0	0	0	0	34
1:15 PM	0	27	10	1	5	0	0	0	0	0	0	0	0	43
1:30 PM	0	21	5	1	2	0	0	1	0	0	0	0	0	30
1:45 PM	0	35	9	1	0	0	0	0	0	0	0	0	0	45
Hour Total	0	107	33	3	8	0	0	1	0	0	0	0	0	152
2:00 PM	0	51	15	0	1	0	0	1	0	0	0	0	0	68
2:15 PM	0	39	14	1	3	0	0	2	1	0	0	0	0	60
2:30 PM	0	32	14	0	0	0	0	0	0	0	0	0	0	46
2:45 PM	0	55	10	1	1	0	0	0	0	0	0	0	0	67
Hour Total	0	177	53	2	5	0	0	3	1	0	0	0	0	241
3:00 PM	1	74	16	1	4	0	0	1	2	0	0	0	0	99
3:15 PM	1	70	15	0	2	0	1	0	3	0	0	0	0	92
3:30 PM	0	65	23	2	1	0	0	0	0	0	0	0	0	91
3:45 PM	1	92	29	1	0	0	0	0	1	0	0	0	0	124
Hour Total	3	301	83	4	7	0	1	1	6	0	0	0	0	406

4:00 PM	1	90	28	0	0	0	1	2	0	0	0	0	0	122
4:15 PM	0	80	31	1	0	0	0	0	1	0	0	0	0	113
4:30 PM	1	115	28	1	0	1	0	0	0	0	0	0	0	146
4:45 PM	1	109	18	1	1	0	0	0	0	0	0	0	0	130
Hour Total	3	394	105	3	1	1	1	2	1	0	0	0	0	511
5:00 PM	2	116	26	0	1	0	0	0	0	0	0	0	0	145
5:15 PM	2	99	16	1	0	0	0	1	0	0	0	0	0	119
5:30 PM	1	88	20	0	1	0	0	0	0	0	0	0	0	110
5:45 PM	0	91	19	1	2	0	0	0	0	0	0	0	0	113
Hour Total	5	394	81	2	4	0	0	1	0	0	0	0	0	487
6:00 PM	0	86	14	2	1	1	0	0	0	0	0	0	0	104
6:15 PM	0	84	18	1	0	0	0	1	0	0	0	0	0	104
6:30 PM	0	66	17	0	0	0	0	1	0	0	0	0	0	84
6:45 PM	0	90	10	1	0	0	1	0	0	0	0	0	0	102
Hour Total	0	326	59	4	1	1	1	2	0	0	0	0	0	394
7:00 PM	1	78	12	1	1	0	0	0	0	0	0	0	0	93
7:15 PM	0	72	9	1	0	0	0	0	1	0	0	0	0	83
7:30 PM	0	44	4	2	0	0	0	0	0	0	0	0	0	50
7:45 PM	0	45	7	1	0	0	0	0	0	0	0	0	0	53
Hour Total	1	239	32	5	1	0	0	0	1	0	0	0	0	279
8:00 PM	0	44	4	1	1	0	0	0	0	0	0	0	0	50
8:15 PM	0	36	7	1	1	0	0	0	0	0	0	0	0	45
8:30 PM	0	21	6	0	1	0	0	0	0	0	0	0	0	28
8:45 PM	0	21	5	1	0	0	0	0	0	0	0	0	0	27
Hour Total	0	122	22	3	3	0	0	0	0	0	0	0	0	150
9:00 PM	0	14	5	0	0	0	0	0	0	0	0	0	0	19
9:15 PM	0	21	3	1	0	0	0	0	0	0	0	0	0	25
9:30 PM	0	25	2	0	0	0	0	0	0	0	0	0	0	27
9:45 PM	0	19	0	1	1	0	0	0	0	0	0	0	0	21
Hour Total	0	79	10	2	1	0	0	0	0	0	0	0	0	92
10:00 PM	0	24	1	0	0	0	0	0	0	0	0	0	0	25
10:15 PM	0	18	1	0	0	0	0	0	0	0	0	0	0	19
10:30 PM	0	20	2	1	0	0	0	0	0	0	0	0	0	23
10:45 PM	0	16	4	0	0	0	0	0	0	0	0	0	0	20
Hour Total	0	78	8	1	0	0	0	0	0	0	0	0	0	87
11:00 PM	0	15	4	0	0	0	0	0	0	0	0	0	0	19
11:15 PM	0	8	1	1	0	0	0	0	0	0	0	0	0	10
11:30 PM	0	10	0	0	0	0	0	0	0	0	0	0	0	10
11:45 PM	0	7	1	0	0	0	0	0	0	0	0	0	0	8
Hour Total	0	40	6	1	0	0	0	0	0	0	0	0	0	47
Totals	15	3853	894	43	85	9	3	23	17	0	1	0	0	4943
Percent	0.3%	77.9%	18.1%	0.9%	1.7%	0.2%	0.1%	0.5%	0.3%	0.0%	0.0%	0.0%	0.0%	



8:00 AM	0	130	41	0	4	1	0	1	0	0	0	0	0	177
8:15 AM	0	102	32	0	3	1	0	2	0	0	0	0	0	140
8:30 AM	0	109	34	0	3	0	0	0	0	0	0	0	0	146
8:45 AM	0	105	30	0	3	0	0	0	0	0	0	0	0	138
Hour Total	0	446	137	0	13	2	0	3	0	0	0	0	0	601
9:00 AM	0	76	25	0	3	1	0	0	0	0	0	0	0	105
9:15 AM	0	64	23	0	3	1	0	3	1	0	0	0	0	95
9:30 AM	0	49	28	0	4	0	0	1	0	0	0	0	0	82
9:45 AM	0	49	15	2	4	0	0	3	1	0	0	0	0	74
Hour Total	0	238	91	2	14	2	0	7	2	0	0	0	0	356
10:00 AM	0	31	25	0	4	0	0	0	0	0	0	0	0	60
10:15 AM	0	36	18	2	4	0	0	1	0	0	0	0	0	61
10:30 AM	0	48	14	0	1	0	0	0	0	0	0	0	0	63
10:45 AM	0	47	24	3	0	0	0	1	2	0	1	0	0	78
Hour Total	0	162	81	5	9	0	0	2	2	0	1	0	0	262
11:00 AM	0	45	16	1	4	2	0	2	2	0	0	0	0	72
11:15 AM	1	46	14	2	2	0	0	1	2	0	0	0	0	68
11:30 AM	0	60	31	0	0	1	0	0	0	0	0	0	0	92
11:45 AM	0	52	10	2	5	0	0	1	0	0	0	0	0	70
Hour Total	1	203	71	5	11	3	0	4	4	0	0	0	0	302
12:00 PM	0	57	19	0	1	0	0	0	0	0	0	0	0	77
12:15 PM	0	58	23	2	2	0	0	0	0	0	0	0	0	85
12:30 PM	1	40	19	0	2	3	0	0	2	0	0	0	0	67
12:45 PM	0	63	24	2	1	0	0	1	0	0	0	0	0	91
Hour Total	1	218	85	4	6	3	0	1	2	0	0	0	0	320
1:00 PM	0	56	20	0	1	0	0	0	0	0	0	0	0	77
1:15 PM	0	49	24	3	7	0	0	0	0	0	0	0	0	83
1:30 PM	0	49	18	2	2	0	0	2	0	0	0	0	0	73
1:45 PM	1	62	20	2	3	0	0	1	0	0	0	0	0	89
Hour Total	1	216	82	7	13	0	0	3	0	0	0	0	0	322
2:00 PM	0	77	27	0	2	1	0	1	1	0	0	0	0	109
2:15 PM	0	67	27	3	3	1	0	2	2	0	1	0	0	106
2:30 PM	0	68	25	1	0	0	0	0	1	0	0	0	0	95
2:45 PM	0	97	24	1	1	0	0	0	3	0	0	0	0	126
Hour Total	0	309	103	5	6	2	0	3	7	0	1	0	0	436
3:00 PM	2	114	25	3	4	0	0	2	3	0	0	0	0	153
3:15 PM	2	119	29	1	3	0	1	1	3	0	0	0	0	159
3:30 PM	1	99	39	4	2	0	0	0	0	0	0	0	0	145
3:45 PM	2	137	41	2	0	0	0	1	1	0	1	0	0	185
Hour Total	7	469	134	10	9	0	1	4	7	0	1	0	0	642

4:00 PM	1	131	44	1	1	1	1	2	0	0	0	0	0	182
4:15 PM	1	127	49	2	3	1	1	0	1	0	0	0	0	185
4:30 PM	2	155	53	2	0	1	0	1	0	0	0	0	0	214
4:45 PM	2	154	32	2	3	0	0	1	0	0	0	0	0	194
Hour Total	6	567	178	7	7	3	2	4	1	0	0	0	0	775
5:00 PM	3	163	38	0	3	0	0	2	0	0	0	0	0	209
5:15 PM	3	151	34	1	3	1	0	2	1	0	0	0	0	196
5:30 PM	2	133	33	1	2	1	0	0	1	0	0	0	0	173
5:45 PM	2	144	33	3	3	1	0	1	0	0	0	0	0	187
Hour Total	10	591	138	5	11	3	0	5	2	0	0	0	0	765
6:00 PM	0	130	25	4	2	2	0	4	1	0	0	0	0	168
6:15 PM	0	128	32	2	1	0	1	1	1	0	0	0	0	166
6:30 PM	0	116	26	1	1	0	0	2	1	0	1	0	0	148
6:45 PM	1	128	19	1	0	1	1	2	1	0	1	0	0	155
Hour Total	1	502	102	8	4	3	2	9	4	0	2	0	0	637
7:00 PM	1	116	26	1	2	0	0	0	0	0	0	0	0	146
7:15 PM	1	113	18	2	1	0	2	0	3	0	0	0	0	140
7:30 PM	0	76	12	4	2	0	0	1	0	0	0	0	0	95
7:45 PM	0	72	18	2	0	0	0	0	0	0	0	0	0	92
Hour Total	2	377	74	9	5	0	2	1	3	0	0	0	0	473
8:00 PM	0	78	7	2	1	0	0	0	0	0	0	0	0	88
8:15 PM	0	64	11	2	3	0	0	0	0	0	0	0	0	80
8:30 PM	0	39	8	0	1	0	0	1	0	0	0	0	0	49
8:45 PM	0	41	10	2	1	0	0	0	0	0	0	0	0	54
Hour Total	0	222	36	6	6	0	0	1	0	0	0	0	0	271
9:00 PM	0	34	11	0	0	0	0	0	0	0	0	0	0	45
9:15 PM	0	43	6	2	0	0	0	0	0	0	0	0	0	51
9:30 PM	0	44	4	0	0	0	0	0	0	0	0	0	0	48
9:45 PM	0	45	3	2	1	0	0	0	0	0	0	0	0	51
Hour Total	0	166	24	4	1	0	0	0	0	0	0	0	0	195
10:00 PM	0	37	3	0	0	0	0	0	0	0	0	0	0	40
10:15 PM	0	29	4	0	0	0	0	0	0	0	0	0	0	33
10:30 PM	0	42	5	2	0	0	0	0	0	0	0	0	0	49
10:45 PM	0	26	6	0	0	0	0	0	0	0	0	0	0	32
Hour Total	0	134	18	2	0	0	0	0	0	0	0	0	0	154
11:00 PM	0	20	4	1	0	0	0	0	0	0	0	0	0	25
11:15 PM	0	22	4	1	0	0	0	0	0	0	0	0	0	27
11:30 PM	0	12	1	0	0	0	0	0	0	0	0	0	0	13
11:45 PM	0	11	1	0	0	0	0	0	0	0	0	0	0	12
Hour Total	0	65	10	2	0	0	0	0	0	0	0	0	0	77
Totals	34	7185	1848	88	151	26	8	53	38	0	6	0	0	9437
Percent	0.4%	76.1%	19.6%	0.9%	1.6%	0.3%	0.1%	0.6%	0.4%	0.0%	0.1%	0.0%	0.0%	



**APPENDIX L.3:  
PROJECT TRANSPORTATION DATA**



Transportation Impact Analysis Data -- Final 10-7-14

Red shading indicates worst-case for traffic analysis.

VMT Project Phase	Truck Activity																	
	Daily						AM Peak Hour						PM Peak Hour					
	Loading Onto Ships			Off-Loading From Ships			Loading Onto Ships			Off-Loading From Ships			Loading Onto Ships			Off-Loading From Ships		
	Loaded In	Empty Out	Total	Empty In	Loaded Out	Total	Loaded In	Empty Out	Total	Empty In	Loaded Out	Total	Loaded In	Empty Out	Total	Empty In	Loaded Out	Total
VMT Phase 1*	0	0	0	87	87	174	0	0	0	6	6	12	0	0	0	4	4	8
VMT Phase 2	0	0	0	87	87	174	0	0	0	6	6	12	0	0	0	4	4	8

Source: Air Quality and Greenhouse Gas Emission Inventory and Air Quality Impact Assessment of Orcem and VMT Facilities, Vallejo, CA, 8/8/14, Table 5.41.

\* Note that Phase 2 has same number of trucks as Phase 1, so no need to run separate scenarios for VMT impacts

Orcem Mode/Milestone	Truck Activity																	
	Daily						AM Peak Hour						PM Peak Hour					
	Raw Material In			Finished Product Out			Raw Material In			Finished Product Out			Raw Material In			Finished Product Out		
	Loaded In	Empty Out	Total	Empty In	Loaded Out	Total	Loaded In	Empty Out	Total	Empty In	Loaded Out	Total	Loaded In	Empty Out	Total	Empty In	Loaded Out	Total
Orcem Mode 1 Milestone 4	3	3	6	82	82	164	1	1	2	7	7	14	1	1	2	6	6	12
Orcem Mode 2 Milestone 4	12	12	24	119	119	238	1	1	2	11	11	22	1	1	2	9	9	18
Orcem Mode 3 Milestone 4	3	3	6	109	109	218	1	1	2	9	9	18	1	1	2	8	8	16
Orcem Mode 1 Milestone 5	5	5	10	130	130	260	1	1	2	11	11	22	1	1	2	9	9	18
Orcem Mode 2 Milestone 5	19	19	38	189	189	378	2	2	4	17	17	34	2	2	4	15	15	30
Orcem Mode 3 Milestone 5	5	5	10	157	157	314	1	1	2	13	13	26	1	1	2	11	11	22

Source: Orcem, transmitted by Richard Loewke, 9/11/14

VMT Project Phase	Rail Activity			
	Trains/Day	Cars/Train	Expected Time Of Day Control for movements through Vallejo (if any)	Describe rail car logistics**
VMT Phase 1	0.29	100	Assuming 20 hours to load 100 cars, train may arrive in early AM hours and depart in late PM hours	A maximum of 2 100-car unit trains may service the terminal in any given week.
VMT Phase 2	0.29	100		

Source: VMT Application for Major Use Permit and Site Development Permit, 3/12/14

Note: Two filled trains per week = one every third day. Assume one empty 100-car train enters the sidings outside the site in the early AM and one filled 100-car train exits the sidings in the late PM. However, these movements could happen at other times of day. Therefore, we will assess impact of 100-car trains on peak hour traffic as a worst-case scenario.

Orcem Mode/Milestone	Rail Activity			
	Trains/Day	Cars/Train	Expected Time Of Day Control for movements through Vallejo (if any)	Rail Logistics
Orcem Mode 1 Milestone 4	0.17	16	None anticipated	See Note 1.
Orcem Mode 2 Milestone 4	0	0	None anticipated	See Note 1.
Orcem Mode 3 Milestone 4	0.4	16	None anticipated	See Note 1.
Orcem Mode 1 Milestone 5	0.27	16	None anticipated	See Note 1.
Orcem Mode 2 Milestone 5	0	0	None anticipated	See Note 1.
Orcem Mode 3 Milestone 5	0.5	16	None anticipated	See Notes 1, 2.

Source: Orcem Proposed GGBFS Manufacturing Facility Transportation and Traffic Information Technical Studies Submission, 1/28/14

Note 1: According to notes from applicant, the figures describe one-way train movements; thus, we will double the movements for the analysis.

Note 2: Worst case is Mode 3 Milestone 5. One empty 16-car train enters and one filled 16-car train exits every other day. No time of day control, per applicant's notes.





## **APPENDIX L.4: SYNCHRO LOS RESULTS**

- L.4.1 Existing Conditions (April 2014)
- L.4.2 Existing Plus VMT Project
- L.4.3 Existing Plus Orcem Project
- L.4.4 Existing Plus Combined Projects
- L.4.5 Cumulative (2040) No Project
- L.4.6 Cumulative Plus VMT Project
- L.4.7 Cumulative Plus Orcem Project
- L.4.8 Cumulative Plus Combined Projects



**APPENDIX L.4.1 — EXISTING CONDITIONS (APRIL 2014)**



HCM Signalized Intersection Capacity Analysis  
1: Sonoma Blvd & Curtola Pkwy

Vallejo Marine Terminal  
Existing AM

	→	↘	↙	←	↖	↗	↑	↘	↙	↓	↖	↗
Movement	EBT	EBR	EBR2	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	SBR2
Lane Configurations	↑↑	↘		↑↑	↗	↘	↑↑			↑↑		
Volume (vph)	246	103	2	404	159	185	168	5	139	140	3	12
Ideal Flow (vphp)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	4.5		4.5	4.5	4.5	4.5			4.5		
Lane Util. Factor	0.91	0.91		0.95	1.00	0.91	0.91			0.95		
Frbp, ped/bikes	1.00	1.00		1.00	0.99	1.00	1.00			1.00		
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00			1.00		
Frt	0.99	0.85		1.00	0.85	1.00	1.00			0.99		
Flt Protected	1.00	1.00		1.00	1.00	0.95	0.99			0.98		
Satd. Flow (prot)	3336	1414		3539	1593	1595	3312			3388		
Flt Permitted	1.00	1.00		1.00	1.00	0.95	0.99			0.98		
Satd. Flow (perm)	3336	1414		3539	1593	1595	3312			3388		
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.92
Adj. Flow (vph)	265	111	2	434	171	199	181	5	149	151	3	13
RTOR Reduction (vph)	0	53	0	0	128	0	1	0	0	2	0	0
Lane Group Flow (vph)	276	49	0	434	43	125	259	0	0	314	0	0
Confl. Peds. (#/hr)						2		2	2		2	
Confl. Bikes (#/hr)					2							
Heavy Vehicles (%)	3%	4%	0%	2%	0%	3%	2%	20%	2%	4%	0%	8%
Turn Type	NA	Perm		NA	Perm	Split	NA		Split	NA		
Protected Phases	2			2		3	3		4	4		
Permitted Phases		2			2							
Actuated Green, G (s)	15.5	15.5		15.5	15.5	13.0	13.0			14.3		
Effective Green, g (s)	15.5	15.5		15.5	15.5	13.0	13.0			14.3		
Actuated g/C Ratio	0.25	0.25		0.25	0.25	0.21	0.21			0.23		
Clearance Time (s)	4.5	4.5		4.5	4.5	4.5	4.5			4.5		
Vehicle Extension (s)	2.0	2.0		2.0	2.0	2.0	2.0			2.0		
Lane Grp Cap (vph)	846	358		897	404	339	704			792		
v/s Ratio Prot	0.08			c0.12		c0.08	0.08			c0.09		
v/s Ratio Perm		0.03			0.03							
v/c Ratio	0.33	0.14		0.48	0.11	0.37	0.37			0.40		
Uniform Delay, d1	18.6	17.6		19.4	17.5	20.5	20.5			19.8		
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00			1.00		
Incremental Delay, d2	0.1	0.1		0.2	0.0	0.2	0.1			0.1		
Delay (s)	18.6	17.7		19.5	17.5	20.8	20.7			19.9		
Level of Service	B	B		B	B	C	C			B		
Approach Delay (s)	18.4			19.0			20.7			19.9		
Approach LOS	B			B			C			B		
<b>Intersection Summary</b>												
HCM 2000 Control Delay			19.4			HCM 2000 Level of Service				B		
HCM 2000 Volume to Capacity ratio			0.41									
Actuated Cycle Length (s)			61.1			Sum of lost time (s)				17.0		
Intersection Capacity Utilization			54.6%			ICU Level of Service				A		
Analysis Period (min)			15									
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis  
 1: Sonoma Blvd & Curtola Pkwy





















Vallejo Marine Terminal  
 Existing AM



Movement	NEL2	NEL	NER2
Lane Configurations			
Volume (vph)	2	2	2
Ideal Flow (vphpl)	1900	1900	1900
Total Lost time (s)		3.5	
Lane Util. Factor		1.00	
Frbp, ped/bikes		1.00	
Flpb, ped/bikes		1.00	
Frt		0.95	
Flt Protected		0.97	
Satd. Flow (prot)		1756	
Flt Permitted		0.97	
Satd. Flow (perm)		1756	
Peak-hour factor, PHF	0.92	0.92	0.92
Adj. Flow (vph)	2	2	2
RTOR Reduction (vph)	0	6	0
Lane Group Flow (vph)	0	0	0
Confl. Peds. (#/hr)			
Confl. Bikes (#/hr)			
Heavy Vehicles (%)	0%	0%	0%
Turn Type	Prot	Prot	
Protected Phases	1	1	
Permitted Phases			
Actuated Green, G (s)		1.3	
Effective Green, g (s)		1.3	
Actuated g/C Ratio		0.02	
Clearance Time (s)		3.5	
Vehicle Extension (s)		2.0	
Lane Grp Cap (vph)		37	
v/s Ratio Prot		c0.00	
v/s Ratio Perm			
v/c Ratio		0.00	
Uniform Delay, d1		29.3	
Progression Factor		1.00	
Incremental Delay, d2		0.0	
Delay (s)		29.3	
Level of Service		C	
Approach Delay (s)		29.3	
Approach LOS		C	
<b>Intersection Summary</b>			



















HCM 2010 Signalized Intersection Summary  
2: Solano Blvd & Sonoma Blvd

Vallejo Marine Terminal  
Existing AM

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	5	8	14	26	16	14	12	345	48	11	222	16
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		0.99	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1583	1545	1900	1696	1840	1900	1900	1863	1900	1610	1841	1900
Adj Flow Rate, veh/h	5	9	0	28	17	0	13	375	45	12	241	14
Adj No. of Lanes	1	1	0	1	2	0	1	2	0	1	2	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	20	13	13	12	0	0	0	2	2	18	3	3
Cap, veh/h	14	99	0	79	360	0	56	1123	134	39	1168	67
Arrive On Green	0.01	0.06	0.00	0.05	0.10	0.00	0.03	0.35	0.35	0.03	0.35	0.35
Sat Flow, veh/h	1508	1545	0	1616	3587	0	1810	3180	379	1533	3358	194
Grp Volume(v), veh/h	5	9	0	28	17	0	13	207	213	12	125	130
Grp Sat Flow(s),veh/h/ln	1508	1545	0	1616	1748	0	1810	1770	1789	1533	1749	1803
Q Serve(g_s), s	0.1	0.2	0.0	0.5	0.1	0.0	0.2	2.5	2.6	0.2	1.5	1.5
Cycle Q Clear(g_c), s	0.1	0.2	0.0	0.5	0.1	0.0	0.2	2.5	2.6	0.2	1.5	1.5
Prop In Lane	1.00		0.00	1.00		0.00	1.00		0.21	1.00		0.11
Lane Grp Cap(c), veh/h	14	99	0	79	360	0	56	625	632	39	608	627
V/C Ratio(X)	0.35	0.09	0.00	0.36	0.05	0.00	0.23	0.33	0.34	0.31	0.21	0.21
Avail Cap(c_a), veh/h	742	1258	0	932	2846	0	1166	1801	1821	936	1780	1835
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	14.5	13.0	0.0	13.6	11.9	0.0	13.9	7.0	7.0	14.1	6.8	6.8
Incr Delay (d2), s/veh	5.3	0.1	0.0	1.0	0.0	0.0	0.8	0.1	0.1	1.6	0.1	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.1	0.1	0.0	0.2	0.1	0.0	0.1	1.2	1.3	0.1	0.7	0.7
LnGrp Delay(d),s/veh	19.8	13.1	0.0	14.6	11.9	0.0	14.7	7.1	7.1	15.8	6.8	6.8
LnGrp LOS	B	B		B	B		B	A	A	B	A	A
Approach Vol, veh/h		14			45			433			267	
Approach Delay, s/veh		15.5			13.6			7.3			7.2	
Approach LOS		B			B			A			A	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	3.7	14.9	4.9	5.9	3.9	14.7	3.8	7.0				
Change Period (Y+Rc), s	3.0	4.5	3.5	4.0	3.0	4.5	3.5	4.0				
Max Green Setting (Gmax), s	18.0	30.0	17.0	24.0	19.0	30.0	14.5	24.0				
Max Q Clear Time (g_c+I1), s	2.2	4.6	2.5	2.2	2.2	3.5	2.1	2.1				
Green Ext Time (p_c), s	0.0	2.7	0.0	0.0	0.0	2.7	0.0	0.0				
<b>Intersection Summary</b>												
HCM 2010 Ctrl Delay			7.8									
HCM 2010 LOS			A									



















HCM 2010 Signalized Intersection Summary  
3: Sonoma Blvd & Lemon St

Vallejo Marine Terminal  
Existing AM

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	10	12	3	55	11	33	7	338	61	20	235	11
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	0.99		1.00	0.99		1.00	1.00		0.98	1.00		0.97
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1900	1900	1900	1792	1900	1667	1845	1900	1727	1797	1900
Adj Flow Rate, veh/h	11	13	1	60	12	12	8	371	54	22	258	9
Adj No. of Lanes	0	1	0	0	1	0	1	2	0	1	2	0
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Percent Heavy Veh, %	0	0	0	0	0	0	14	3	3	10	6	6
Cap, veh/h	257	230	13	368	72	40	24	1125	162	64	1315	46
Arrive On Green	0.19	0.19	0.19	0.19	0.19	0.19	0.02	0.37	0.37	0.04	0.39	0.39
Sat Flow, veh/h	469	1182	69	877	368	208	1587	3064	442	1645	3362	117
Grp Volume(v), veh/h	25	0	0	84	0	0	8	211	214	22	131	136
Grp Sat Flow(s),veh/h/ln	1721	0	0	1453	0	0	1587	1752	1754	1645	1707	1772
Q Serve(g_s), s	0.0	0.0	0.0	0.6	0.0	0.0	0.2	2.7	2.8	0.4	1.6	1.6
Cycle Q Clear(g_c), s	0.3	0.0	0.0	1.4	0.0	0.0	0.2	2.7	2.8	0.4	1.6	1.6
Prop In Lane	0.44		0.04	0.71		0.14	1.00		0.25	1.00		0.07
Lane Grp Cap(c), veh/h	500	0	0	480	0	0	24	644	644	64	668	693
V/C Ratio(X)	0.05	0.00	0.00	0.18	0.00	0.00	0.34	0.33	0.33	0.34	0.20	0.20
Avail Cap(c_a), veh/h	2087	0	0	1849	0	0	837	1960	1961	867	1909	1982
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	10.3	0.0	0.0	10.7	0.0	0.0	15.3	7.1	7.1	14.6	6.3	6.3
Incr Delay (d2), s/veh	0.0	0.0	0.0	0.1	0.0	0.0	3.0	0.4	0.4	1.2	0.2	0.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.2	0.0	0.0	0.6	0.0	0.0	0.1	1.4	1.4	0.2	0.8	0.8
LnGrp Delay(d),s/veh	10.3	0.0	0.0	10.8	0.0	0.0	18.3	7.5	7.6	15.8	6.5	6.5
LnGrp LOS	B			B			B	A	A	B	A	A
Approach Vol, veh/h		25			84			433			289	
Approach Delay, s/veh		10.3			10.8			7.8			7.2	
Approach LOS		B			B			A			A	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	5.2	16.0		10.1	4.5	16.7		10.1				
Change Period (Y+Rc), s	4.0	4.5		4.0	4.0	4.5		4.0				
Max Green Setting (Gmax), s	16.5	35.0		36.5	16.5	35.0		36.5				
Max Q Clear Time (g_c+I1), s	2.4	4.8		2.3	2.2	3.6		3.4				
Green Ext Time (p_c), s	0.0	6.6		0.4	0.0	6.6		0.4				
<b>Intersection Summary</b>												
HCM 2010 Ctrl Delay			7.9									
HCM 2010 LOS			A									




















HCM 2010 Signalized Intersection Summary  
6: Sonoma Blvd & Magazine St

Vallejo Marine Terminal  
Existing AM

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	68	127	10	36	45	87	11	199	81	58	204	27
Number	3	8	18	7	4	14	1	6	16	5	2	12
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	0.98		0.96	0.98		0.97	1.00		0.98	1.00		0.96
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1888	1900	1900	1871	1900	1900	1855	1900	1727	1813	1900
Adj Flow Rate, veh/h	79	148	10	42	52	46	13	231	54	67	237	24
Adj No. of Lanes	0	1	0	0	1	0	1	2	0	1	2	0
Peak Hour Factor	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86
Percent Heavy Veh, %	1	1	1	0	0	0	0	3	3	10	4	4
Cap, veh/h	174	287	17	149	177	127	46	1424	326	137	1763	177
Arrive On Green	0.24	0.24	0.24	0.24	0.24	0.24	0.03	0.50	0.50	0.08	0.56	0.56
Sat Flow, veh/h	434	1183	71	340	729	523	1810	2837	649	1645	3149	315
Grp Volume(v), veh/h	237	0	0	140	0	0	13	142	143	67	128	133
Grp Sat Flow(s),veh/h/ln	1688	0	0	1592	0	0	1810	1762	1723	1645	1722	1742
Q Serve(g_s), s	3.6	0.0	0.0	0.0	0.0	0.0	0.5	3.0	3.2	2.7	2.5	2.5
Cycle Q Clear(g_c), s	8.2	0.0	0.0	4.6	0.0	0.0	0.5	3.0	3.2	2.7	2.5	2.5
Prop In Lane	0.33		0.04	0.30		0.33	1.00		0.38	1.00		0.18
Lane Grp Cap(c), veh/h	478	0	0	453	0	0	46	885	865	137	964	975
V/C Ratio(X)	0.50	0.00	0.00	0.31	0.00	0.00	0.28	0.16	0.17	0.49	0.13	0.14
Avail Cap(c_a), veh/h	829	0	0	782	0	0	467	885	865	425	964	975
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	23.0	0.0	0.0	21.7	0.0	0.0	33.3	9.4	9.4	30.5	7.3	7.3
Incr Delay (d2), s/veh	0.3	0.0	0.0	0.1	0.0	0.0	1.2	0.4	0.4	1.0	0.3	0.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	4.0	0.0	0.0	2.2	0.0	0.0	0.3	1.5	1.6	1.3	1.3	1.3
LnGrp Delay(d),s/veh	23.3	0.0	0.0	21.9	0.0	0.0	34.6	9.8	9.8	31.5	7.6	7.6
LnGrp LOS	C			C			C	A	A	C	A	A
Approach Vol, veh/h		237			140			298			328	
Approach Delay, s/veh		23.3			21.9			10.9			12.5	
Approach LOS		C			C			B			B	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	5.3	44.0		20.4	9.3	40.0		20.4				
Change Period (Y+Rc), s	3.5	5.0		3.5	3.5	5.0		3.5				
Max Green Setting (Gmax), s	18.0	35.0		32.0	18.0	35.0		32.0				
Max Q Clear Time (g_c+I1), s	2.5	4.5		6.6	4.7	5.2		10.2				
Green Ext Time (p_c), s	0.0	5.0		1.5	0.1	5.0		1.5				
<b>Intersection Summary</b>												
HCM 2010 Ctrl Delay			15.9									
HCM 2010 LOS			B									

HCM 2010 Signalized Intersection Summary  
8: Sonoma Blvd & Maritime Academy Dr






















Vallejo Marine Terminal  
Existing AM

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	22	10	8	13	79	93	8	155	11	32	139	32
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		1.00	1.00		1.00	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1719	1900	1900	1786	1863	1900	1832	1900	1900	1820	1900
Adj Flow Rate, veh/h	24	11	2	14	86	22	9	168	8	35	151	17
Adj No. of Lanes	0	1	0	0	1	1	1	2	0	1	2	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	0	0	0	5	5	2	0	4	4	0	4	4
Cap, veh/h	371	136	18	164	404	389	39	1156	55	138	1240	138
Arrive On Green	0.25	0.25	0.25	0.25	0.25	0.25	0.02	0.34	0.34	0.08	0.40	0.40
Sat Flow, veh/h	699	554	72	106	1644	1583	1810	3383	160	1810	3132	347
Grp Volume(v), veh/h	37	0	0	100	0	22	9	86	90	35	82	86
Grp Sat Flow(s),veh/h/ln	1324	0	0	1750	0	1583	1810	1740	1803	1810	1729	1750
Q Serve(g_s), s	0.0	0.0	0.0	0.0	0.0	0.3	0.1	1.0	1.0	0.5	0.9	0.9
Cycle Q Clear(g_c), s	1.3	0.0	0.0	1.3	0.0	0.3	0.1	1.0	1.0	0.5	0.9	0.9
Prop In Lane	0.65		0.05	0.14		1.00	1.00		0.09	1.00		0.20
Lane Grp Cap(c), veh/h	525	0	0	568	0	389	39	595	616	138	685	693
V/C Ratio(X)	0.07	0.00	0.00	0.18	0.00	0.06	0.23	0.14	0.15	0.25	0.12	0.12
Avail Cap(c_a), veh/h	1531	0	0	1870	0	1598	1461	2341	2426	1461	2327	2354
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	8.6	0.0	0.0	9.0	0.0	8.6	14.3	6.8	6.8	12.9	5.7	5.7
Incr Delay (d2), s/veh	0.0	0.0	0.0	0.1	0.0	0.0	1.1	0.1	0.1	0.4	0.1	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.2	0.0	0.0	0.6	0.0	0.1	0.1	0.5	0.5	0.3	0.4	0.4
LnGrp Delay(d),s/veh	8.7	0.0	0.0	9.0	0.0	8.6	15.4	6.9	6.9	13.3	5.8	5.8
LnGrp LOS	A			A		A	B	A	A	B	A	A
Approach Vol, veh/h		37			122			185			203	
Approach Delay, s/veh		8.7			8.9			7.3			7.1	
Approach LOS		A			A			A			A	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	5.3	14.2		10.3	3.6	15.8		10.3				
Change Period (Y+Rc), s	3.0	4.0		3.0	3.0	4.0		3.0				
Max Green Setting (Gmax), s	24.0	40.0		30.0	24.0	40.0		30.0				
Max Q Clear Time (g_c+I1), s	2.5	3.0		3.3	2.1	2.9		3.3				
Green Ext Time (p_c), s	0.0	2.1		0.5	0.0	2.1		0.5				
<b>Intersection Summary</b>												
HCM 2010 Ctrl Delay			7.7									
HCM 2010 LOS			A									



HCM 2010 Signalized Intersection Summary  
 17: Lemon St & Curtola Pkwy

Vallejo Marine Terminal  
 Existing AM

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	26	70	202	120	90	25	187	730	106	23	412	30
Number	3	8	18	7	4	14	1	6	16	5	2	12
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		0.94	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1696	1859	1900	1827	1827	1900	1863	1849	1900	1827	1845	1900
Adj Flow Rate, veh/h	29	78	137	133	100	6	208	811	0	26	458	0
Adj No. of Lanes	1	1	0	1	1	1	1	2	0	1	2	0
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	12	0	0	4	4	0	2	3	3	4	3	3
Cap, veh/h	50	109	191	169	452	378	254	1499	0	49	1093	0
Arrive On Green	0.03	0.18	0.18	0.10	0.25	0.25	0.14	0.43	0.00	0.03	0.31	0.00
Sat Flow, veh/h	1616	601	1055	1740	1827	1524	1774	3606	0	1740	3597	0
Grp Volume(v), veh/h	29	0	215	133	100	6	208	811	0	26	458	0
Grp Sat Flow(s),veh/h/ln	1616	0	1656	1740	1827	1524	1774	1757	0	1740	1752	0
Q Serve(g_s), s	1.3	0.0	8.7	5.3	3.1	0.2	8.1	12.2	0.0	1.0	7.3	0.0
Cycle Q Clear(g_c), s	1.3	0.0	8.7	5.3	3.1	0.2	8.1	12.2	0.0	1.0	7.3	0.0
Prop In Lane	1.00		0.64	1.00		1.00	1.00		0.00	1.00		0.00
Lane Grp Cap(c), veh/h	50	0	300	169	452	378	254	1499	0	49	1093	0
V/C Ratio(X)	0.58	0.00	0.72	0.78	0.22	0.02	0.82	0.54	0.00	0.53	0.42	0.00
Avail Cap(c_a), veh/h	570	0	818	614	903	753	626	1736	0	614	1732	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	33.9	0.0	27.3	31.2	21.2	20.1	29.5	15.1	0.0	34.0	19.3	0.0
Incr Delay (d2), s/veh	4.0	0.0	3.4	3.0	0.3	0.0	2.5	0.4	0.0	3.2	0.3	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.6	0.0	4.2	2.7	1.6	0.1	4.1	5.9	0.0	0.5	3.5	0.0
LnGrp Delay(d),s/veh	37.9	0.0	30.7	34.3	21.5	20.1	32.0	15.6	0.0	37.2	19.6	0.0
LnGrp LOS	D		C	C	C	C	C	B		D	B	
Approach Vol, veh/h		244			239			1019			484	
Approach Delay, s/veh		31.5			28.6			18.9			20.5	
Approach LOS		C			C			B			C	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	14.1	28.1	6.2	22.4	6.0	36.2	10.9	17.7				
Change Period (Y+Rc), s	4.0	6.0	4.0	4.9	4.0	6.0	4.0	4.9				
Max Green Setting (Gmax), s	25.0	35.0	25.0	35.0	25.0	35.0	25.0	35.0				
Max Q Clear Time (g_c+I1), s	10.1	9.3	3.3	5.1	3.0	14.2	7.3	10.7				
Green Ext Time (p_c), s	0.2	12.8	0.0	2.3	0.0	11.3	0.2	2.2				
<b>Intersection Summary</b>												
HCM 2010 Ctrl Delay			22.0									
HCM 2010 LOS			C									

**Intersection**

Int Delay, s/veh 0.7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR
Vol, veh/h	15	1	4	2	3	7	6	388	3
Conflicting Peds, #/hr	0	0	2	2	0	0	6	0	3
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-
Peak Hour Factor	89	89	89	89	89	89	89	89	89
Heavy Vehicles, %	13	0	0	0	0	0	0	2	33
Mvmt Flow	17	1	4	2	3	8	7	436	3

Major/Minor	Minor2			Minor1			Major1		
Conflicting Flow All	576	796	174	628	797	228	335	0	0
Stage 1	341	341	-	453	453	-	-	-	-
Stage 2	235	455	-	175	344	-	-	-	-
Critical Hdwy	7.76	6.5	6.9	7.5	6.5	6.9	4.1	-	-
Critical Hdwy Stg 1	6.76	5.5	-	6.5	5.5	-	-	-	-
Critical Hdwy Stg 2	6.76	5.5	-	6.5	5.5	-	-	-	-
Follow-up Hdwy	3.63	4	3.3	3.5	4	3.3	2.2	-	-
Pot Cap-1 Maneuver	378	322	846	371	322	781	1236	-	-
Stage 1	618	642	-	561	573	-	-	-	-
Stage 2	716	572	-	816	640	-	-	-	-
Platoon blocked, %									
Mov Cap-1 Maneuver	365	317	840	362	317	776	1230	-	-
Mov Cap-2 Maneuver	365	317	-	362	317	-	-	-	-
Stage 1	612	638	-	556	567	-	-	-	-
Stage 2	695	566	-	803	636	-	-	-	-

Approach	EB	WB	NB
HCM Control Delay, s	14.3	12.4	0.1
HCM LOS	B	B	

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1230	-	-	408	500	1124	-	-
HCM Lane V/C Ratio	0.005	-	-	0.055	0.027	0.004	-	-
HCM Control Delay (s)	7.9	0	-	14.3	12.4	8.2	0	-
HCM Lane LOS	A	A	-	B	B	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0.2	0.1	0	-	-

**Intersection**

Int Delay, s/veh

Movement	SBL	SBT	SBR
Vol, veh/h	4	291	5
Conflicting Peds, #/hr	3	0	6
Sign Control	Free	Free	Free
RT Channelized	-	-	None
Storage Length	-	-	-
Veh in Median Storage, #	-	0	-
Grade, %	-	0	-
Peak Hour Factor	89	89	89
Heavy Vehicles, %	0	6	20
Mvmt Flow	4	327	6

**Major/Minor Major2**

Conflicting Flow All	441	0	0
Stage 1	-	-	-
Stage 2	-	-	-
Critical Hdwy	4.1	-	-
Critical Hdwy Stg 1	-	-	-
Critical Hdwy Stg 2	-	-	-
Follow-up Hdwy	2.2	-	-
Pot Cap-1 Maneuver	1130	-	-
Stage 1	-	-	-
Stage 2	-	-	-
Platoon blocked, %		-	-
Mov Cap-1 Maneuver	1124	-	-
Mov Cap-2 Maneuver	-	-	-
Stage 1	-	-	-
Stage 2	-	-	-

**Approach SB**

HCM Control Delay, s	0.1
HCM LOS	

**Minor Lane/Major Mvmt**

**Intersection**

Int Delay, s/veh 1.3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR
Vol, veh/h	26	4	7	3	1	13	7	344	4
Conflicting Peds, #/hr	1	0	4	4	0	1	13	0	5
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-
Peak Hour Factor	91	91	91	91	91	91	91	91	91
Heavy Vehicles, %	0	0	0	0	0	15	0	3	0
Mvmt Flow	29	4	8	3	1	14	8	378	4

Major/Minor	Minor2			Minor1			Major1		
Conflicting Flow All	549	742	176	583	748	208	322	0	0
Stage 1	340	340	-	400	400	-	-	-	-
Stage 2	209	402	-	183	348	-	-	-	-
Critical Hdwy	7.5	6.5	6.9	7.5	6.5	7.2	4.1	-	-
Critical Hdwy Stg 1	6.5	5.5	-	6.5	5.5	-	-	-	-
Critical Hdwy Stg 2	6.5	5.5	-	6.5	5.5	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	3.5	4	3.45	2.2	-	-
Pot Cap-1 Maneuver	423	346	843	400	343	759	1249	-	-
Stage 1	654	643	-	603	605	-	-	-	-
Stage 2	779	604	-	807	638	-	-	-	-
Platoon blocked, %									
Mov Cap-1 Maneuver	401	336	831	380	333	748	1235	-	-
Mov Cap-2 Maneuver	401	336	-	380	333	-	-	-	-
Stage 1	647	632	-	596	598	-	-	-	-
Stage 2	748	597	-	774	627	-	-	-	-

Approach	EB	WB	NB
HCM Control Delay, s	14.2	11.2	0.2
HCM LOS	B	B	

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1235	-	-	434	601	1102	-	-
HCM Lane V/C Ratio	0.006	-	-	0.094	0.031	0.012	-	-
HCM Control Delay (s)	7.9	0	-	14.2	11.2	8.3	0.1	-
HCM Lane LOS	A	A	-	B	B	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0.3	0.1	0	-	-

**Intersection**

Int Delay, s/veh

Movement	SBL	SBT	SBR
Vol, veh/h	12	274	15
Conflicting Peds, #/hr	5	0	13
Sign Control	Free	Free	Free
RT Channelized	-	-	None
Storage Length	-	-	-
Veh in Median Storage, #	-	0	-
Grade, %	-	0	-
Peak Hour Factor	91	91	91
Heavy Vehicles, %	10	6	0
Mvmt Flow	13	301	16

**Major/Minor Major2**

Conflicting Flow All	386	0	0
Stage 1	-	-	-
Stage 2	-	-	-
Critical Hdwy	4.3	-	-
Critical Hdwy Stg 1	-	-	-
Critical Hdwy Stg 2	-	-	-
Follow-up Hdwy	2.3	-	-
Pot Cap-1 Maneuver	1114	-	-
Stage 1	-	-	-
Stage 2	-	-	-
Platoon blocked, %		-	-
Mov Cap-1 Maneuver	1102	-	-
Mov Cap-2 Maneuver	-	-	-
Stage 1	-	-	-
Stage 2	-	-	-

**Approach SB**

HCM Control Delay, s	0.4
HCM LOS	

**Minor Lane/Major Mvmt**

**Intersection**

Int Delay, s/veh 4.3

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Vol, veh/h	94	41	87	185	162	90
Conflicting Peds, #/hr	0	0	8	0	0	8
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	80	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	85	85	85	85	85	85
Heavy Vehicles, %	3	3	3	3	3	3
Mvmt Flow	111	48	102	218	191	106

Major/Minor	Minor2	Major1	Major2
Conflicting Flow All	558	156	296
Stage 1	244	-	-
Stage 2	314	-	-
Critical Hdwy	6.86	6.96	4.16
Critical Hdwy Stg 1	5.86	-	-
Critical Hdwy Stg 2	5.86	-	-
Follow-up Hdwy	3.53	3.33	2.23
Pot Cap-1 Maneuver	457	859	1255
Stage 1	771	-	-
Stage 2	711	-	-
Platoon blocked, %			-
Mov Cap-1 Maneuver	420	853	1247
Mov Cap-2 Maneuver	420	-	-
Stage 1	771	-	-
Stage 2	653	-	-

Approach	EB	NB	SB
HCM Control Delay, s	15.6	2.6	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1247	-	497	-	-
HCM Lane V/C Ratio	0.082	-	0.32	-	-
HCM Control Delay (s)	8.1	-	15.6	-	-
HCM Lane LOS	A	-	C	-	-
HCM 95th %tile Q(veh)	0.3	-	1.4	-	-

**Intersection**

Int Delay, s/veh 1.5

Movement	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBL	NBT	NBR
Vol, veh/h	0	7	0	3	0	5	4	0	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	-	0	-	-	0	-
Grade, %	-	0	-	-	-	0	-	-	0	-
Peak Hour Factor	82	82	82	82	82	82	82	82	82	82
Heavy Vehicles, %	0	0	0	0	0	0	0	0	0	0
Mvmt Flow	0	9	0	4	0	6	5	0	0	0

**Major/Minor**

	Major1	Major2						Minor1		
Conflicting Flow All	11	0	0	9	9	0	0	18	27	12
Stage 1	-	-	-	-	-	-	-	9	9	-
Stage 2	-	-	-	-	-	-	-	9	18	-
Critical Hdwy	4.1	-	-	-	4.1	-	-	7.1	6.5	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	-	6.1	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	-	6.1	5.5	-
Follow-up Hdwy	2.2	-	-	-	2.2	-	-	3.5	4	3.3
Pot Cap-1 Maneuver	1621	-	-	-	1624	-	-	1001	870	1074
Stage 1	-	-	-	-	-	-	-	1017	892	-
Stage 2	-	-	-	-	-	-	-	1017	884	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1621	-	-	-	-	-	-	1000	870	1074
Mov Cap-2 Maneuver	-	-	-	-	-	-	-	1000	870	-
Stage 1	-	-	-	-	-	-	-	1017	892	-
Stage 2	-	-	-	-	-	-	-	1016	884	-

**Approach**

	EB	WB	NB
HCM Control Delay, s	0	0	0
HCM LOS			A

**Minor Lane/Major Mvmt**

	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	-	1621	-	-	-	-	-	1019
HCM Lane V/C Ratio	-	-	-	-	-	-	-	0.005
HCM Control Delay (s)	0	0	-	-	-	-	-	8.6
HCM Lane LOS	A	A	-	-	-	-	-	A
HCM 95th %tile Q(veh)	-	0	-	-	-	-	-	0

**Intersection**

Int Delay, s/veh

Movement	SBL	SBT	SBR
Vol, veh/h	3	0	1
Conflicting Peds, #/hr	0	0	0
Sign Control	Stop	Stop	Stop
RT Channelized	-	-	None
Storage Length	-	-	-
Veh in Median Storage, #	-	0	-
Grade, %	-	0	-
Peak Hour Factor	82	82	82
Heavy Vehicles, %	0	0	0
Mvmt Flow	4	0	1

Major/Minor	Minor2		
Conflicting Flow All	18	25	9
Stage 1	9	16	-
Stage 2	9	9	-
Critical Hdwy	7.1	6.5	6.2
Critical Hdwy Stg 1	6.1	5.5	-
Critical Hdwy Stg 2	6.1	5.5	-
Follow-up Hdwy	3.5	4	3.3
Pot Cap-1 Maneuver	1001	872	1079
Stage 1	1017	886	-
Stage 2	1017	892	-
Platoon blocked, %			
Mov Cap-1 Maneuver	1001	872	1079
Mov Cap-2 Maneuver	1001	872	-
Stage 1	1017	886	-
Stage 2	1017	892	-

**Approach** SB

HCM Control Delay, s	8.6
HCM LOS	A

**Minor Lane/Major Mvmt**



**Intersection**

Int Delay, s/veh 4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR
Vol, veh/h	3	10	0	6	12	5	1	4	9
Conflicting Peds, #/hr	0	0	0	0	0	0	2	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-
Peak Hour Factor	88	88	88	88	88	88	88	88	88
Heavy Vehicles, %	0	0	0	0	0	0	0	0	0
Mvmt Flow	3	11	0	7	14	6	1	5	10

Major/Minor	Major1	Major2	Minor1
Conflicting Flow All	21	0	0
Stage 1	-	-	-
Stage 2	-	-	-
Critical Hdwy	4.1	-	-
Critical Hdwy Stg 1	-	-	-
Critical Hdwy Stg 2	-	-	-
Follow-up Hdwy	2.2	-	-
Pot Cap-1 Maneuver	1608	-	-
Stage 1	-	-	-
Stage 2	-	-	-
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	1608	-	-
Mov Cap-2 Maneuver	-	-	-
Stage 1	-	-	-
Stage 2	-	-	-

Approach	EB	WB	NB
HCM Control Delay, s	1.7	1.9	8.7
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	981	1608	-	-	1619	-	-	922
HCM Lane V/C Ratio	0.016	0.002	-	-	0.004	-	-	0.004
HCM Control Delay (s)	8.7	7.2	0	-	7.2	0	-	8.9
HCM Lane LOS	A	A	A	-	A	A	-	A
HCM 95th %tile Q(veh)	0	0	-	-	0	-	-	0

**Intersection**

Int Delay, s/veh

Movement	SBL	SBT	SBR
Vol, veh/h	3	0	0
Conflicting Peds, #/hr	0	0	2
Sign Control	Stop	Stop	Stop
RT Channelized	-	-	None
Storage Length	-	-	-
Veh in Median Storage, #	-	0	-
Grade, %	-	0	-
Peak Hour Factor	88	88	88
Heavy Vehicles, %	0	0	0
Mvmt Flow	3	0	0

**Major/Minor**

Minor2

Conflicting Flow All	60	52	18
Stage 1	32	32	-
Stage 2	28	20	-
Critical Hdwy	7.1	6.5	6.2
Critical Hdwy Stg 1	6.1	5.5	-
Critical Hdwy Stg 2	6.1	5.5	-
Follow-up Hdwy	3.5	4	3.3
Pot Cap-1 Maneuver	941	843	1066
Stage 1	990	872	-
Stage 2	994	883	-
Platoon blocked, %			
Mov Cap-1 Maneuver	922	835	1064
Mov Cap-2 Maneuver	922	835	-
Stage 1	986	867	-
Stage 2	977	880	-

**Approach**

SB

HCM Control Delay, s	8.9
HCM LOS	A

**Minor Lane/Major Mvmt**

**Intersection**

Int Delay, s/veh 1.6

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR
Vol, veh/h	7	86	1	6	88	4	3	3	4
Conflicting Peds, #/hr	2	0	2	2	0	2	0	0	1
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-
Peak Hour Factor	85	85	85	85	85	85	85	85	85
Heavy Vehicles, %	0	5	0	17	7	0	0	0	25
Mvmt Flow	8	101	1	7	104	5	4	4	5

Major/Minor	Major1	Major2	Minor1						
Conflicting Flow All	109	0	0	103	0	0	245	242	105
Stage 1	-	-	-	-	-	-	119	119	-
Stage 2	-	-	-	-	-	-	126	123	-
Critical Hdwy	4.1	-	-	4.27	-	-	7.1	6.5	6.45
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-
Follow-up Hdwy	2.2	-	-	2.353	-	-	3.5	4	3.525
Pot Cap-1 Maneuver	1494	-	-	1400	-	-	713	663	890
Stage 1	-	-	-	-	-	-	890	801	-
Stage 2	-	-	-	-	-	-	883	798	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1492	-	-	1398	-	-	698	655	888
Mov Cap-2 Maneuver	-	-	-	-	-	-	698	655	-
Stage 1	-	-	-	-	-	-	884	796	-
Stage 2	-	-	-	-	-	-	868	793	-

Approach	EB	WB	NB
HCM Control Delay, s	0.6	0.5	9.9
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	747	1492	-	-	1398	-	-	756
HCM Lane V/C Ratio	0.016	0.006	-	-	0.005	-	-	0.023
HCM Control Delay (s)	9.9	7.4	0	-	7.6	0	-	9.9
HCM Lane LOS	A	A	A	-	A	A	-	A
HCM 95th %tile Q(veh)	0	0	-	-	0	-	-	0.1

**Intersection**

Int Delay, s/veh

Movement	SBL	SBT	SBR
Vol, veh/h	7	3	5
Conflicting Peds, #/hr	1	0	0
Sign Control	Stop	Stop	Stop
RT Channelized	-	-	None
Storage Length	-	-	-
Veh in Median Storage, #	-	0	-
Grade, %	-	0	-
Peak Hour Factor	85	85	85
Heavy Vehicles, %	0	0	0
Mvmt Flow	8	4	6

**Major/Minor**

	Minor2		
Conflicting Flow All	244	241	109
Stage 1	121	121	-
Stage 2	123	120	-
Critical Hdwy	7.1	6.5	6.2
Critical Hdwy Stg 1	6.1	5.5	-
Critical Hdwy Stg 2	6.1	5.5	-
Follow-up Hdwy	3.5	4	3.3
Pot Cap-1 Maneuver	714	664	950
Stage 1	888	800	-
Stage 2	886	800	-
Platoon blocked, %			
Mov Cap-1 Maneuver	700	656	948
Mov Cap-2 Maneuver	700	656	-
Stage 1	882	795	-
Stage 2	871	795	-

**Approach**

	SB
HCM Control Delay, s	9.9
HCM LOS	A

**Minor Lane/Major Mvmt**

**Intersection**

Int Delay, s/veh 4.2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR
Vol, veh/h	12	83	3	13	79	17	5	25	24
Conflicting Peds, #/hr	1	0	3	3	0	1	1	0	1
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	8	4	0	0	8	6	0	4	0
Mvmt Flow	13	92	3	14	88	19	6	28	27

Major/Minor	Major1	Major2	Minor1						
Conflicting Flow All	108	0	0	97	0	0	270	259	98
Stage 1	-	-	-	-	-	-	122	122	-
Stage 2	-	-	-	-	-	-	148	137	-
Critical Hdwy	4.18	-	-	4.1	-	-	7.1	6.54	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.54	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.54	-
Follow-up Hdwy	2.272	-	-	2.2	-	-	3.5	4.036	3.3
Pot Cap-1 Maneuver	1446	-	-	1509	-	-	687	642	963
Stage 1	-	-	-	-	-	-	887	791	-
Stage 2	-	-	-	-	-	-	859	779	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1442	-	-	1505	-	-	642	628	960
Mov Cap-2 Maneuver	-	-	-	-	-	-	642	628	-
Stage 1	-	-	-	-	-	-	877	782	-
Stage 2	-	-	-	-	-	-	806	771	-

Approach	EB	WB	NB
HCM Control Delay, s	0.9	0.9	10.3
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	744	1442	-	-	1505	-	-	692
HCM Lane V/C Ratio	0.081	0.009	-	-	0.01	-	-	0.085
HCM Control Delay (s)	10.3	7.5	0	-	7.4	0	-	10.7
HCM Lane LOS	B	A	A	-	A	A	-	B
HCM 95th %tile Q(veh)	0.3	0	-	-	0	-	-	0.3

**Intersection**

Int Delay, s/veh

Movement	SBL	SBT	SBR
Vol, veh/h	15	24	14
Conflicting Peds, #/hr	1	0	1
Sign Control	Stop	Stop	Stop
RT Channelized	-	-	None
Storage Length	-	-	-
Veh in Median Storage, #	-	0	-
Grade, %	-	0	-
Peak Hour Factor	90	90	90
Heavy Vehicles, %	0	4	7
Mvmt Flow	17	27	16

**Major/Minor**

	Minor2		
Conflicting Flow All	276	250	101
Stage 1	127	127	-
Stage 2	149	123	-
Critical Hdwy	7.1	6.54	6.27
Critical Hdwy Stg 1	6.1	5.54	-
Critical Hdwy Stg 2	6.1	5.54	-
Follow-up Hdwy	3.5	4.036	3.363
Pot Cap-1 Maneuver	680	649	941
Stage 1	882	787	-
Stage 2	858	790	-
Platoon blocked, %			
Mov Cap-1 Maneuver	627	635	938
Mov Cap-2 Maneuver	627	635	-
Stage 1	872	778	-
Stage 2	794	781	-

**Approach**

Approach	SB
HCM Control Delay, s	10.7
HCM LOS	B

**Minor Lane/Major Mvmt**

**Intersection**

Int Delay, s/veh 1.6

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR
Vol, veh/h	2	115	2	13	99	3	5	0	21
Conflicting Peds, #/hr	4	0	7	7	0	4	4	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-
Peak Hour Factor	81	81	81	81	81	81	81	81	81
Heavy Vehicles, %	0	3	0	0	6	33	0	5	0
Mvmt Flow	2	142	2	16	122	4	6	0	26

Major/Minor	Major1	Major2	Minor1						
Conflicting Flow All	130	0	0	148	0	0	315	314	154
Stage 1	-	-	-	-	-	-	152	152	-
Stage 2	-	-	-	-	-	-	163	162	-
Critical Hdwy	4.1	-	-	4.1	-	-	7.1	6.55	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.55	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.55	-
Follow-up Hdwy	2.2	-	-	2.2	-	-	3.5	4.045	3.3
Pot Cap-1 Maneuver	1468	-	-	1446	-	-	642	597	897
Stage 1	-	-	-	-	-	-	855	766	-
Stage 2	-	-	-	-	-	-	844	758	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1459	-	-	1438	-	-	626	585	889
Mov Cap-2 Maneuver	-	-	-	-	-	-	626	585	-
Stage 1	-	-	-	-	-	-	851	763	-
Stage 2	-	-	-	-	-	-	824	746	-

Approach	EB	WB	NB
HCM Control Delay, s	0.1	0.9	9.6
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	823	1459	-	-	1438	-	-	696
HCM Lane V/C Ratio	0.039	0.002	-	-	0.011	-	-	0.011
HCM Control Delay (s)	9.6	7.5	0	-	7.5	0	-	10.2
HCM Lane LOS	A	A	A	-	A	A	-	B
HCM 95th %tile Q(veh)	0.1	0	-	-	0	-	-	0

**Intersection**

Int Delay, s/veh

Movement	SBL	SBT	SBR
Vol, veh/h	2	1	3
Conflicting Peds, #/hr	0	0	4
Sign Control	Stop	Stop	Stop
RT Channelized	-	-	None
Storage Length	-	-	-
Veh in Median Storage, #	-	0	-
Grade, %	-	0	-
Peak Hour Factor	81	81	81
Heavy Vehicles, %	0	0	33
Mvmt Flow	2	1	4

**Major/Minor**                      **Minor2**

Conflicting Flow All	325	313	135
Stage 1	160	160	-
Stage 2	165	153	-
Critical Hdwy	7.1	6.5	6.53
Critical Hdwy Stg 1	6.1	5.5	-
Critical Hdwy Stg 2	6.1	5.5	-
Follow-up Hdwy	3.5	4	3.597
Pot Cap-1 Maneuver	632	606	837
Stage 1	847	769	-
Stage 2	842	775	-
Platoon blocked, %			
Mov Cap-1 Maneuver	602	594	829
Mov Cap-2 Maneuver	602	594	-
Stage 1	843	757	-
Stage 2	812	772	-

**Approach**                      **SB**

HCM Control Delay, s	10.2
HCM LOS	B

**Minor Lane/Major Mvmt**



**Intersection**

Int Delay, s/veh 0.1

Movement	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBL	NBT	NBR
Vol, veh/h	0	142	0	5	0	119	1	1	0	0
Conflicting Peds, #/hr	7	0	3	0	3	0	7	3	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	-	0	-	-	0	-
Grade, %	-	0	-	-	-	0	-	-	0	-
Peak Hour Factor	83	83	83	83	83	83	83	83	83	83
Heavy Vehicles, %	0	3	0	0	0	5	0	0	0	0
Mvmt Flow	0	171	0	6	0	143	1	1	0	0

Major/Minor	Major1	Major2	Minor1
Conflicting Flow All	148	0	0
Stage 1	-	-	-
Stage 2	-	-	-
Critical Hdwy	4.1	-	-
Critical Hdwy Stg 1	-	-	-
Critical Hdwy Stg 2	-	-	-
Follow-up Hdwy	2.2	-	-
Pot Cap-1 Maneuver	1446	-	-
Stage 1	-	-	-
Stage 2	-	-	-
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	1438	-	-
Mov Cap-2 Maneuver	-	-	-
Stage 1	-	-	-
Stage 2	-	-	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0	10.7
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	631	1438	-	-	-	-	-	631
HCM Lane V/C Ratio	0.002	-	-	-	-	-	-	0.004
HCM Control Delay (s)	10.7	0	-	-	-	-	-	10.7
HCM Lane LOS	B	A	-	-	-	-	-	B
HCM 95th %tile Q(veh)	0	0	-	-	-	-	-	0

**Intersection**

Int Delay, s/veh

Movement	SBL	SBT	SBR
Vol, veh/h	2	0	0
Conflicting Peds, #/hr	0	0	3
Sign Control	Stop	Stop	Stop
RT Channelized	-	-	None
Storage Length	-	-	-
Veh in Median Storage, #	-	0	-
Grade, %	-	0	-
Peak Hour Factor	83	83	83
Heavy Vehicles, %	0	0	0
Mvmt Flow	2	0	0

**Major/Minor**

	Minor2		
Conflicting Flow All	321	333	154
Stage 1	147	159	-
Stage 2	174	174	-
Critical Hdwy	7.1	6.5	6.2
Critical Hdwy Stg 1	6.1	5.5	-
Critical Hdwy Stg 2	6.1	5.5	-
Follow-up Hdwy	3.5	4	3.3
Pot Cap-1 Maneuver	636	590	897
Stage 1	860	770	-
Stage 2	833	759	-
Platoon blocked, %			
Mov Cap-1 Maneuver	631	587	890
Mov Cap-2 Maneuver	631	587	-
Stage 1	858	768	-
Stage 2	828	757	-

**Approach**

Approach	SB
HCM Control Delay, s	10.7
HCM LOS	B

**Minor Lane/Major Mvmt**

**Intersection**

Int Delay, s/veh 0.4

Movement	EBT	EBR	WBU	WBL	WBT	NBL	NBR
Vol, veh/h	141	1	2	15	127	2	10
Conflicting Peds, #/hr	0	4	0	4	0	0	1
Sign Control	Free	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	-	None	-	None
Storage Length	-	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	-	0	0	-
Grade, %	0	-	-	-	0	0	-
Peak Hour Factor	88	88	88	88	88	88	88
Heavy Vehicles, %	3	0	0	13	4	40	0
Mvmt Flow	160	1	2	17	144	2	11

Major/Minor	Major1	Major2	Minor1				
Conflicting Flow All	0	0	173	162	0	340	168
Stage 1	-	-	-	-	-	162	-
Stage 2	-	-	-	-	-	178	-
Critical Hdwy	-	-	-	4.23	-	6.8	6.2
Critical Hdwy Stg 1	-	-	-	-	-	5.8	-
Critical Hdwy Stg 2	-	-	-	-	-	5.8	-
Follow-up Hdwy	-	-	-	2.317	-	3.86	3.3
Pot Cap-1 Maneuver	-	-	-	1353	-	586	881
Stage 1	-	-	-	-	-	783	-
Stage 2	-	-	-	-	-	769	-
Platoon blocked, %	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	-9	-9	-	584	877
Mov Cap-2 Maneuver	-	-	-	-	-	584	-
Stage 1	-	-	-	-	-	782	-
Stage 2	-	-	-	-	-	766	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0	9.5
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	809	-	-	+	-
HCM Lane V/C Ratio	0.017	-	-	-	-
HCM Control Delay (s)	9.5	-	-	-	-
HCM Lane LOS	A	-	-	-	-
HCM 95th %tile Q(veh)	0.1	-	-	-	-

**Notes**

-: Volume exceeds capacity    \$: Delay exceeds 300s    +: Computation Not Defined    \*: All major volume in platoon

Intersection	
Int Delay, s/veh	4.4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR
Vol, veh/h	2	147	5	11	145	139	3	2	16
Conflicting Peds, #/hr	15	0	0	0	0	15	1	0	2
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-
Peak Hour Factor	85	85	85	85	85	85	85	85	85
Heavy Vehicles, %	0	5	20	9	5	0	0	50	13
Mvmt Flow	2	173	6	13	171	164	4	2	19

Major/Minor	Major1	Major2	Minor1						
Conflicting Flow All	336	0	0	181	0	0	468	545	193
Stage 1	-	-	-	-	-	-	183	183	-
Stage 2	-	-	-	-	-	-	285	362	-
Critical Hdwy	4.1	-	-	4.19	-	-	7.1	7	6.33
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	6	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	6	-
Follow-up Hdwy	2.2	-	-	2.281	-	-	3.5	4.45	3.417
Pot Cap-1 Maneuver	1235	-	-	1353	-	-	509	385	821
Stage 1	-	-	-	-	-	-	823	666	-
Stage 2	-	-	-	-	-	-	727	549	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1220	-	-	1336	-	-	490	378	809
Mov Cap-2 Maneuver	-	-	-	-	-	-	490	378	-
Stage 1	-	-	-	-	-	-	820	664	-
Stage 2	-	-	-	-	-	-	700	542	-

Approach	EB	WB	NB
HCM Control Delay, s	0.1	0.3	10.6
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	673	1220	-	-	1336	-	-	486
HCM Lane V/C Ratio	0.037	0.002	-	-	0.01	-	-	0.349
HCM Control Delay (s)	10.6	8	0	-	7.7	0	-	16.3
HCM Lane LOS	B	A	A	-	A	A	-	C
HCM 95th %tile Q(veh)	0.1	0	-	-	0	-	-	1.5

**Intersection**

Int Delay, s/veh

Movement	SBL	SBT	SBR
Vol, veh/h	136	1	7
Conflicting Peds, #/hr	2	0	1
Sign Control	Stop	Stop	Stop
RT Channelized	-	-	None
Storage Length	-	-	-
Veh in Median Storage, #	-	0	-
Grade, %	-	0	-
Peak Hour Factor	85	85	85
Heavy Vehicles, %	1	0	0
Mvmt Flow	160	1	8

Major/Minor	Minor2		
Conflicting Flow All	473	466	269
Stage 1	280	280	-
Stage 2	193	186	-
Critical Hdwy	7.11	6.5	6.2
Critical Hdwy Stg 1	6.11	5.5	-
Critical Hdwy Stg 2	6.11	5.5	-
Follow-up Hdwy	3.509	4	3.3
Pot Cap-1 Maneuver	503	497	775
Stage 1	729	683	-
Stage 2	811	750	-
Platoon blocked, %			
Mov Cap-1 Maneuver	477	488	764
Mov Cap-2 Maneuver	477	488	-
Stage 1	726	674	-
Stage 2	778	747	-

**Approach** SB

HCM Control Delay, s	16.3
HCM LOS	C

**Minor Lane/Major Mvmt**

HCM Signalized Intersection Capacity Analysis  
1: Sonoma Blvd & Curtola Pkwy

Vallejo Marine Terminal  
Existing PM



Movement	EBT	EBR	EBR2	WBT	WBR	NBL2	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↑↑	←		↑↑	↑		↑	↑↑			↑↑	
Volume (vph)	497	170	3	288	195	12	160	246	5	187	171	6
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	4.5		4.5	4.5		4.5	4.5			4.5	
Lane Util. Factor	0.91	0.91		0.95	1.00		1.00	0.95			0.95	
Frbp, ped/bikes	1.00	1.00		1.00	0.98		1.00	1.00			1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00			1.00	
Frt	0.99	0.85		1.00	0.85		1.00	1.00			0.99	
Flt Protected	1.00	1.00		1.00	1.00		0.95	1.00			0.98	
Satd. Flow (prot)	3374	1455		3539	1589		1756	3564			3443	
Flt Permitted	1.00	1.00		1.00	1.00		0.95	1.00			0.98	
Satd. Flow (perm)	3374	1455		3539	1589		1756	3564			3443	
Peak-hour factor, PHF	0.91	0.91	0.91	0.91	0.91	0.92	0.91	0.91	0.91	0.91	0.91	0.91
Adj. Flow (vph)	546	187	3	316	214	13	176	270	5	205	188	7
RTOR Reduction (vph)	0	50	0	0	149	0	0	1	0	0	2	0
Lane Group Flow (vph)	565	121	0	316	65	0	189	274	0	0	419	0
Confl. Peds. (#/hr)					4		1		4	4		1
Confl. Bikes (#/hr)									1			1
Heavy Vehicles (%)	2%	1%	0%	2%	0%	0%	3%	1%	0%	1%	1%	0%
Turn Type	NA	Perm		NA	Perm	Split	Split	NA		Split	NA	
Protected Phases	2			2		3	3	3		4	4	
Permitted Phases		2			2							
Actuated Green, G (s)	22.6	22.6		22.6	22.6		15.4	15.4			16.5	
Effective Green, g (s)	22.6	22.6		22.6	22.6		15.4	15.4			16.5	
Actuated g/C Ratio	0.30	0.30		0.30	0.30		0.21	0.21			0.22	
Clearance Time (s)	4.5	4.5		4.5	4.5		4.5	4.5			4.5	
Vehicle Extension (s)	2.0	2.0		2.0	2.0		2.0	2.0			2.0	
Lane Grp Cap (vph)	1020	440		1070	480		362	734			760	
v/s Ratio Prot	c0.17			0.09			c0.11	0.08			c0.12	
v/s Ratio Perm		0.08			0.04							
v/c Ratio	0.55	0.28		0.30	0.13		0.52	0.37			0.55	
Uniform Delay, d1	21.8	19.8		20.0	18.9		26.4	25.5			25.8	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00			1.00	
Incremental Delay, d2	0.4	0.1		0.1	0.0		0.6	0.1			0.5	
Delay (s)	22.2	19.9		20.0	19.0		27.0	25.6			26.3	
Level of Service	C	B		C	B		C	C			C	
Approach Delay (s)	21.7			19.6			26.2				26.3	
Approach LOS	C			B			C				C	

Intersection Summary

HCM 2000 Control Delay	23.1	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.51		
Actuated Cycle Length (s)	74.7	Sum of lost time (s)	17.0
Intersection Capacity Utilization	61.6%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis  
 1: Sonoma Blvd & Curtola Pkwy





















Vallejo Marine Terminal  
 Existing PM



Movement	SBR2	NEL2	NEL	NER	NER2
Lane Configurations					
Volume (vph)	19	6	4	5	4
Ideal Flow (vphpl)	1900	1900	1900	1900	1900
Total Lost time (s)			3.5		
Lane Util. Factor			1.00		
Frbp, ped/bikes			1.00		
Flpb, ped/bikes			1.00		
Frt			0.94		
Flt Protected			0.97		
Satd. Flow (prot)			1737		
Flt Permitted			0.97		
Satd. Flow (perm)			1737		
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	21	7	4	5	4
RTOR Reduction (vph)	0	0	19	0	0
Lane Group Flow (vph)	0	0	1	0	0
Confl. Peds. (#/hr)					
Confl. Bikes (#/hr)					
Heavy Vehicles (%)	5%	0%	0%	0%	0%
Turn Type		Prot	Prot		
Protected Phases		1	1		
Permitted Phases					
Actuated Green, G (s)			3.2		
Effective Green, g (s)			3.2		
Actuated g/C Ratio			0.04		
Clearance Time (s)			3.5		
Vehicle Extension (s)			2.0		
Lane Grp Cap (vph)			74		
v/s Ratio Prot			c0.00		
v/s Ratio Perm					
v/c Ratio			0.01		
Uniform Delay, d1			34.2		
Progression Factor			1.00		
Incremental Delay, d2			0.0		
Delay (s)			34.3		
Level of Service			C		
Approach Delay (s)			34.3		
Approach LOS			C		
<b>Intersection Summary</b>					

HCM 2010 Signalized Intersection Summary  
2: Solano Blvd & Sonoma Blvd



















Vallejo Marine Terminal  
Existing PM

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	16	54	9	31	13	49	8	366	44	10	325	5
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		0.99	1.00		0.99	1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1868	1900	1845	1840	1900	1900	1857	1900	1900	1881	1900
Adj Flow Rate, veh/h	18	62	3	36	15	1	9	421	45	11	374	6
Adj No. of Lanes	1	1	0	1	2	0	1	2	0	1	2	0
Peak Hour Factor	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87
Percent Heavy Veh, %	0	2	2	3	8	8	0	2	2	0	1	1
Cap, veh/h	55	200	10	95	454	30	38	1749	186	46	1975	32
Arrive On Green	0.03	0.11	0.11	0.05	0.14	0.14	0.02	0.54	0.54	0.03	0.55	0.55
Sat Flow, veh/h	1810	1767	86	1757	3326	219	1810	3213	342	1810	3600	58
Grp Volume(v), veh/h	18	0	65	36	8	8	9	230	236	11	185	195
Grp Sat Flow(s),veh/h/ln	1810	0	1853	1757	1748	1798	1810	1764	1791	1810	1787	1870
Q Serve(g_s), s	0.5	0.0	1.8	1.1	0.2	0.2	0.3	3.8	3.8	0.3	2.9	2.9
Cycle Q Clear(g_c), s	0.5	0.0	1.8	1.1	0.2	0.2	0.3	3.8	3.8	0.3	2.9	2.9
Prop In Lane	1.00		0.05	1.00		0.12	1.00		0.19	1.00		0.03
Lane Grp Cap(c), veh/h	55	0	210	95	239	245	38	960	975	46	981	1026
V/C Ratio(X)	0.33	0.00	0.31	0.38	0.03	0.03	0.24	0.24	0.24	0.24	0.19	0.19
Avail Cap(c_a), veh/h	493	0	807	558	761	783	624	960	975	591	981	1026
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	26.2	0.0	22.5	25.2	20.6	20.6	26.5	6.6	6.6	26.3	6.3	6.3
Incr Delay (d2), s/veh	1.3	0.0	0.3	0.9	0.0	0.0	1.2	0.6	0.6	1.0	0.4	0.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.3	0.0	0.9	0.6	0.1	0.1	0.1	1.9	2.0	0.2	1.5	1.6
LnGrp Delay(d),s/veh	27.4	0.0	22.8	26.1	20.7	20.7	27.7	7.2	7.2	27.3	6.7	6.7
LnGrp LOS	C		C	C	C	C	C	A	A	C	A	A
Approach Vol, veh/h		83			52			475			391	
Approach Delay, s/veh		23.8			24.4			7.6			7.3	
Approach LOS		C			C			A			A	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	4.4	34.5	6.0	10.2	4.2	34.7	4.7	11.5				
Change Period (Y+Rc), s	3.0	4.5	3.0	4.0	3.0	4.5	3.0	4.0				
Max Green Setting (Gmax), s	18.0	30.0	17.5	24.0	19.0	30.0	15.0	24.0				
Max Q Clear Time (g_c+I1), s	2.3	5.8	3.1	3.8	2.3	4.9	2.5	2.2				
Green Ext Time (p_c), s	0.0	3.4	0.0	0.2	0.0	3.4	0.0	0.2				
<b>Intersection Summary</b>												
HCM 2010 Ctrl Delay			9.7									
HCM 2010 LOS			A									
<b>Notes</b>												
User approved pedestrian interval to be less than phase max green.												





















HCM 2010 Signalized Intersection Summary  
3: Sonoma Blvd & Lemon St

Vallejo Marine Terminal  
Existing PM

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	8	16	5	44	20	30	7	340	113	48	324	10
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	0.98		0.98	0.98		0.98	1.00		0.98	1.00		0.97
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1900	1900	1900	1882	1900	1900	1877	1900	1900	1882	1900
Adj Flow Rate, veh/h	8	17	1	46	21	3	7	354	93	50	338	9
Adj No. of Lanes	0	1	0	0	1	0	1	2	0	1	2	0
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	0	0	0	0	0	0	0	1	1	0	1	1
Cap, veh/h	148	250	12	274	108	12	23	1421	368	125	2011	53
Arrive On Green	0.18	0.18	0.18	0.18	0.18	0.18	0.03	1.00	1.00	0.07	0.57	0.57
Sat Flow, veh/h	316	1384	68	880	598	66	1810	2789	722	1810	3555	94
Grp Volume(v), veh/h	26	0	0	70	0	0	7	224	223	50	170	177
Grp Sat Flow(s),veh/h/ln	1768	0	0	1544	0	0	1810	1783	1729	1810	1788	1861
Q Serve(g_s), s	0.0	0.0	0.0	0.8	0.0	0.0	0.2	0.0	0.0	1.4	2.4	2.4
Cycle Q Clear(g_c), s	0.6	0.0	0.0	1.8	0.0	0.0	0.2	0.0	0.0	1.4	2.4	2.4
Prop In Lane	0.31		0.04	0.66		0.04	1.00		0.42	1.00		0.05
Lane Grp Cap(c), veh/h	410	0	0	394	0	0	23	908	881	125	1011	1053
V/C Ratio(X)	0.06	0.00	0.00	0.18	0.00	0.00	0.30	0.25	0.25	0.40	0.17	0.17
Avail Cap(c_a), veh/h	853	0	0	787	0	0	383	908	881	452	1011	1053
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	1.00	1.00	1.00	0.97	0.97	0.97
Uniform Delay (d), s/veh	17.7	0.0	0.0	18.2	0.0	0.0	25.1	0.0	0.0	23.2	5.4	5.4
Incr Delay (d2), s/veh	0.0	0.0	0.0	0.1	0.0	0.0	2.6	0.6	0.7	0.7	0.3	0.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.3	0.0	0.0	0.9	0.0	0.0	0.1	0.2	0.2	0.7	1.2	1.3
LnGrp Delay(d),s/veh	17.7	0.0	0.0	18.2	0.0	0.0	27.7	0.6	0.7	23.9	5.8	5.8
LnGrp LOS	B			B			C	A	A	C	A	A
Approach Vol, veh/h		26			70			454			397	
Approach Delay, s/veh		17.7			18.2			1.1			8.0	
Approach LOS		B			B			A			A	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	7.6	54.0		13.4	4.7	56.9		13.4				
Change Period (Y+Rc), s	4.0	4.5		4.0	4.0	4.5		4.0				
Max Green Setting (Gmax), s	13.0	26.5		23.0	11.0	28.5		23.0				
Max Q Clear Time (g_c+I1), s	3.4	2.0		2.6	2.2	4.4		3.8				
Green Ext Time (p_c), s	0.0	7.2		0.3	0.0	7.1		0.3				
<b>Intersection Summary</b>												
HCM 2010 Ctrl Delay			5.7									
HCM 2010 LOS			A									




















HCM 2010 Signalized Intersection Summary  
6: Sonoma Blvd & Magazine St

Vallejo Marine Terminal  
Existing PM

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	25	52	7	21	56	82	14	315	116	82	224	24
Number	3	8	18	7	4	14	1	6	16	5	2	12
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	0.98		0.96	0.98		0.97	1.00		0.97	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1900	1900	1900	1890	1900	1900	1886	1900	1900	1883	1900
Adj Flow Rate, veh/h	27	56	2	23	60	16	15	339	92	88	241	20
Adj No. of Lanes	0	1	0	0	1	0	1	2	0	1	2	0
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Percent Heavy Veh, %	0	0	0	0	0	0	0	1	1	0	1	1
Cap, veh/h	185	339	10	143	316	72	54	1138	304	197	1634	135
Arrive On Green	0.26	0.26	0.26	0.26	0.26	0.26	0.03	0.41	0.41	0.22	0.98	0.98
Sat Flow, veh/h	375	1308	41	233	1220	280	1810	2782	743	1810	3347	276
Grp Volume(v), veh/h	85	0	0	99	0	0	15	216	215	88	128	133
Grp Sat Flow(s),veh/h/ln	1724	0	0	1733	0	0	1810	1792	1732	1810	1789	1834
Q Serve(g_s), s	0.0	0.0	0.0	0.0	0.0	0.0	0.4	4.4	4.5	2.3	0.1	0.1
Cycle Q Clear(g_c), s	1.9	0.0	0.0	2.3	0.0	0.0	0.4	4.4	4.5	2.3	0.1	0.1
Prop In Lane	0.32		0.02	0.23		0.16	1.00		0.43	1.00		0.15
Lane Grp Cap(c), veh/h	534	0	0	531	0	0	54	733	709	197	873	895
V/C Ratio(X)	0.16	0.00	0.00	0.19	0.00	0.00	0.28	0.30	0.30	0.45	0.15	0.15
Avail Cap(c_a), veh/h	968	0	0	969	0	0	370	733	709	438	873	895
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	15.5	0.0	0.0	15.6	0.0	0.0	25.5	10.7	10.7	19.6	0.3	0.3
Incr Delay (d2), s/veh	0.1	0.0	0.0	0.1	0.0	0.0	1.0	1.0	1.1	0.6	0.4	0.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.0	0.0	0.0	1.2	0.0	0.0	0.2	2.4	2.4	1.2	0.1	0.1
LnGrp Delay(d),s/veh	15.5	0.0	0.0	15.7	0.0	0.0	26.5	11.7	11.8	20.2	0.7	0.7
LnGrp LOS	B			B			C	B	B	C	A	A
Approach Vol, veh/h		85			99			446			349	
Approach Delay, s/veh		15.5			15.7			12.3			5.6	
Approach LOS		B			B			B			A	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	5.1	52.5		17.4	9.4	48.2		17.4				
Change Period (Y+Rc), s	3.5	5.0		3.5	3.5	5.0		3.5				
Max Green Setting (Gmax), s	11.0	24.0		28.0	13.0	22.0		28.0				
Max Q Clear Time (g_c+I1), s	2.4	2.1		4.3	4.3	6.5		3.9				
Green Ext Time (p_c), s	0.0	5.9		0.6	0.1	5.1		0.6				
<b>Intersection Summary</b>												
HCM 2010 Ctrl Delay			10.5									
HCM 2010 LOS			B									























HCM 2010 Signalized Intersection Summary  
8: Sonoma Blvd & Maritime Academy Dr

Vallejo Marine Terminal  
Existing PM

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	110	16	14	10	39	116	15	278	42	21	176	41
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	0.99		0.98	1.00		0.98	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1900	1900	1900	1793	1900	1900	1879	1900	1810	1885	1900
Adj Flow Rate, veh/h	115	17	10	10	41	21	16	290	35	22	183	26
Adj No. of Lanes	0	1	0	0	1	1	1	2	0	1	2	0
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	0	0	0	5	5	0	0	1	1	5	1	1
Cap, veh/h	538	75	31	183	489	486	68	1033	124	86	1055	148
Arrive On Green	0.31	0.31	0.31	0.31	0.31	0.31	0.04	0.32	0.32	0.05	0.33	0.33
Sat Flow, veh/h	1072	244	100	146	1595	1586	1810	3212	384	1723	3155	442
Grp Volume(v), veh/h	142	0	0	51	0	21	16	160	165	22	103	106
Grp Sat Flow(s),veh/h/ln	1416	0	0	1740	0	1586	1810	1785	1811	1723	1791	1807
Q Serve(g_s), s	1.8	0.0	0.0	0.0	0.0	0.3	0.3	2.1	2.1	0.4	1.3	1.3
Cycle Q Clear(g_c), s	2.4	0.0	0.0	0.6	0.0	0.3	0.3	2.1	2.1	0.4	1.3	1.3
Prop In Lane	0.81		0.07	0.20		1.00	1.00		0.21	1.00		0.24
Lane Grp Cap(c), veh/h	644	0	0	672	0	486	68	574	582	86	599	604
V/C Ratio(X)	0.22	0.00	0.00	0.08	0.00	0.04	0.24	0.28	0.28	0.25	0.17	0.18
Avail Cap(c_a), veh/h	1577	0	0	1775	0	1530	1397	2296	2330	1330	2303	2324
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	8.3	0.0	0.0	7.7	0.0	7.6	14.5	7.9	7.9	14.2	7.3	7.3
Incr Delay (d2), s/veh	0.1	0.0	0.0	0.0	0.0	0.0	0.7	0.3	0.3	0.6	0.1	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.9	0.0	0.0	0.3	0.0	0.1	0.1	1.1	1.1	0.2	0.6	0.6
LnGrp Delay(d),s/veh	8.4	0.0	0.0	7.7	0.0	7.6	15.2	8.1	8.1	14.8	7.4	7.5
LnGrp LOS	A			A		A	B	A	A	B	A	A
Approach Vol, veh/h		142			72			341			231	
Approach Delay, s/veh		8.4			7.7			8.5			8.1	
Approach LOS		A			A			A			A	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	4.6	14.0		12.5	4.2	14.4		12.5				
Change Period (Y+Rc), s	3.0	4.0		3.0	3.0	4.0		3.0				
Max Green Setting (Gmax), s	24.0	40.0		30.0	24.0	40.0		30.0				
Max Q Clear Time (g_c+I1), s	2.4	4.1		4.4	2.3	3.3		2.6				
Green Ext Time (p_c), s	0.0	3.4		0.7	0.0	3.4		0.8				
<b>Intersection Summary</b>												
HCM 2010 Ctrl Delay			8.3									
HCM 2010 LOS			A									

HCM 2010 Signalized Intersection Summary  
 17: Lemon St & Curtola Pkwy

Vallejo Marine Terminal  
 Existing PM

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	53	145	403	102	85	22	188	569	155	38	784	24
Number	3	8	18	7	4	14	1	6	16	5	2	12
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		0.96	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1759	1895	1900	1881	1863	1900	1776	1881	1900	1900	1846	1900
Adj Flow Rate, veh/h	55	149	345	105	88	8	194	587	0	39	808	0
Adj No. of Lanes	1	1	0	1	1	1	1	2	0	1	2	0
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %	8	1	1	1	2	0	7	1	1	0	3	3
Cap, veh/h	70	161	373	133	657	545	226	1376	0	60	998	0
Arrive On Green	0.04	0.32	0.32	0.07	0.35	0.35	0.13	0.39	0.00	0.03	0.28	0.00
Sat Flow, veh/h	1675	504	1167	1792	1863	1544	1691	3668	0	1810	3600	0
Grp Volume(v), veh/h	55	0	494	105	88	8	194	587	0	39	808	0
Grp Sat Flow(s),veh/h/ln	1675	0	1671	1792	1863	1544	1691	1787	0	1810	1754	0
Q Serve(g_s), s	3.3	0.0	28.7	5.8	3.2	0.3	11.3	12.2	0.0	2.1	21.6	0.0
Cycle Q Clear(g_c), s	3.3	0.0	28.7	5.8	3.2	0.3	11.3	12.2	0.0	2.1	21.6	0.0
Prop In Lane	1.00		0.70	1.00		1.00	1.00		0.00	1.00		0.00
Lane Grp Cap(c), veh/h	70	0	535	133	657	545	226	1376	0	60	998	0
V/C Ratio(X)	0.79	0.00	0.92	0.79	0.13	0.01	0.86	0.43	0.00	0.65	0.81	0.00
Avail Cap(c_a), veh/h	416	0	581	445	657	545	420	1376	0	449	1219	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	47.9	0.0	33.1	45.8	22.1	21.2	42.7	22.8	0.0	48.2	33.5	0.0
Incr Delay (d2), s/veh	7.3	0.0	19.9	3.9	0.1	0.0	3.7	0.3	0.0	4.4	3.7	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.7	0.0	16.1	3.0	1.7	0.1	5.5	6.0	0.0	1.1	10.9	0.0
LnGrp Delay(d),s/veh	55.1	0.0	52.9	49.7	22.3	21.2	46.4	23.1	0.0	52.6	37.2	0.0
LnGrp LOS	E		D	D	C	C	D	C		D	D	
Approach Vol, veh/h		549			201			781			847	
Approach Delay, s/veh		53.1			36.6			28.9			37.9	
Approach LOS		D			D			C			D	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	17.5	34.7	8.2	40.5	7.3	44.8	11.5	37.1				
Change Period (Y+Rc), s	4.0	6.0	4.0	4.9	4.0	6.0	4.0	4.9				
Max Green Setting (Gmax), s	25.0	35.0	25.0	35.0	25.0	35.0	25.0	35.0				
Max Q Clear Time (g_c+I1), s	13.3	23.6	5.3	5.2	4.1	14.2	7.8	30.7				
Green Ext Time (p_c), s	0.2	5.1	0.0	4.8	0.0	12.0	0.1	1.5				
<b>Intersection Summary</b>												
HCM 2010 Ctrl Delay			38.3									
HCM 2010 LOS			D									

**Intersection**

Int Delay, s/veh 0.6

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR
Vol, veh/h	13	3	5	4	2	5	3	446	3
Conflicting Peds, #/hr	0	0	0	0	0	0	2	0	5
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-
Peak Hour Factor	97	97	97	97	97	97	97	97	97
Heavy Vehicles, %	15	0	0	0	0	0	0	1	0
Mvmt Flow	13	3	5	4	2	5	3	460	3

Major/Minor	Minor2			Minor1			Major1		
Conflicting Flow All	616	848	193	661	854	236	375	0	0
Stage 1	379	379	-	468	468	-	-	-	-
Stage 2	237	469	-	193	386	-	-	-	-
Critical Hdwy	7.8	6.5	6.9	7.5	6.5	6.9	4.1	-	-
Critical Hdwy Stg 1	6.8	5.5	-	6.5	5.5	-	-	-	-
Critical Hdwy Stg 2	6.8	5.5	-	6.5	5.5	-	-	-	-
Follow-up Hdwy	3.65	4	3.3	3.5	4	3.3	2.2	-	-
Pot Cap-1 Maneuver	349	301	822	352	298	772	1195	-	-
Stage 1	581	618	-	550	565	-	-	-	-
Stage 2	709	564	-	796	614	-	-	-	-
Platoon blocked, %									
Mov Cap-1 Maneuver	341	298	819	343	295	769	1190	-	-
Mov Cap-2 Maneuver	341	298	-	343	295	-	-	-	-
Stage 1	579	614	-	548	563	-	-	-	-
Stage 2	697	562	-	779	610	-	-	-	-

Approach	EB	WB	NB
HCM Control Delay, s	14.9	13.4	0.1
HCM LOS	B	B	

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1190	-	-	387	441	1104	-	-
HCM Lane V/C Ratio	0.003	-	-	0.056	0.026	0.005	-	-
HCM Control Delay (s)	8	0	-	14.9	13.4	8.3	0	-
HCM Lane LOS	A	A	-	B	B	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0.2	0.1	0	-	-

**Intersection**

Int Delay, s/veh

Movement	SBL	SBT	SBR
Vol, veh/h	5	352	12
Conflicting Peds, #/hr	5	0	2
Sign Control	Free	Free	Free
RT Channelized	-	-	None
Storage Length	-	-	-
Veh in Median Storage, #	-	0	-
Grade, %	-	0	-
Peak Hour Factor	97	97	97
Heavy Vehicles, %	0	1	0
Mvmt Flow	5	363	12

**Major/Minor**

Major2

Conflicting Flow All	463	0	0
Stage 1	-	-	-
Stage 2	-	-	-
Critical Hdwy	4.1	-	-
Critical Hdwy Stg 1	-	-	-
Critical Hdwy Stg 2	-	-	-
Follow-up Hdwy	2.2	-	-
Pot Cap-1 Maneuver	1109	-	-
Stage 1	-	-	-
Stage 2	-	-	-
Platoon blocked, %		-	-
Mov Cap-1 Maneuver	1104	-	-
Mov Cap-2 Maneuver	-	-	-
Stage 1	-	-	-
Stage 2	-	-	-

**Approach**

SB

HCM Control Delay, s	0.1
HCM LOS	

**Minor Lane/Major Mvmt**

**Intersection**

Int Delay, s/veh 1.1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR
Vol, veh/h	37	1	5	2	0	10	11	403	4
Conflicting Peds, #/hr	0	0	1	1	0	0	1	0	2
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-
Peak Hour Factor	97	97	97	97	97	97	97	97	97
Heavy Vehicles, %	3	0	0	0	0	0	0	1	0
Mvmt Flow	38	1	5	2	0	10	11	415	4

Major/Minor	Minor2			Minor1			Major1		
Conflicting Flow All	596	808	182	628	820	213	359	0	0
Stage 1	365	365	-	441	441	-	-	-	-
Stage 2	231	443	-	187	379	-	-	-	-
Critical Hdwy	7.56	6.5	6.9	7.5	6.5	6.9	4.1	-	-
Critical Hdwy Stg 1	6.56	5.5	-	6.5	5.5	-	-	-	-
Critical Hdwy Stg 2	6.56	5.5	-	6.5	5.5	-	-	-	-
Follow-up Hdwy	3.53	4	3.3	3.5	4	3.3	2.2	-	-
Pot Cap-1 Maneuver	385	317	836	371	312	798	1211	-	-
Stage 1	624	627	-	570	580	-	-	-	-
Stage 2	748	579	-	803	618	-	-	-	-
Platoon blocked, %									
Mov Cap-1 Maneuver	372	309	834	360	304	796	1209	-	-
Mov Cap-2 Maneuver	372	309	-	360	304	-	-	-	-
Stage 1	616	620	-	563	573	-	-	-	-
Stage 2	728	572	-	787	611	-	-	-	-

Approach	EB	WB	NB
HCM Control Delay, s	15.2	10.5	0.2
HCM LOS	C	B	

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1209	-	-	396	662	1147	-	-
HCM Lane V/C Ratio	0.009	-	-	0.112	0.019	0.009	-	-
HCM Control Delay (s)	8	0	-	15.2	10.5	8.2	0	-
HCM Lane LOS	A	A	-	C	B	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0.4	0.1	0	-	-

**Intersection**

Int Delay, s/veh

Movement	SBL	SBT	SBR
Vol, veh/h	10	319	28
Conflicting Peds, #/hr	2	0	1
Sign Control	Free	Free	Free
RT Channelized	-	-	None
Storage Length	-	-	-
Veh in Median Storage, #	-	0	-
Grade, %	-	0	-
Peak Hour Factor	97	97	97
Heavy Vehicles, %	0	1	0
Mvmt Flow	10	329	29

**Major/Minor Major2**

Conflicting Flow All	421	0	0
Stage 1	-	-	-
Stage 2	-	-	-
Critical Hdwy	4.1	-	-
Critical Hdwy Stg 1	-	-	-
Critical Hdwy Stg 2	-	-	-
Follow-up Hdwy	2.2	-	-
Pot Cap-1 Maneuver	1149	-	-
Stage 1	-	-	-
Stage 2	-	-	-
Platoon blocked, %		-	-
Mov Cap-1 Maneuver	1147	-	-
Mov Cap-2 Maneuver	-	-	-
Stage 1	-	-	-
Stage 2	-	-	-

**Approach SB**

HCM Control Delay, s 0.2

HCM LOS

**Minor Lane/Major Mvmt**



**Intersection**

Int Delay, s/veh 2

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Vol, veh/h	39	19	100	406	217	33
Conflicting Peds, #/hr	0	0	2	0	0	2
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	60	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	0	0	0	1	1	0
Mvmt Flow	41	20	105	427	228	35

Major/Minor	Minor2	Major1	Major2
Conflicting Flow All	670	134	263
Stage 1	246	-	-
Stage 2	424	-	-
Critical Hdwy	6.8	6.9	4.1
Critical Hdwy Stg 1	5.8	-	-
Critical Hdwy Stg 2	5.8	-	-
Follow-up Hdwy	3.5	3.3	2.2
Pot Cap-1 Maneuver	395	897	1313
Stage 1	778	-	-
Stage 2	634	-	-
Platoon blocked, %			-
Mov Cap-1 Maneuver	363	896	1311
Mov Cap-2 Maneuver	363	-	-
Stage 1	778	-	-
Stage 2	583	-	-

Approach	EB	NB	SB
HCM Control Delay, s	14.2	1.6	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1311	-	451	-	-
HCM Lane V/C Ratio	0.08	-	0.135	-	-
HCM Control Delay (s)	8	-	14.2	-	-
HCM Lane LOS	A	-	B	-	-
HCM 95th %tile Q(veh)	0.3	-	0.5	-	-

**Intersection**

Int Delay, s/veh 1.7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR
Vol, veh/h	0	7	0	1	5	11	0	0	1
Conflicting Peds, #/hr	1	0	0	0	0	1	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-
Peak Hour Factor	80	80	80	80	80	80	80	80	80
Heavy Vehicles, %	0	0	0	0	0	0	0	0	0
Mvmt Flow	0	9	0	1	6	14	0	0	1

Major/Minor	Major1	Major2	Minor1
Conflicting Flow All	20	0	0
Stage 1	-	-	-
Stage 2	-	-	-
Critical Hdwy	4.1	-	-
Critical Hdwy Stg 1	-	-	-
Critical Hdwy Stg 2	-	-	-
Follow-up Hdwy	2.2	-	-
Pot Cap-1 Maneuver	1609	-	-
Stage 1	-	-	-
Stage 2	-	-	-
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	1608	-	-
Mov Cap-2 Maneuver	-	-	-
Stage 1	-	-	-
Stage 2	-	-	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.4	8.4
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	1076	1608	-	-	1623	-	-	988
HCM Lane V/C Ratio	0.001	-	-	-	0.001	-	-	0.005
HCM Control Delay (s)	8.4	0	-	-	7.2	0	-	8.7
HCM Lane LOS	A	A	-	-	A	A	-	A
HCM 95th %tile Q(veh)	0	0	-	-	0	-	-	0

**Intersection**

Int Delay, s/veh

Movement	SBL	SBT	SBR
Vol, veh/h	4	0	0
Conflicting Peds, #/hr	0	0	0
Sign Control	Stop	Stop	Stop
RT Channelized	-	-	None
Storage Length	-	-	-
Veh in Median Storage, #	-	0	-
Grade, %	-	0	-
Peak Hour Factor	80	80	80
Heavy Vehicles, %	0	0	0
Mvmt Flow	5	0	0

**Major/Minor**

Minor2

Conflicting Flow All	25	25	14
Stage 1	16	16	-
Stage 2	9	9	-
Critical Hdwy	7.1	6.5	6.2
Critical Hdwy Stg 1	6.1	5.5	-
Critical Hdwy Stg 2	6.1	5.5	-
Follow-up Hdwy	3.5	4	3.3
Pot Cap-1 Maneuver	991	872	1072
Stage 1	1009	886	-
Stage 2	1017	892	-
Platoon blocked, %			
Mov Cap-1 Maneuver	988	871	1071
Mov Cap-2 Maneuver	988	871	-
Stage 1	1009	885	-
Stage 2	1015	892	-

**Approach**

SB

HCM Control Delay, s	8.7
HCM LOS	A

**Minor Lane/Major Mvmt**

**Intersection**

Int Delay, s/veh 2.7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR
Vol, veh/h	0	14	0	6	19	7	1	0	12
Conflicting Peds, #/hr	0	0	1	1	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-
Peak Hour Factor	80	80	80	80	80	80	80	80	80
Heavy Vehicles, %	0	0	0	0	0	0	0	0	0
Mvmt Flow	0	18	0	8	24	9	1	0	15

Major/Minor	Major1	Major2	Minor1						
Conflicting Flow All	33	0	0	18	0	0	62	66	19
Stage 1	-	-	-	-	-	-	18	18	-
Stage 2	-	-	-	-	-	-	44	48	-
Critical Hdwy	4.1	-	-	4.1	-	-	7.1	6.5	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-
Follow-up Hdwy	2.2	-	-	2.2	-	-	3.5	4	3.3
Pot Cap-1 Maneuver	1592	-	-	1612	-	-	938	829	1065
Stage 1	-	-	-	-	-	-	1006	884	-
Stage 2	-	-	-	-	-	-	975	859	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1591	-	-	1611	-	-	933	825	1064
Mov Cap-2 Maneuver	-	-	-	-	-	-	933	825	-
Stage 1	-	-	-	-	-	-	1006	884	-
Stage 2	-	-	-	-	-	-	968	855	-

Approach	EB	WB	NB
HCM Control Delay, s	0	1.4	8.5
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	1053	1591	-	-	1611	-	-	830
HCM Lane V/C Ratio	0.015	-	-	-	0.005	-	-	0.002
HCM Control Delay (s)	8.5	0	-	-	7.2	0	-	9.3
HCM Lane LOS	A	A	-	-	A	A	-	A
HCM 95th %tile Q(veh)	0	0	-	-	0	-	-	0

**Intersection**

Int Delay, s/veh

Movement	SBL	SBT	SBR
Vol, veh/h	0	1	0
Conflicting Peds, #/hr	0	0	0
Sign Control	Stop	Stop	Stop
RT Channelized	-	-	None
Storage Length	-	-	-
Veh in Median Storage, #	-	0	-
Grade, %	-	0	-
Peak Hour Factor	80	80	80
Heavy Vehicles, %	0	0	0
Mvmt Flow	0	1	0

**Major/Minor**

Minor2

Conflicting Flow All	68	61	29
Stage 1	43	43	-
Stage 2	25	18	-
Critical Hdwy	7.1	6.5	6.2
Critical Hdwy Stg 1	6.1	5.5	-
Critical Hdwy Stg 2	6.1	5.5	-
Follow-up Hdwy	3.5	4	3.3
Pot Cap-1 Maneuver	930	834	1052
Stage 1	976	863	-
Stage 2	998	884	-
Platoon blocked, %			
Mov Cap-1 Maneuver	913	830	1051
Mov Cap-2 Maneuver	913	830	-
Stage 1	976	859	-
Stage 2	983	884	-

**Approach**

SB

HCM Control Delay, s	9.3
HCM LOS	A

**Minor Lane/Major Mvmt**

**Intersection**

Int Delay, s/veh 0.9

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR
Vol, veh/h	3	172	3	10	92	7	2	1	4
Conflicting Peds, #/hr	5	0	4	4	0	5	3	0	4
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-
Peak Hour Factor	88	88	88	88	88	88	88	88	88
Heavy Vehicles, %	0	1	0	0	1	14	0	0	0
Mvmt Flow	3	195	3	11	105	8	2	1	5

Major/Minor	Major1	Major2	Minor1						
Conflicting Flow All	117	0	0	203	0	0	347	347	206
Stage 1	-	-	-	-	-	-	208	208	-
Stage 2	-	-	-	-	-	-	139	139	-
Critical Hdwy	4.1	-	-	4.1	-	-	7.1	6.5	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-
Follow-up Hdwy	2.2	-	-	2.2	-	-	3.5	4	3.3
Pot Cap-1 Maneuver	1484	-	-	1381	-	-	611	580	840
Stage 1	-	-	-	-	-	-	799	734	-
Stage 2	-	-	-	-	-	-	869	785	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1478	-	-	1375	-	-	597	570	834
Mov Cap-2 Maneuver	-	-	-	-	-	-	597	570	-
Stage 1	-	-	-	-	-	-	795	730	-
Stage 2	-	-	-	-	-	-	851	775	-

Approach	EB	WB	NB
HCM Control Delay, s	0.1	0.7	10.2
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	707	1478	-	-	1375	-	-	690
HCM Lane V/C Ratio	0.011	0.002	-	-	0.008	-	-	0.016
HCM Control Delay (s)	10.2	7.4	0	-	7.6	0	-	10.3
HCM Lane LOS	B	A	A	-	A	A	-	B
HCM 95th %tile Q(veh)	0	0	-	-	0	-	-	0.1

**Intersection**

Int Delay, s/veh

Movement	SBL	SBT	SBR
Vol, veh/h	4	2	4
Conflicting Peds, #/hr	4	0	3
Sign Control	Stop	Stop	Stop
RT Channelized	-	-	None
Storage Length	-	-	-
Veh in Median Storage, #	-	0	-
Grade, %	-	0	-
Peak Hour Factor	88	88	88
Heavy Vehicles, %	0	0	0
Mvmt Flow	5	2	5

**Major/Minor**

Minor2

Conflicting Flow All	346	345	118
Stage 1	135	135	-
Stage 2	211	210	-
Critical Hdwy	7.1	6.5	6.2
Critical Hdwy Stg 1	6.1	5.5	-
Critical Hdwy Stg 2	6.1	5.5	-
Follow-up Hdwy	3.5	4	3.3
Pot Cap-1 Maneuver	612	581	939
Stage 1	873	789	-
Stage 2	796	732	-
Platoon blocked, %			
Mov Cap-1 Maneuver	598	571	932
Mov Cap-2 Maneuver	598	571	-
Stage 1	868	779	-
Stage 2	786	728	-

**Approach**

SB

HCM Control Delay, s	10.3
HCM LOS	B

**Minor Lane/Major Mvmt**

**Intersection**

Int Delay, s/veh 4.5

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR
Vol, veh/h	9	160	8	19	96	35	3	44	18
Conflicting Peds, #/hr	3	0	0	0	0	3	1	0	4
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-
Peak Hour Factor	94	94	94	94	94	94	94	94	94
Heavy Vehicles, %	0	1	0	5	2	6	0	0	0
Mvmt Flow	10	170	9	20	102	37	3	47	19

Major/Minor	Major1	Major2	Minor1						
Conflicting Flow All	143	0	0	183	0	0	387	382	181
Stage 1	-	-	-	-	-	-	198	198	-
Stage 2	-	-	-	-	-	-	189	184	-
Critical Hdwy	4.1	-	-	4.15	-	-	7.1	6.5	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-
Follow-up Hdwy	2.2	-	-	2.245	-	-	3.5	4	3.3
Pot Cap-1 Maneuver	1452	-	-	1374	-	-	575	554	867
Stage 1	-	-	-	-	-	-	808	741	-
Stage 2	-	-	-	-	-	-	817	751	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1448	-	-	1371	-	-	527	537	862
Mov Cap-2 Maneuver	-	-	-	-	-	-	527	537	-
Stage 1	-	-	-	-	-	-	799	733	-
Stage 2	-	-	-	-	-	-	754	737	-

Approach	EB	WB	NB
HCM Control Delay, s	0.4	1	11.8
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	599	1448	-	-	1371	-	-	546
HCM Lane V/C Ratio	0.115	0.007	-	-	0.015	-	-	0.181
HCM Control Delay (s)	11.8	7.5	0	-	7.7	0	-	13
HCM Lane LOS	B	A	A	-	A	A	-	B
HCM 95th %tile Q(veh)	0.4	0	-	-	0	-	-	0.7



**Intersection**

Int Delay, s/veh

Movement	SBL	SBT	SBR
Vol, veh/h	49	34	10
Conflicting Peds, #/hr	4	0	1
Sign Control	Stop	Stop	Stop
RT Channelized	-	-	None
Storage Length	-	-	-
Veh in Median Storage, #	-	0	-
Grade, %	-	0	-
Peak Hour Factor	94	94	94
Heavy Vehicles, %	2	0	0
Mvmt Flow	52	36	11

**Major/Minor**

**Minor2**

Conflicting Flow All	396	367	128
Stage 1	165	165	-
Stage 2	231	202	-
Critical Hdwy	7.12	6.5	6.2
Critical Hdwy Stg 1	6.12	5.5	-
Critical Hdwy Stg 2	6.12	5.5	-
Follow-up Hdwy	3.518	4	3.3
Pot Cap-1 Maneuver	564	565	927
Stage 1	837	766	-
Stage 2	772	738	-
Platoon blocked, %			
Mov Cap-1 Maneuver	503	548	922
Mov Cap-2 Maneuver	503	548	-
Stage 1	828	751	-
Stage 2	699	730	-

**Approach**

SB

HCM Control Delay, s	13
HCM LOS	B

**Minor Lane/Major Mvmt**

**Intersection**

Int Delay, s/veh 1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR
Vol, veh/h	3	220	5	18	138	0	6	0	18
Conflicting Peds, #/hr	1	0	1	1	0	1	4	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	0	1	0	0	3	0	0	0	0
Mvmt Flow	3	244	6	20	153	0	7	0	20

Major/Minor	Major1	Major2	Minor1						
Conflicting Flow All	157	0	0	254	0	0	456	455	252
Stage 1	-	-	-	-	-	-	258	258	-
Stage 2	-	-	-	-	-	-	198	197	-
Critical Hdwy	4.1	-	-	4.1	-	-	7.1	6.5	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-
Follow-up Hdwy	2.2	-	-	2.2	-	-	3.5	4	3.3
Pot Cap-1 Maneuver	1435	-	-	1323	-	-	518	504	792
Stage 1	-	-	-	-	-	-	751	698	-
Stage 2	-	-	-	-	-	-	808	742	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1434	-	-	1322	-	-	508	491	789
Mov Cap-2 Maneuver	-	-	-	-	-	-	508	491	-
Stage 1	-	-	-	-	-	-	747	694	-
Stage 2	-	-	-	-	-	-	793	727	-

Approach	EB	WB	NB
HCM Control Delay, s	0.1	0.9	10.4
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	693	1434	-	-	1322	-	-	889
HCM Lane V/C Ratio	0.038	0.002	-	-	0.015	-	-	0.001
HCM Control Delay (s)	10.4	7.5	0	-	7.8	0	-	9.1
HCM Lane LOS	B	A	A	-	A	A	-	A
HCM 95th %tile Q(veh)	0.1	0	-	-	0	-	-	0

**Intersection**

Int Delay, s/veh

Movement	SBL	SBT	SBR
Vol, veh/h	0	0	1
Conflicting Peds, #/hr	0	0	4
Sign Control	Stop	Stop	Stop
RT Channelized	-	-	None
Storage Length	-	-	-
Veh in Median Storage, #	-	0	-
Grade, %	-	0	-
Peak Hour Factor	90	90	90
Heavy Vehicles, %	0	0	0
Mvmt Flow	0	0	1

**Major/Minor**                      **Minor2**

Conflicting Flow All	465	458	158
Stage 1	197	197	-
Stage 2	268	261	-
Critical Hdwy	7.1	6.5	6.2
Critical Hdwy Stg 1	6.1	5.5	-
Critical Hdwy Stg 2	6.1	5.5	-
Follow-up Hdwy	3.5	4	3.3
Pot Cap-1 Maneuver	511	502	893
Stage 1	809	742	-
Stage 2	742	696	-
Platoon blocked, %			
Mov Cap-1 Maneuver	489	489	889
Mov Cap-2 Maneuver	489	489	-
Stage 1	805	727	-
Stage 2	721	692	-

**Approach**                      **SB**

HCM Control Delay, s	9.1
HCM LOS	A

**Minor Lane/Major Mvmt**

**Intersection**

Int Delay, s/veh 0.1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR
Vol, veh/h	0	239	1	0	159	4	0	0	0
Conflicting Peds, #/hr	1	0	2	2	0	1	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-
Peak Hour Factor	87	87	87	87	87	87	87	87	87
Heavy Vehicles, %	0	1	0	0	3	0	0	0	0
Mvmt Flow	0	275	1	0	183	5	0	0	0

Major/Minor	Major1	Major2	Minor1						
Conflicting Flow All	187	0	0	276	0	0	461	462	277
Stage 1	-	-	-	-	-	-	275	275	-
Stage 2	-	-	-	-	-	-	186	187	-
Critical Hdwy	4.1	-	-	4.1	-	-	7.1	6.5	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-
Follow-up Hdwy	2.2	-	-	2.2	-	-	3.5	4	3.3
Pot Cap-1 Maneuver	1399	-	-	1299	-	-	514	500	767
Stage 1	-	-	-	-	-	-	736	686	-
Stage 2	-	-	-	-	-	-	820	749	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1397	-	-	1297	-	-	512	500	766
Mov Cap-2 Maneuver	-	-	-	-	-	-	512	500	-
Stage 1	-	-	-	-	-	-	736	686	-
Stage 2	-	-	-	-	-	-	816	749	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0	0
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	-	1397	-	-	1297	-	-	702
HCM Lane V/C Ratio	-	-	-	-	-	-	-	0.005
HCM Control Delay (s)	0	0	-	-	0	-	-	10.2
HCM Lane LOS	A	A	-	-	A	-	-	B
HCM 95th %tile Q(veh)	-	0	-	-	0	-	-	0

**Intersection**

Int Delay, s/veh

Movement	SBL	SBT	SBR
Vol, veh/h	1	0	2
Conflicting Peds, #/hr	0	0	0
Sign Control	Stop	Stop	Stop
RT Channelized	-	-	None
Storage Length	-	-	-
Veh in Median Storage, #	-	0	-
Grade, %	-	0	-
Peak Hour Factor	87	87	87
Heavy Vehicles, %	0	0	0
Mvmt Flow	1	0	2

**Major/Minor**                      **Minor2**

Conflicting Flow All	460	461	187
Stage 1	185	185	-
Stage 2	275	276	-
Critical Hdwy	7.1	6.5	6.2
Critical Hdwy Stg 1	6.1	5.5	-
Critical Hdwy Stg 2	6.1	5.5	-
Follow-up Hdwy	3.5	4	3.3
Pot Cap-1 Maneuver	515	500	860
Stage 1	821	751	-
Stage 2	736	685	-
Platoon blocked, %			
Mov Cap-1 Maneuver	514	500	859
Mov Cap-2 Maneuver	514	500	-
Stage 1	821	751	-
Stage 2	735	685	-

**Approach**                      **SB**

HCM Control Delay, s	10.2
HCM LOS	B

**Minor Lane/Major Mvmt**

**Intersection**

Int Delay, s/veh 1.1

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Vol, veh/h	250	6	15	163	5	32
Conflicting Peds, #/hr	0	5	5	0	0	2
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	84	84	84	84	84	84
Heavy Vehicles, %	0	17	33	3	0	0
Mvmt Flow	298	7	18	194	6	38

Major/Minor	Major1	Major2	Minor1
Conflicting Flow All	0	0	307
Stage 1	-	-	303
Stage 2	-	-	230
Critical Hdwy	-	-	4.43
Critical Hdwy Stg 1	-	-	5.4
Critical Hdwy Stg 2	-	-	5.4
Follow-up Hdwy	-	-	2.497
Pot Cap-1 Maneuver	-	-	1097
Stage 1	-	-	754
Stage 2	-	-	813
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	-	-	1092
Mov Cap-2 Maneuver	-	-	-
Stage 1	-	-	753
Stage 2	-	-	795

Approach	EB	WB	NB
HCM Control Delay, s	0	0.7	10.6
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	689	-	-	1092	-
HCM Lane V/C Ratio	0.064	-	-	0.016	-
HCM Control Delay (s)	10.6	-	-	8.4	0
HCM Lane LOS	B	-	-	A	A
HCM 95th %tile Q(veh)	0.2	-	-	0.1	-

**Intersection**

Int Delay, s/veh 9.6

Movement	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBL	NBT	NBR
Vol, veh/h	8	294	4	21	15	177	65	0	0	29
Conflicting Peds, #/hr	40	0	16	0	16	0	40	39	0	5
Sign Control	Free	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	-	0	-	-	0	-
Grade, %	-	0	-	-	-	0	-	-	0	-
Peak Hour Factor	93	93	93	93	93	93	93	93	93	93
Heavy Vehicles, %	0	1	0	0	0	6	8	0	0	0
Mvmt Flow	9	316	4	23	16	190	70	0	0	31

Major/Minor	Major1	Major2	Minor1
Conflicting Flow All	299	0	0
Stage 1	-	-	-
Stage 2	-	-	-
Critical Hdwy	4.1	-	-
Critical Hdwy Stg 1	-	-	-
Critical Hdwy Stg 2	-	-	-
Follow-up Hdwy	2.2	-	-
Pot Cap-1 Maneuver	1274	-	-
Stage 1	-	-	-
Stage 2	-	-	-
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	1232	-	-
Mov Cap-2 Maneuver	-	-	-
Stage 1	-	-	-
Stage 2	-	-	-

Approach	EB	WB	NB
HCM Control Delay, s	0.2	0	11.4
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	597	1232	-	-	~	-	-	327
HCM Lane V/C Ratio	0.052	0.007	-	-	~	-	-	0.677
HCM Control Delay (s)	11.4	7.9	0	-	-	-	-	36.3
HCM Lane LOS	B	A	A	-	-	-	-	E
HCM 95th %tile Q(veh)	0.2	0	-	-	~	-	-	4.7

**Notes**

~: Volume exceeds capacity    \$: Delay exceeds 300s    +: Computation Not Defined    \*: All major volume in platoon

**Intersection**

Int Delay, s/veh

Movement	SBL	SBT	SBR
Vol, veh/h	195	0	11
Conflicting Peds, #/hr	5	0	39
Sign Control	Stop	Stop	Stop
RT Channelized	-	-	None
Storage Length	-	-	-
Veh in Median Storage, #	-	0	-
Grade, %	-	0	-
Peak Hour Factor	93	93	93
Heavy Vehicles, %	2	0	0
Mvmt Flow	210	0	12

**Major/Minor**

Minor2

Conflicting Flow All	687	719	304
Stage 1	297	342	-
Stage 2	390	377	-
Critical Hdwy	7.12	6.5	6.2
Critical Hdwy Stg 1	6.12	5.5	-
Critical Hdwy Stg 2	6.12	5.5	-
Follow-up Hdwy	3.518	4	3.3
Pot Cap-1 Maneuver	361	357	740
Stage 1	712	642	-
Stage 2	634	619	-
Platoon blocked, %			
Mov Cap-1 Maneuver	318	331	692
Mov Cap-2 Maneuver	318	331	-
Stage 1	683	621	-
Stage 2	576	593	-

**Approach**

SB

HCM Control Delay, s	36.3
HCM LOS	E

**Minor Lane/Major Mvmt**



**APPENDIX L.4.2 — EXISTING PLUS VMT PROJECT**



# HCM Signalized Intersection Capacity Analysis

## 1: Sonoma Blvd & Curtola Pkwy

Vallejo Marine Terminal  
Existing AM with VMT Project



Movement	EBT	EBR	EBR2	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	SBR2
Lane Configurations	↑↑	←		↑↑	←	←	↑↑			↑↑		
Volume (vph)	246	103	2	404	159	185	169	5	139	141	3	12
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	4.5		4.5	4.5	4.5	4.5			4.5		
Lane Util. Factor	0.91	0.91		0.95	1.00	1.00	0.95			0.95		
Frbp, ped/bikes	1.00	1.00		1.00	0.99	1.00	1.00			1.00		
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00			1.00		
Frt	0.99	0.85		1.00	0.85	1.00	1.00			0.99		
Flt Protected	1.00	1.00		1.00	1.00	0.95	1.00			0.98		
Satd. Flow (prot)	3336	1414		3539	1593	1752	3507			3388		
Flt Permitted	1.00	1.00		1.00	1.00	0.95	1.00			0.98		
Satd. Flow (perm)	3336	1414		3539	1593	1752	3507			3388		
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.92
Adj. Flow (vph)	265	111	2	434	171	199	182	5	149	152	3	13
RTOR Reduction (vph)	0	53	0	0	127	0	2	0	0	2	0	0
Lane Group Flow (vph)	276	49	0	434	44	199	185	0	0	315	0	0
Confl. Peds. (#/hr)						2		2	2		2	
Confl. Bikes (#/hr)					2							
Heavy Vehicles (%)	3%	4%	0%	2%	0%	3%	2%	20%	2%	4%	0%	8%
Turn Type	NA	Perm		NA	Perm	Split	NA		Split	NA		
Protected Phases	2			2		3	3		4	4		
Permitted Phases		2			2							
Actuated Green, G (s)	15.9	15.9		15.9	15.9	13.9	13.9			14.3		
Effective Green, g (s)	15.9	15.9		15.9	15.9	13.9	13.9			14.3		
Actuated g/C Ratio	0.25	0.25		0.25	0.25	0.22	0.22			0.23		
Clearance Time (s)	4.5	4.5		4.5	4.5	4.5	4.5			4.5		
Vehicle Extension (s)	2.0	2.0		2.0	2.0	2.0	2.0			2.0		
Lane Grp Cap (vph)	850	360		901	405	390	781			776		
v/s Ratio Prot	0.08			c0.12		c0.11	0.05			c0.09		
v/s Ratio Perm		0.03			0.03							
v/c Ratio	0.32	0.14		0.48	0.11	0.51	0.24			0.41		
Uniform Delay, d1	18.9	17.9		19.7	17.8	21.3	19.9			20.4		
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00			1.00		
Incremental Delay, d2	0.1	0.1		0.1	0.0	0.5	0.1			0.1		
Delay (s)	19.0	18.0		19.9	17.9	21.7	20.0			20.6		
Level of Service	B	B		B	B	C	B			C		
Approach Delay (s)	18.7			19.3			20.9			20.6		
Approach LOS	B			B			C			C		

### Intersection Summary

HCM 2000 Control Delay	19.8	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.45		
Actuated Cycle Length (s)	62.4	Sum of lost time (s)	17.0
Intersection Capacity Utilization	56.4%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis  
 1: Sonoma Blvd & Curtola Pkwy





















Vallejo Marine Terminal  
 Existing AM with VMT Project



Movement	NEL2	NEL	NER2
Lane Configurations			
Volume (vph)	2	2	2
Ideal Flow (vphpl)	1900	1900	1900
Total Lost time (s)		3.5	
Lane Util. Factor		1.00	
Frbp, ped/bikes		1.00	
Flpb, ped/bikes		1.00	
Frt		0.95	
Flt Protected		0.97	
Satd. Flow (prot)		1756	
Flt Permitted		0.97	
Satd. Flow (perm)		1756	
Peak-hour factor, PHF	0.92	0.92	0.92
Adj. Flow (vph)	2	2	2
RTOR Reduction (vph)	0	6	0
Lane Group Flow (vph)	0	0	0
Confl. Peds. (#/hr)			
Confl. Bikes (#/hr)			
Heavy Vehicles (%)	0%	0%	0%
Turn Type	Prot	Prot	
Protected Phases	1	1	
Permitted Phases			
Actuated Green, G (s)		1.3	
Effective Green, g (s)		1.3	
Actuated g/C Ratio		0.02	
Clearance Time (s)		3.5	
Vehicle Extension (s)		2.0	
Lane Grp Cap (vph)		36	
v/s Ratio Prot		c0.00	
v/s Ratio Perm			
v/c Ratio		0.00	
Uniform Delay, d1		29.9	
Progression Factor		1.00	
Incremental Delay, d2		0.0	
Delay (s)		29.9	
Level of Service		C	
Approach Delay (s)		29.9	
Approach LOS		C	
<b>Intersection Summary</b>			



















HCM 2010 Signalized Intersection Summary  
2: Solano Blvd & Sonoma Blvd

Vallejo Marine Terminal  
Existing AM with VMT Project

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	5	8	14	26	16	14	12	346	48	11	223	16
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		0.99	1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1583	1545	1900	1696	1840	1900	1900	1863	1900	1610	1841	1900
Adj Flow Rate, veh/h	5	9	0	28	17	0	13	376	45	12	242	14
Adj No. of Lanes	1	1	0	1	2	0	1	2	0	1	2	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	20	13	13	12	0	0	0	2	2	18	3	3
Cap, veh/h	14	91	0	73	329	0	54	1866	222	42	1963	113
Arrive On Green	0.01	0.06	0.00	0.04	0.09	0.00	0.03	0.59	0.59	0.03	0.58	0.58
Sat Flow, veh/h	1508	1545	0	1616	3587	0	1810	3181	378	1533	3360	193
Grp Volume(v), veh/h	5	9	0	28	17	0	13	208	213	12	125	131
Grp Sat Flow(s),veh/h/ln	1508	1545	0	1616	1748	0	1810	1770	1790	1533	1749	1804
Q Serve(g_s), s	0.2	0.3	0.0	0.9	0.2	0.0	0.4	2.8	2.9	0.4	1.6	1.7
Cycle Q Clear(g_c), s	0.2	0.3	0.0	0.9	0.2	0.0	0.4	2.8	2.9	0.4	1.6	1.7
Prop In Lane	1.00		0.00	1.00		0.00	1.00		0.21	1.00		0.11
Lane Grp Cap(c), veh/h	14	91	0	73	329	0	54	1038	1050	42	1022	1054
V/C Ratio(X)	0.35	0.10	0.00	0.39	0.05	0.00	0.24	0.20	0.20	0.28	0.12	0.12
Avail Cap(c_a), veh/h	441	722	0	551	1634	0	670	1038	1050	538	1022	1054
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	25.3	22.9	0.0	23.8	21.2	0.0	24.3	5.0	5.0	24.5	4.8	4.8
Incr Delay (d2), s/veh	5.5	0.2	0.0	1.2	0.0	0.0	0.9	0.4	0.4	1.3	0.2	0.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.1	0.1	0.0	0.4	0.1	0.0	0.2	1.5	1.5	0.2	0.8	0.9
LnGrp Delay(d),s/veh	30.7	23.1	0.0	25.1	21.2	0.0	25.2	5.4	5.4	25.8	5.0	5.0
LnGrp LOS	C	C		C	C		C	A	A	C	A	A
Approach Vol, veh/h		14			45			434			268	
Approach Delay, s/veh		25.8			23.6			6.0			6.0	
Approach LOS		C			C			A			A	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	4.4	34.6	5.3	7.0	4.5	34.5	3.5	8.8				
Change Period (Y+Rc), s	3.0	4.5	3.0	4.0	3.0	4.5	3.0	4.0				
Max Green Setting (Gmax), s	18.0	30.0	17.5	24.0	19.0	30.0	15.0	24.0				
Max Q Clear Time (g_c+I1), s	2.4	4.9	2.9	2.3	2.4	3.7	2.2	2.2				
Green Ext Time (p_c), s	0.0	2.7	0.0	0.0	0.0	2.7	0.0	0.0				
<b>Intersection Summary</b>												
HCM 2010 Ctrl Delay			7.4									
HCM 2010 LOS			A									
<b>Notes</b>												
User approved pedestrian interval to be less than phase max green.												




















HCM 2010 Signalized Intersection Summary  
3: Sonoma Blvd & Lemon St

Vallejo Marine Terminal  
Existing AM with VMT Project

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	11	22	10	55	21	33	14	338	61	20	235	12
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	0.99		0.99	0.99		0.99	1.00		0.98	1.00		0.97
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1695	1900	1900	1754	1900	1473	1845	1900	1727	1797	1900
Adj Flow Rate, veh/h	12	24	9	60	23	12	15	371	54	22	258	10
Adj No. of Lanes	0	1	0	0	1	0	1	2	0	1	2	0
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Percent Heavy Veh, %	14	14	14	15	15	15	29	3	3	10	6	6
Cap, veh/h	125	174	52	244	83	31	37	1684	243	60	1875	72
Arrive On Green	0.17	0.17	0.17	0.17	0.17	0.17	0.05	1.00	1.00	0.04	0.56	0.56
Sat Flow, veh/h	210	1038	312	765	494	182	1403	3065	442	1645	3348	129
Grp Volume(v), veh/h	45	0	0	95	0	0	15	211	214	22	131	137
Grp Sat Flow(s),veh/h/ln	1560	0	0	1441	0	0	1403	1752	1754	1645	1707	1770
Q Serve(g_s), s	0.0	0.0	0.0	1.6	0.0	0.0	0.5	0.0	0.0	0.7	1.9	1.9
Cycle Q Clear(g_c), s	1.2	0.0	0.0	2.8	0.0	0.0	0.5	0.0	0.0	0.7	1.9	1.9
Prop In Lane	0.27		0.20	0.63		0.13	1.00		0.25	1.00		0.07
Lane Grp Cap(c), veh/h	352	0	0	358	0	0	37	963	964	60	956	991
V/C Ratio(X)	0.13	0.00	0.00	0.27	0.00	0.00	0.41	0.22	0.22	0.36	0.14	0.14
Avail Cap(c_a), veh/h	776	0	0	754	0	0	303	963	964	420	956	991
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	1.00	1.00	1.00	0.99	0.99	0.99
Uniform Delay (d), s/veh	18.1	0.0	0.0	18.7	0.0	0.0	23.7	0.0	0.0	23.9	5.3	5.3
Incr Delay (d2), s/veh	0.1	0.0	0.0	0.1	0.0	0.0	2.7	0.5	0.5	1.3	0.3	0.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.5	0.0	0.0	1.2	0.0	0.0	0.2	0.1	0.1	0.3	1.0	1.0
LnGrp Delay(d),s/veh	18.2	0.0	0.0	18.9	0.0	0.0	26.4	0.5	0.5	25.3	5.6	5.6
LnGrp LOS	B			B			C	A	A	C	A	A
Approach Vol, veh/h		45			95			440			290	
Approach Delay, s/veh		18.2			18.9			1.4			7.1	
Approach LOS		B			B			A			A	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	5.9	56.6		12.6	5.3	57.1		12.6				
Change Period (Y+Rc), s	4.0	4.5		4.0	4.0	4.5		4.0				
Max Green Setting (Gmax), s	13.0	26.5		23.0	11.0	28.5		23.0				
Max Q Clear Time (g_c+I1), s	2.7	2.0		3.2	2.5	3.9		4.8				
Green Ext Time (p_c), s	0.0	6.2		0.4	0.0	6.2		0.4				
<b>Intersection Summary</b>												
HCM 2010 Ctrl Delay			6.1									
HCM 2010 LOS			A									




















HCM 2010 Signalized Intersection Summary  
6: Sonoma Blvd & Magazine St

Vallejo Marine Terminal  
Existing AM with VMT Project

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	68	127	10	36	45	87	11	206	81	58	211	27
Number	3	8	18	7	4	14	1	6	16	5	2	12
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	0.98		0.96	0.99		0.98	1.00		0.98	1.00		0.96
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1888	1900	1900	1871	1900	1900	1842	1900	1727	1798	1900
Adj Flow Rate, veh/h	79	148	10	42	52	46	13	240	54	67	245	24
Adj No. of Lanes	0	1	0	0	1	0	1	2	0	1	2	0
Peak Hour Factor	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86
Percent Heavy Veh, %	1	1	1	0	0	0	0	4	4	10	5	5
Cap, veh/h	199	322	19	176	204	143	48	1172	258	155	1508	146
Arrive On Green	0.27	0.27	0.27	0.27	0.27	0.27	0.03	0.41	0.41	0.19	0.96	0.96
Sat Flow, veh/h	407	1204	71	331	765	536	1810	2839	625	1645	3133	304
Grp Volume(v), veh/h	237	0	0	140	0	0	13	146	148	67	132	137
Grp Sat Flow(s),veh/h/ln	1682	0	0	1632	0	0	1810	1750	1714	1645	1708	1728
Q Serve(g_s), s	2.5	0.0	0.0	0.0	0.0	0.0	0.4	2.8	3.0	1.9	0.2	0.2
Cycle Q Clear(g_c), s	6.1	0.0	0.0	3.4	0.0	0.0	0.4	2.8	3.0	1.9	0.2	0.2
Prop In Lane	0.33		0.04	0.30		0.33	1.00		0.36	1.00		0.18
Lane Grp Cap(c), veh/h	540	0	0	524	0	0	48	723	708	155	822	832
V/C Ratio(X)	0.44	0.00	0.00	0.27	0.00	0.00	0.27	0.20	0.21	0.43	0.16	0.16
Avail Cap(c_a), veh/h	958	0	0	917	0	0	374	723	708	401	822	832
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	16.4	0.0	0.0	15.5	0.0	0.0	25.4	10.0	10.0	20.3	0.5	0.5
Incr Delay (d2), s/veh	0.2	0.0	0.0	0.1	0.0	0.0	1.1	0.6	0.7	0.7	0.4	0.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.9	0.0	0.0	1.6	0.0	0.0	0.2	1.5	1.5	0.9	0.2	0.2
LnGrp Delay(d),s/veh	16.6	0.0	0.0	15.6	0.0	0.0	26.6	10.6	10.7	21.0	0.9	0.9
LnGrp LOS	B			B			C	B	B	C	A	A
Approach Vol, veh/h		237			140			307			336	
Approach Delay, s/veh		16.6			15.6			11.4			5.0	
Approach LOS		B			B			B			A	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	4.9	52.4		17.7	8.5	48.7		17.7				
Change Period (Y+Rc), s	3.5	5.0		3.5	3.5	5.0		3.5				
Max Green Setting (Gmax), s	11.0	24.0		28.0	13.0	22.0		28.0				
Max Q Clear Time (g_c+I1), s	2.4	2.2		5.4	3.9	5.0		8.1				
Green Ext Time (p_c), s	0.0	4.7		1.5	0.0	4.2		1.5				
<b>Intersection Summary</b>												
HCM 2010 Ctrl Delay				11.1								
HCM 2010 LOS				B								



















HCM 2010 Signalized Intersection Summary  
8: Sonoma Blvd & Maritime Academy Dr

Vallejo Marine Terminal  
Existing AM with VMT Project

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	22	10	8	13	79	93	8	162	11	32	146	32
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		1.00	1.00		1.00	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1719	1900	1900	1786	1863	1900	1799	1900	1900	1792	1900
Adj Flow Rate, veh/h	24	11	2	14	86	22	9	176	8	35	159	17
Adj No. of Lanes	0	1	0	0	1	1	1	2	0	1	2	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	0	0	0	5	5	2	0	6	6	0	6	6
Cap, veh/h	371	136	18	164	404	389	39	1138	51	138	1228	130
Arrive On Green	0.25	0.25	0.25	0.25	0.25	0.25	0.02	0.34	0.34	0.08	0.40	0.40
Sat Flow, veh/h	699	554	72	106	1644	1583	1810	3330	151	1810	3102	327
Grp Volume(v), veh/h	37	0	0	100	0	22	9	90	94	35	86	90
Grp Sat Flow(s),veh/h/ln	1324	0	0	1750	0	1583	1810	1709	1772	1810	1703	1726
Q Serve(g_s), s	0.0	0.0	0.0	0.0	0.0	0.3	0.1	1.1	1.1	0.5	1.0	1.0
Cycle Q Clear(g_c), s	1.3	0.0	0.0	1.3	0.0	0.3	0.1	1.1	1.1	0.5	1.0	1.0
Prop In Lane	0.65		0.05	0.14		1.00	1.00		0.08	1.00		0.19
Lane Grp Cap(c), veh/h	525	0	0	568	0	389	39	584	606	138	674	684
V/C Ratio(X)	0.07	0.00	0.00	0.18	0.00	0.06	0.23	0.15	0.16	0.25	0.13	0.13
Avail Cap(c_a), veh/h	1531	0	0	1870	0	1598	1461	2299	2384	1461	2291	2322
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	8.6	0.0	0.0	9.0	0.0	8.6	14.3	6.8	6.8	12.9	5.7	5.7
Incr Delay (d2), s/veh	0.0	0.0	0.0	0.1	0.0	0.0	1.1	0.1	0.1	0.4	0.1	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.2	0.0	0.0	0.6	0.0	0.1	0.1	0.5	0.5	0.3	0.4	0.5
LnGrp Delay(d),s/veh	8.7	0.0	0.0	9.0	0.0	8.6	15.4	6.9	6.9	13.3	5.8	5.8
LnGrp LOS	A			A		A	B	A	A	B	A	A
Approach Vol, veh/h		37			122			193			211	
Approach Delay, s/veh		8.7			8.9			7.3			7.0	
Approach LOS		A			A			A			A	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	5.3	14.2		10.3	3.6	15.8		10.3				
Change Period (Y+Rc), s	3.0	4.0		3.0	3.0	4.0		3.0				
Max Green Setting (Gmax), s	24.0	40.0		30.0	24.0	40.0		30.0				
Max Q Clear Time (g_c+I1), s	2.5	3.1		3.3	2.1	3.0		3.3				
Green Ext Time (p_c), s	0.0	2.2		0.5	0.0	2.2		0.5				
<b>Intersection Summary</b>												
HCM 2010 Ctrl Delay			7.7									
HCM 2010 LOS			A									

HCM 2010 Signalized Intersection Summary  
 16: Lemon St & Carlson St

























Vallejo Marine Terminal  
 Existing AM with VMT Project

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	2	157	5	11	155	139	3	4	16	136	1	7
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	0.99		0.98	0.99		0.96	1.00		0.98	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1770	1900	1743	1833	1900	1900	1614	1900	1881	1883	1900
Adj Flow Rate, veh/h	2	185	4	13	182	109	4	5	4	163	0	0
Adj No. of Lanes	0	1	0	1	1	0	0	1	0	2	1	0
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85
Percent Heavy Veh, %	7	7	7	9	7	7	50	50	50	1	0	0
Cap, veh/h	178	708	15	722	436	261	275	154	90	1243	380	0
Arrive On Green	0.41	0.41	0.41	0.41	0.41	0.41	0.20	0.20	0.20	0.20	0.00	0.00
Sat Flow, veh/h	5	1717	37	1099	1057	633	238	765	446	2815	1883	0
Grp Volume(v), veh/h	191	0	0	13	0	291	13	0	0	163	0	0
Grp Sat Flow(s),veh/h/ln	1759	0	0	1099	0	1689	1449	0	0	1407	1883	0
Q Serve(g_s), s	0.0	0.0	0.0	0.2	0.0	2.5	0.0	0.0	0.0	1.0	0.0	0.0
Cycle Q Clear(g_c), s	1.5	0.0	0.0	1.6	0.0	2.5	0.1	0.0	0.0	1.2	0.0	0.0
Prop In Lane	0.01		0.02	1.00		0.37	0.31		0.31	1.00		0.00
Lane Grp Cap(c), veh/h	901	0	0	722	0	697	519	0	0	1243	380	0
V/C Ratio(X)	0.21	0.00	0.00	0.02	0.00	0.42	0.03	0.00	0.00	0.13	0.00	0.00
Avail Cap(c_a), veh/h	3304	0	0	2232	0	3017	2253	0	0	4752	2727	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	1.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	4.0	0.0	0.0	4.6	0.0	4.3	6.7	0.0	0.0	7.1	0.0	0.0
Incr Delay (d2), s/veh	0.1	0.0	0.0	0.0	0.0	0.4	0.0	0.0	0.0	0.0	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.7	0.0	0.0	0.0	0.0	1.2	0.1	0.0	0.0	0.4	0.0	0.0
LnGrp Delay(d),s/veh	4.1	0.0	0.0	4.6	0.0	4.7	6.7	0.0	0.0	7.2	0.0	0.0
LnGrp LOS	A			A		A	A			A		
Approach Vol, veh/h		191			304			13			163	
Approach Delay, s/veh		4.1			4.7			6.7			7.2	
Approach LOS		A			A			A			A	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		12.5		8.2		12.5		8.2				
Change Period (Y+Rc), s		4.0		4.0		4.0		4.0				
Max Green Setting (Gmax), s		37.0		30.0		37.0		30.0				
Max Q Clear Time (g_c+I1), s		3.5		3.2		4.5		2.1				
Green Ext Time (p_c), s		3.3		0.6		3.3		0.6				
<b>Intersection Summary</b>												
HCM 2010 Ctrl Delay				5.2								
HCM 2010 LOS				A								
<b>Notes</b>												
User approved volume balancing among the lanes for turning movement.												



HCM 2010 Signalized Intersection Summary  
 17: Lemon St & Curtola Pkwy

Vallejo Marine Terminal  
 Existing AM with VMT Project

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	26	70	212	120	90	25	197	730	106	23	412	30
Number	3	8	18	7	4	14	1	6	16	5	2	12
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		0.93	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1696	1852	1810	1827	1827	1900	1827	1849	1900	1827	1845	1900
Adj Flow Rate, veh/h	29	78	70	133	100	6	219	811	0	26	458	0
Adj No. of Lanes	1	1	1	1	1	1	1	2	0	1	2	0
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	12	0	5	4	4	0	4	3	3	4	3	3
Cap, veh/h	51	211	173	171	330	271	268	1621	0	50	1178	0
Arrive On Green	0.03	0.11	0.11	0.10	0.18	0.18	0.15	0.46	0.00	0.03	0.34	0.00
Sat Flow, veh/h	1616	1852	1517	1740	1827	1498	1740	3606	0	1740	3597	0
Grp Volume(v), veh/h	29	78	70	133	100	6	219	811	0	26	458	0
Grp Sat Flow(s),veh/h/ln	1616	1852	1517	1740	1827	1498	1740	1757	0	1740	1752	0
Q Serve(g_s), s	1.1	2.5	2.7	4.7	3.0	0.2	7.7	10.3	0.0	0.9	6.3	0.0
Cycle Q Clear(g_c), s	1.1	2.5	2.7	4.7	3.0	0.2	7.7	10.3	0.0	0.9	6.3	0.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.00	1.00		0.00
Lane Grp Cap(c), veh/h	51	211	173	171	330	271	268	1621	0	50	1178	0
V/C Ratio(X)	0.57	0.37	0.40	0.78	0.30	0.02	0.82	0.50	0.00	0.52	0.39	0.00
Avail Cap(c_a), veh/h	636	1020	835	685	1006	825	685	1935	0	685	1931	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	30.3	26.0	26.1	28.0	22.6	21.4	26.0	12.0	0.0	30.4	16.1	0.0
Incr Delay (d2), s/veh	3.7	1.1	1.6	2.9	0.7	0.0	2.3	0.3	0.0	3.0	0.2	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.6	1.3	1.2	2.4	1.6	0.1	3.9	5.0	0.0	0.5	3.1	0.0
LnGrp Delay(d),s/veh	34.0	27.1	27.7	30.9	23.2	21.5	28.3	12.3	0.0	33.4	16.4	0.0
LnGrp LOS	C	C	C	C	C	C	C	B		C	B	
Approach Vol, veh/h		177			239			1030			484	
Approach Delay, s/veh		28.5			27.4			15.7			17.3	
Approach LOS		C			C			B			B	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	13.8	27.4	6.0	16.4	5.8	35.3	10.2	12.1				
Change Period (Y+Rc), s	4.0	6.0	4.0	4.9	4.0	6.0	4.0	4.9				
Max Green Setting (Gmax), s	25.0	35.0	25.0	35.0	25.0	35.0	25.0	35.0				
Max Q Clear Time (g_c+I1), s	9.7	8.3	3.1	5.0	2.9	12.3	6.7	4.7				
Green Ext Time (p_c), s	0.3	13.0	0.0	1.5	0.0	11.9	0.2	1.5				
<b>Intersection Summary</b>												
HCM 2010 Ctrl Delay			18.7									
HCM 2010 LOS			B									
<b>Notes</b>												
User approved volume balancing among the lanes for turning movement.												

Intersection									
Int Delay, s/veh	0.7								
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR
Vol, veh/h	15	1	4	2	3	7	6	395	3
Conflicting Peds, #/hr	0	0	2	2	0	0	6	0	3
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-
Peak Hour Factor	89	89	89	89	89	89	89	89	89
Heavy Vehicles, %	13	0	0	0	0	0	0	3	33
Mvmt Flow	17	1	4	2	3	8	7	444	3
Major/Minor	Minor2			Minor1			Major1		
Conflicting Flow All	588	812	178	640	812	232	342	0	0
Stage 1	349	349	-	461	461	-	-	-	-
Stage 2	239	463	-	179	351	-	-	-	-
Critical Hdwy	7.76	6.5	6.9	7.5	6.5	6.9	4.1	-	-
Critical Hdwy Stg 1	6.76	5.5	-	6.5	5.5	-	-	-	-
Critical Hdwy Stg 2	6.76	5.5	-	6.5	5.5	-	-	-	-
Follow-up Hdwy	3.63	4	3.3	3.5	4	3.3	2.2	-	-
Pot Cap-1 Maneuver	370	315	841	364	315	776	1228	-	-
Stage 1	611	637	-	555	569	-	-	-	-
Stage 2	712	568	-	811	636	-	-	-	-
Platoon blocked, %	-								
Mov Cap-1 Maneuver	357	310	835	355	310	771	1222	-	-
Mov Cap-2 Maneuver	357	310	-	355	310	-	-	-	-
Stage 1	605	633	-	550	564	-	-	-	-
Stage 2	691	563	-	798	632	-	-	-	-
Approach	EB			WB			NB		
HCM Control Delay, s	14.5			12.5			0.1		
HCM LOS	B			B					
Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR	
Capacity (veh/h)	1222	-	-	400	492	1116	-	-	
HCM Lane V/C Ratio	0.006	-	-	0.056	0.027	0.004	-	-	
HCM Control Delay (s)	8	0	-	14.5	12.5	8.2	0	-	
HCM Lane LOS	A	A	-	B	B	A	A	-	
HCM 95th %tile Q(veh)	0	-	-	0.2	0.1	0	-	-	

**Intersection**

Int Delay, s/veh

Movement	SBL	SBT	SBR
Vol, veh/h	4	298	5
Conflicting Peds, #/hr	3	0	6
Sign Control	Free	Free	Free
RT Channelized	-	-	None
Storage Length	-	-	-
Veh in Median Storage, #	-	0	-
Grade, %	-	0	-
Peak Hour Factor	89	89	89
Heavy Vehicles, %	0	7	20
Mvmt Flow	4	335	6

**Major/Minor Major2**

Conflicting Flow All	449	0	0
Stage 1	-	-	-
Stage 2	-	-	-
Critical Hdwy	4.1	-	-
Critical Hdwy Stg 1	-	-	-
Critical Hdwy Stg 2	-	-	-
Follow-up Hdwy	2.2	-	-
Pot Cap-1 Maneuver	1122	-	-
Stage 1	-	-	-
Stage 2	-	-	-
Platoon blocked, %		-	-
Mov Cap-1 Maneuver	1116	-	-
Mov Cap-2 Maneuver	-	-	-
Stage 1	-	-	-
Stage 2	-	-	-

**Approach SB**

HCM Control Delay, s 0.1

HCM LOS

**Minor Lane/Major Mvmt**

**Intersection**

Int Delay, s/veh 1.3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR
Vol, veh/h	26	4	7	3	1	13	7	351	4
Conflicting Peds, #/hr	1	0	4	4	0	1	13	0	5
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-
Peak Hour Factor	91	91	91	91	91	91	91	91	91
Heavy Vehicles, %	0	0	0	0	0	15	0	4	0
Mvmt Flow	29	4	8	3	1	14	8	386	4

Major/Minor	Minor2			Minor1			Major1		
Conflicting Flow All	560	756	180	594	763	212	329	0	0
Stage 1	347	347	-	407	407	-	-	-	-
Stage 2	213	409	-	187	356	-	-	-	-
Critical Hdwy	7.5	6.5	6.9	7.5	6.5	7.2	4.1	-	-
Critical Hdwy Stg 1	6.5	5.5	-	6.5	5.5	-	-	-	-
Critical Hdwy Stg 2	6.5	5.5	-	6.5	5.5	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	3.5	4	3.45	2.2	-	-
Pot Cap-1 Maneuver	415	340	838	393	337	755	1242	-	-
Stage 1	648	638	-	597	601	-	-	-	-
Stage 2	775	600	-	803	633	-	-	-	-
Platoon blocked, %									
Mov Cap-1 Maneuver	393	330	826	373	327	744	1229	-	-
Mov Cap-2 Maneuver	393	330	-	373	327	-	-	-	-
Stage 1	641	626	-	590	594	-	-	-	-
Stage 2	744	593	-	770	621	-	-	-	-

Approach	EB	WB	NB
HCM Control Delay, s	14.3	11.2	0.2
HCM LOS	B	B	

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1229	-	-	426	595	1094	-	-
HCM Lane V/C Ratio	0.006	-	-	0.095	0.031	0.012	-	-
HCM Control Delay (s)	7.9	0	-	14.3	11.2	8.3	0.1	-
HCM Lane LOS	A	A	-	B	B	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0.3	0.1	0	-	-

**Intersection**

Int Delay, s/veh

Movement	SBL	SBT	SBR
Vol, veh/h	12	281	15
Conflicting Peds, #/hr	5	0	13
Sign Control	Free	Free	Free
RT Channelized	-	-	None
Storage Length	-	-	-
Veh in Median Storage, #	-	0	-
Grade, %	-	0	-
Peak Hour Factor	91	91	91
Heavy Vehicles, %	10	7	0
Mvmt Flow	13	309	16

**Major/Minor Major2**

Conflicting Flow All	394	0	0
Stage 1	-	-	-
Stage 2	-	-	-
Critical Hdwy	4.3	-	-
Critical Hdwy Stg 1	-	-	-
Critical Hdwy Stg 2	-	-	-
Follow-up Hdwy	2.3	-	-
Pot Cap-1 Maneuver	1106	-	-
Stage 1	-	-	-
Stage 2	-	-	-
Platoon blocked, %		-	-
Mov Cap-1 Maneuver	1094	-	-
Mov Cap-2 Maneuver	-	-	-
Stage 1	-	-	-
Stage 2	-	-	-

**Approach SB**

HCM Control Delay, s 0.4

HCM LOS

**Minor Lane/Major Mvmt**

**Intersection**

Int Delay, s/veh 4.2

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Vol, veh/h	94	41	87	192	169	90
Conflicting Peds, #/hr	0	0	8	0	0	8
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	60	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	85	85	85	85	85	85
Heavy Vehicles, %	3	3	3	5	5	3
Mvmt Flow	111	48	102	226	199	106

Major/Minor	Minor2	Major1	Major2
Conflicting Flow All	570	160	305
Stage 1	252	-	-
Stage 2	318	-	-
Critical Hdwy	6.86	6.96	4.16
Critical Hdwy Stg 1	5.86	-	-
Critical Hdwy Stg 2	5.86	-	-
Follow-up Hdwy	3.53	3.33	2.23
Pot Cap-1 Maneuver	449	854	1245
Stage 1	764	-	-
Stage 2	707	-	-
Platoon blocked, %			-
Mov Cap-1 Maneuver	412	848	1237
Mov Cap-2 Maneuver	412	-	-
Stage 1	764	-	-
Stage 2	649	-	-

Approach	EB	NB	SB
HCM Control Delay, s	15.9	2.5	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1237	-	488	-	-
HCM Lane V/C Ratio	0.083	-	0.325	-	-
HCM Control Delay (s)	8.2	-	15.9	-	-
HCM Lane LOS	A	-	C	-	-
HCM 95th %tile Q(veh)	0.3	-	1.4	-	-

**Intersection**

Int Delay, s/veh 0.6

Movement	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBL	NBT	NBR
Vol, veh/h	0	26	0	3	0	24	4	0	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	-	0	-	-	0	-
Grade, %	-	0	-	-	-	0	-	-	0	-
Peak Hour Factor	82	82	82	82	82	82	82	82	82	82
Heavy Vehicles, %	0	24	0	0	0	26	0	0	0	0
Mvmt Flow	0	32	0	4	0	29	5	0	0	0

Major/Minor	Major1	Major2	Minor1							
Conflicting Flow All	34	0	0	32	32	0	0	64	73	35
Stage 1	-	-	-	-	-	-	-	32	32	-
Stage 2	-	-	-	-	-	-	-	32	41	-
Critical Hdwy	4.1	-	-	-	4.1	-	-	7.1	6.5	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	-	6.1	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	-	6.1	5.5	-
Follow-up Hdwy	2.2	-	-	-	2.2	-	-	3.5	4	3.3
Pot Cap-1 Maneuver	1591	-	-	-	1593	-	-	935	821	1044
Stage 1	-	-	-	-	-	-	-	990	872	-
Stage 2	-	-	-	-	-	-	-	990	865	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1591	-	-	-	-	-	-	934	821	1044
Mov Cap-2 Maneuver	-	-	-	-	-	-	-	934	821	-
Stage 1	-	-	-	-	-	-	-	990	872	-
Stage 2	-	-	-	-	-	-	-	989	865	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0	0
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	-	1591	-	-	-	-	-	961
HCM Lane V/C Ratio	-	-	-	-	-	-	-	0.005
HCM Control Delay (s)	0	0	-	-	-	-	-	8.8
HCM Lane LOS	A	A	-	-	-	-	-	A
HCM 95th %tile Q(veh)	-	0	-	-	-	-	-	0

**Intersection**

Int Delay, s/veh

Movement	SBL	SBT	SBR
Vol, veh/h	3	0	1
Conflicting Peds, #/hr	0	0	0
Sign Control	Stop	Stop	Stop
RT Channelized	-	-	None
Storage Length	-	-	-
Veh in Median Storage, #	-	0	-
Grade, %	-	0	-
Peak Hour Factor	82	82	82
Heavy Vehicles, %	0	0	0
Mvmt Flow	4	0	1

**Major/Minor**                      **Minor2**

Conflicting Flow All	64	71	32
Stage 1	32	39	-
Stage 2	32	32	-
Critical Hdwy	7.1	6.5	6.2
Critical Hdwy Stg 1	6.1	5.5	-
Critical Hdwy Stg 2	6.1	5.5	-
Follow-up Hdwy	3.5	4	3.3
Pot Cap-1 Maneuver	935	823	1048
Stage 1	990	866	-
Stage 2	990	872	-
Platoon blocked, %			
Mov Cap-1 Maneuver	935	823	1048
Mov Cap-2 Maneuver	935	823	-
Stage 1	990	866	-
Stage 2	990	872	-

**Approach**                      **SB**

HCM Control Delay, s	8.8
HCM LOS	A

**Minor Lane/Major Mvmt**



**Intersection**

Int Delay, s/veh 2.4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR
Vol, veh/h	3	29	0	6	31	5	1	4	9
Conflicting Peds, #/hr	0	0	0	0	0	0	2	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-
Peak Hour Factor	88	88	88	88	88	88	88	88	88
Heavy Vehicles, %	0	21	0	0	20	0	0	0	0
Mvmt Flow	3	33	0	7	35	6	1	5	10

Major/Minor	Major1	Major2	Minor1						
Conflicting Flow All	43	0	0	35	0	0	96	99	35
Stage 1	-	-	-	-	-	-	42	42	-
Stage 2	-	-	-	-	-	-	54	57	-
Critical Hdwy	4.1	-	-	4.1	-	-	7.1	6.5	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-
Follow-up Hdwy	2.2	-	-	2.2	-	-	3.5	4	3.3
Pot Cap-1 Maneuver	1579	-	-	1589	-	-	891	795	1044
Stage 1	-	-	-	-	-	-	978	864	-
Stage 2	-	-	-	-	-	-	963	851	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1579	-	-	1589	-	-	885	787	1042
Mov Cap-2 Maneuver	-	-	-	-	-	-	885	787	-
Stage 1	-	-	-	-	-	-	974	861	-
Stage 2	-	-	-	-	-	-	958	845	-

Approach	EB	WB	NB
HCM Control Delay, s	0.7	1	8.9
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	943	1579	-	-	1589	-	-	863
HCM Lane V/C Ratio	0.017	0.002	-	-	0.004	-	-	0.004
HCM Control Delay (s)	8.9	7.3	0	-	7.3	0	-	9.2
HCM Lane LOS	A	A	A	-	A	A	-	A
HCM 95th %tile Q(veh)	0.1	0	-	-	0	-	-	0

**Intersection**

Int Delay, s/veh

Movement	SBL	SBT	SBR
Vol, veh/h	3	0	0
Conflicting Peds, #/hr	0	0	2
Sign Control	Stop	Stop	Stop
RT Channelized	-	-	None
Storage Length	-	-	-
Veh in Median Storage, #	-	0	-
Grade, %	-	0	-
Peak Hour Factor	88	88	88
Heavy Vehicles, %	0	0	0
Mvmt Flow	3	0	0

**Major/Minor**

**Minor2**

Conflicting Flow All	103	96	40
Stage 1	54	54	-
Stage 2	49	42	-
Critical Hdwy	7.1	6.5	6.2
Critical Hdwy Stg 1	6.1	5.5	-
Critical Hdwy Stg 2	6.1	5.5	-
Follow-up Hdwy	3.5	4	3.3
Pot Cap-1 Maneuver	882	798	1037
Stage 1	963	854	-
Stage 2	969	864	-
Platoon blocked, %			
Mov Cap-1 Maneuver	863	790	1035
Mov Cap-2 Maneuver	863	790	-
Stage 1	959	848	-
Stage 2	953	861	-

**Approach**

SB

HCM Control Delay, s	9.2
HCM LOS	A

**Minor Lane/Major Mvmt**

**Intersection**

Int Delay, s/veh 1.5

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR
Vol, veh/h	7	96	1	6	98	4	3	3	4
Conflicting Peds, #/hr	2	0	2	2	0	2	0	0	1
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-
Peak Hour Factor	85	85	85	85	85	85	85	85	85
Heavy Vehicles, %	0	9	0	17	11	0	0	0	25
Mvmt Flow	8	113	1	7	115	5	4	4	5

Major/Minor	Major1	Major2	Minor1						
Conflicting Flow All	121	0	0	115	0	0	268	266	117
Stage 1	-	-	-	-	-	-	131	131	-
Stage 2	-	-	-	-	-	-	137	135	-
Critical Hdwy	4.1	-	-	4.27	-	-	7.1	6.5	6.45
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-
Follow-up Hdwy	2.2	-	-	2.353	-	-	3.5	4	3.525
Pot Cap-1 Maneuver	1479	-	-	1386	-	-	689	643	876
Stage 1	-	-	-	-	-	-	877	792	-
Stage 2	-	-	-	-	-	-	871	789	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1477	-	-	1384	-	-	674	635	874
Mov Cap-2 Maneuver	-	-	-	-	-	-	674	635	-
Stage 1	-	-	-	-	-	-	871	787	-
Stage 2	-	-	-	-	-	-	856	784	-

Approach	EB	WB	NB
HCM Control Delay, s	0.5	0.4	10
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	727	1477	-	-	1384	-	-	734
HCM Lane V/C Ratio	0.016	0.006	-	-	0.005	-	-	0.024
HCM Control Delay (s)	10	7.5	0	-	7.6	0	-	10
HCM Lane LOS	B	A	A	-	A	A	-	B
HCM 95th %tile Q(veh)	0	0	-	-	0	-	-	0.1

**Intersection**

Int Delay, s/veh

Movement	SBL	SBT	SBR
Vol, veh/h	7	3	5
Conflicting Peds, #/hr	1	0	0
Sign Control	Stop	Stop	Stop
RT Channelized	-	-	None
Storage Length	-	-	-
Veh in Median Storage, #	-	0	-
Grade, %	-	0	-
Peak Hour Factor	85	85	85
Heavy Vehicles, %	0	0	0
Mvmt Flow	8	4	6

**Major/Minor**

**Minor2**

Conflicting Flow All	268	265	121
Stage 1	133	133	-
Stage 2	135	132	-
Critical Hdwy	7.1	6.5	6.2
Critical Hdwy Stg 1	6.1	5.5	-
Critical Hdwy Stg 2	6.1	5.5	-
Follow-up Hdwy	3.5	4	3.3
Pot Cap-1 Maneuver	689	644	936
Stage 1	875	790	-
Stage 2	873	791	-
Platoon blocked, %			
Mov Cap-1 Maneuver	675	636	934
Mov Cap-2 Maneuver	675	636	-
Stage 1	869	785	-
Stage 2	858	786	-

**Approach**

SB

HCM Control Delay, s	10
HCM LOS	B

**Minor Lane/Major Mvmt**

**Intersection**

Int Delay, s/veh 4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR
Vol, veh/h	12	93	3	13	89	17	5	25	24
Conflicting Peds, #/hr	1	0	3	3	0	1	1	0	1
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	8	8	0	0	12	6	0	4	0
Mvmt Flow	13	103	3	14	99	19	6	28	27

Major/Minor	Major1	Major2	Minor1						
Conflicting Flow All	119	0	0	108	0	0	292	281	109
Stage 1	-	-	-	-	-	-	133	133	-
Stage 2	-	-	-	-	-	-	159	148	-
Critical Hdwy	4.18	-	-	4.1	-	-	7.1	6.54	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.54	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.54	-
Follow-up Hdwy	2.272	-	-	2.2	-	-	3.5	4.036	3.3
Pot Cap-1 Maneuver	1432	-	-	1495	-	-	664	624	950
Stage 1	-	-	-	-	-	-	875	782	-
Stage 2	-	-	-	-	-	-	848	771	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1428	-	-	1491	-	-	620	611	947
Mov Cap-2 Maneuver	-	-	-	-	-	-	620	611	-
Stage 1	-	-	-	-	-	-	866	774	-
Stage 2	-	-	-	-	-	-	795	763	-

Approach	EB	WB	NB
HCM Control Delay, s	0.8	0.8	10.4
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	727	1428	-	-	1491	-	-	673
HCM Lane V/C Ratio	0.083	0.009	-	-	0.01	-	-	0.088
HCM Control Delay (s)	10.4	7.5	0	-	7.4	0	-	10.9
HCM Lane LOS	B	A	A	-	A	A	-	B
HCM 95th %tile Q(veh)	0.3	0	-	-	0	-	-	0.3

**Intersection**

Int Delay, s/veh

Movement	SBL	SBT	SBR
Vol, veh/h	15	24	14
Conflicting Peds, #/hr	1	0	1
Sign Control	Stop	Stop	Stop
RT Channelized	-	-	None
Storage Length	-	-	-
Veh in Median Storage, #	-	0	-
Grade, %	-	0	-
Peak Hour Factor	90	90	90
Heavy Vehicles, %	0	4	7
Mvmt Flow	17	27	16

**Major/Minor**

	Minor2		
Conflicting Flow All	298	272	112
Stage 1	138	138	-
Stage 2	160	134	-
Critical Hdwy	7.1	6.54	6.27
Critical Hdwy Stg 1	6.1	5.54	-
Critical Hdwy Stg 2	6.1	5.54	-
Follow-up Hdwy	3.5	4.036	3.363
Pot Cap-1 Maneuver	658	631	928
Stage 1	870	779	-
Stage 2	847	782	-
Platoon blocked, %			
Mov Cap-1 Maneuver	606	617	925
Mov Cap-2 Maneuver	606	617	-
Stage 1	861	771	-
Stage 2	784	774	-

**Approach**

	SB
HCM Control Delay, s	10.9
HCM LOS	B

**Minor Lane/Major Mvmt**

**Intersection**

Int Delay, s/veh 1.5

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR
Vol, veh/h	2	125	2	13	109	3	5	0	21
Conflicting Peds, #/hr	4	0	7	7	0	4	4	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-
Peak Hour Factor	81	81	81	81	81	81	81	81	81
Heavy Vehicles, %	0	6	0	0	9	33	0	5	0
Mvmt Flow	2	154	2	16	135	4	6	0	26

Major/Minor	Major1	Major2	Minor1						
Conflicting Flow All	142	0	0	161	0	0	339	338	167
Stage 1	-	-	-	-	-	-	164	164	-
Stage 2	-	-	-	-	-	-	175	174	-
Critical Hdwy	4.1	-	-	4.1	-	-	7.1	6.55	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.55	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.55	-
Follow-up Hdwy	2.2	-	-	2.2	-	-	3.5	4.045	3.3
Pot Cap-1 Maneuver	1453	-	-	1430	-	-	619	578	882
Stage 1	-	-	-	-	-	-	843	757	-
Stage 2	-	-	-	-	-	-	832	749	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1445	-	-	1422	-	-	603	566	874
Mov Cap-2 Maneuver	-	-	-	-	-	-	603	566	-
Stage 1	-	-	-	-	-	-	839	753	-
Stage 2	-	-	-	-	-	-	812	738	-

Approach	EB	WB	NB
HCM Control Delay, s	0.1	0.8	9.7
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	804	1445	-	-	1422	-	-	676
HCM Lane V/C Ratio	0.04	0.002	-	-	0.011	-	-	0.011
HCM Control Delay (s)	9.7	7.5	0	-	7.6	0	-	10.4
HCM Lane LOS	A	A	A	-	A	A	-	B
HCM 95th %tile Q(veh)	0.1	0	-	-	0	-	-	0

**Intersection**

Int Delay, s/veh

Movement	SBL	SBT	SBR
Vol, veh/h	2	1	3
Conflicting Peds, #/hr	0	0	4
Sign Control	Stop	Stop	Stop
RT Channelized	-	-	None
Storage Length	-	-	-
Veh in Median Storage, #	-	0	-
Grade, %	-	0	-
Peak Hour Factor	81	81	81
Heavy Vehicles, %	0	0	33
Mvmt Flow	2	1	4

**Major/Minor**

	Minor2		
Conflicting Flow All	350	339	147
Stage 1	173	173	-
Stage 2	177	166	-
Critical Hdwy	7.1	6.5	6.53
Critical Hdwy Stg 1	6.1	5.5	-
Critical Hdwy Stg 2	6.1	5.5	-
Follow-up Hdwy	3.5	4	3.597
Pot Cap-1 Maneuver	608	586	824
Stage 1	834	760	-
Stage 2	829	765	-
Platoon blocked, %			
Mov Cap-1 Maneuver	578	574	816
Mov Cap-2 Maneuver	578	574	-
Stage 1	830	748	-
Stage 2	798	761	-

**Approach**

	SB
HCM Control Delay, s	10.4
HCM LOS	B

**Minor Lane/Major Mvmt**



**Intersection**

Int Delay, s/veh 0.1

Movement	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBL	NBT	NBR
Vol, veh/h	0	152	0	5	0	129	1	1	0	0
Conflicting Peds, #/hr	7	0	3	0	3	0	7	3	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	-	0	-	-	0	-
Grade, %	-	0	-	-	-	0	-	-	0	-
Peak Hour Factor	83	83	83	83	83	83	83	83	83	83
Heavy Vehicles, %	0	5	0	0	0	8	0	0	0	0
Mvmt Flow	0	183	0	6	0	155	1	1	0	0

Major/Minor	Major1	Major2	Minor1							
Conflicting Flow All	160	0	0	183	186	0	0	345	358	199
Stage 1	-	-	-	-	-	-	-	186	186	-
Stage 2	-	-	-	-	-	-	-	159	172	-
Critical Hdwy	4.1	-	-	-	4.1	-	-	7.1	6.5	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	-	6.1	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	-	6.1	5.5	-
Follow-up Hdwy	2.2	-	-	-	2.2	-	-	3.5	4	3.3
Pot Cap-1 Maneuver	1432	-	-	-	1401	-	-	613	572	847
Stage 1	-	-	-	-	-	-	-	820	750	-
Stage 2	-	-	-	-	-	-	-	848	760	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1424	-	-	-	-	-	-	608	569	840
Mov Cap-2 Maneuver	-	-	-	-	-	-	-	608	569	-
Stage 1	-	-	-	-	-	-	-	818	748	-
Stage 2	-	-	-	-	-	-	-	843	758	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0	10.9
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	608	1424	-	-	-	-	-	608
HCM Lane V/C Ratio	0.002	-	-	-	-	-	-	0.004
HCM Control Delay (s)	10.9	0	-	-	-	-	-	10.9
HCM Lane LOS	B	A	-	-	-	-	-	B
HCM 95th %tile Q(veh)	0	0	-	-	-	-	-	0

**Intersection**

Int Delay, s/veh

Movement	SBL	SBT	SBR
Vol, veh/h	2	0	0
Conflicting Peds, #/hr	0	0	3
Sign Control	Stop	Stop	Stop
RT Channelized	-	-	None
Storage Length	-	-	-
Veh in Median Storage, #	-	0	-
Grade, %	-	0	-
Peak Hour Factor	83	83	83
Heavy Vehicles, %	0	0	0
Mvmt Flow	2	0	0

**Major/Minor**

**Minor2**

Conflicting Flow All	345	357	166
Stage 1	159	171	-
Stage 2	186	186	-
Critical Hdwy	7.1	6.5	6.2
Critical Hdwy Stg 1	6.1	5.5	-
Critical Hdwy Stg 2	6.1	5.5	-
Follow-up Hdwy	3.5	4	3.3
Pot Cap-1 Maneuver	613	572	884
Stage 1	848	761	-
Stage 2	820	750	-
Platoon blocked, %			
Mov Cap-1 Maneuver	608	569	877
Mov Cap-2 Maneuver	608	569	-
Stage 1	846	759	-
Stage 2	815	748	-

**Approach**

SB

HCM Control Delay, s	10.9
HCM LOS	B

**Minor Lane/Major Mvmt**

**Intersection**

Int Delay, s/veh 0.4

Movement	EBT	EBR	WBU	WBL	WBT	NBL	NBR
Vol, veh/h	151	1	2	15	137	2	10
Conflicting Peds, #/hr	0	4	0	4	0	0	1
Sign Control	Free	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	-	None	-	None
Storage Length	-	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	-	0	0	-
Grade, %	0	-	-	-	0	0	-
Peak Hour Factor	88	88	88	88	88	88	88
Heavy Vehicles, %	5	0	0	13	7	40	0
Mvmt Flow	172	1	2	17	156	2	11

Major/Minor	Major1	Major2	Minor1				
Conflicting Flow All	0	0	184	174	0	363	179
Stage 1	-	-	-	-	-	173	-
Stage 2	-	-	-	-	-	190	-
Critical Hdwy	-	-	-	4.23	-	6.8	6.2
Critical Hdwy Stg 1	-	-	-	-	-	5.8	-
Critical Hdwy Stg 2	-	-	-	-	-	5.8	-
Follow-up Hdwy	-	-	-	2.317	-	3.86	3.3
Pot Cap-1 Maneuver	-	-	-	1339	-	567	869
Stage 1	-	-	-	-	-	773	-
Stage 2	-	-	-	-	-	759	-
Platoon blocked, %	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	-9	-9	-	565	865
Mov Cap-2 Maneuver	-	-	-	-	-	565	-
Stage 1	-	-	-	-	-	772	-
Stage 2	-	-	-	-	-	756	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0	9.6
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	795	-	-	+	-
HCM Lane V/C Ratio	0.017	-	-	-	-
HCM Control Delay (s)	9.6	-	-	-	-
HCM Lane LOS	A	-	-	-	-
HCM 95th %tile Q(veh)	0.1	-	-	-	-

**Notes**

~: Volume exceeds capacity    \$: Delay exceeds 300s    +: Computation Not Defined    \*: All major volume in platoon

HCM Signalized Intersection Capacity Analysis  
1: Sonoma Blvd & Curtola Pkwy

Vallejo Marine Terminal  
Existing PM with VMT Project



Movement	EBT	EBR	EBR2	WBT	WBR	NBL2	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↑↑	←		↑↑	↑		↑	↑↑			↑↑	
Volume (vph)	497	170	3	288	195	12	160	247	5	187	171	6
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	4.5		4.5	4.5		4.5	4.5			4.5	
Lane Util. Factor	0.91	0.91		0.95	1.00		1.00	0.95			0.95	
Frbp, ped/bikes	1.00	1.00		1.00	0.98		1.00	1.00			1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00			1.00	
Frt	0.99	0.85		1.00	0.85		1.00	1.00			0.99	
Flt Protected	1.00	1.00		1.00	1.00		0.95	1.00			0.98	
Satd. Flow (prot)	3374	1455		3539	1589		1756	3564			3443	
Flt Permitted	1.00	1.00		1.00	1.00		0.95	1.00			0.98	
Satd. Flow (perm)	3374	1455		3539	1589		1756	3564			3443	
Peak-hour factor, PHF	0.91	0.91	0.91	0.91	0.91	0.92	0.91	0.91	0.91	0.91	0.91	0.91
Adj. Flow (vph)	546	187	3	316	214	13	176	271	5	205	188	7
RTOR Reduction (vph)	0	50	0	0	149	0	0	1	0	0	2	0
Lane Group Flow (vph)	565	121	0	316	65	0	189	275	0	0	419	0
Confl. Peds. (#/hr)					4		1		4	4		1
Confl. Bikes (#/hr)									1			1
Heavy Vehicles (%)	2%	1%	0%	2%	0%	0%	3%	1%	0%	1%	1%	0%
Turn Type	NA	Perm		NA	Perm	Split	Split	NA		Split	NA	
Protected Phases	2			2		3	3	3		4	4	
Permitted Phases		2			2							
Actuated Green, G (s)	22.6	22.6		22.6	22.6		15.4	15.4			16.5	
Effective Green, g (s)	22.6	22.6		22.6	22.6		15.4	15.4			16.5	
Actuated g/C Ratio	0.30	0.30		0.30	0.30		0.21	0.21			0.22	
Clearance Time (s)	4.5	4.5		4.5	4.5		4.5	4.5			4.5	
Vehicle Extension (s)	2.0	2.0		2.0	2.0		2.0	2.0			2.0	
Lane Grp Cap (vph)	1020	440		1070	480		362	734			760	
v/s Ratio Prot	c0.17			0.09			c0.11	0.08			c0.12	
v/s Ratio Perm		0.08			0.04							
v/c Ratio	0.55	0.28		0.30	0.13		0.52	0.37			0.55	
Uniform Delay, d1	21.8	19.8		20.0	18.9		26.4	25.5			25.8	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00			1.00	
Incremental Delay, d2	0.4	0.1		0.1	0.0		0.6	0.1			0.5	
Delay (s)	22.2	19.9		20.0	19.0		27.0	25.6			26.3	
Level of Service	C	B		C	B		C	C			C	
Approach Delay (s)	21.7			19.6			26.2				26.3	
Approach LOS	C			B			C				C	

Intersection Summary			
HCM 2000 Control Delay	23.1	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.51		
Actuated Cycle Length (s)	74.7	Sum of lost time (s)	17.0
Intersection Capacity Utilization	61.6%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis  
 1: Sonoma Blvd & Curtola Pkwy






















Vallejo Marine Terminal  
 Existing PM with VMT Project



Movement	SBR2	NEL2	NEL	NER	NER2
Lane Configurations					
Volume (vph)	19	6	4	5	4
Ideal Flow (vphpl)	1900	1900	1900	1900	1900
Total Lost time (s)			3.5		
Lane Util. Factor			1.00		
Frbp, ped/bikes			1.00		
Flpb, ped/bikes			1.00		
Frt			0.94		
Flt Protected			0.97		
Satd. Flow (prot)			1737		
Flt Permitted			0.97		
Satd. Flow (perm)			1737		
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	21	7	4	5	4
RTOR Reduction (vph)	0	0	19	0	0
Lane Group Flow (vph)	0	0	1	0	0
Confl. Peds. (#/hr)					
Confl. Bikes (#/hr)					
Heavy Vehicles (%)	5%	0%	0%	0%	0%
Turn Type		Prot	Prot		
Protected Phases		1	1		
Permitted Phases					
Actuated Green, G (s)			3.2		
Effective Green, g (s)			3.2		
Actuated g/C Ratio			0.04		
Clearance Time (s)			3.5		
Vehicle Extension (s)			2.0		
Lane Grp Cap (vph)			74		
v/s Ratio Prot			c0.00		
v/s Ratio Perm					
v/c Ratio			0.01		
Uniform Delay, d1			34.2		
Progression Factor			1.00		
Incremental Delay, d2			0.0		
Delay (s)			34.3		
Level of Service			C		
Approach Delay (s)			34.3		
Approach LOS			C		
<b>Intersection Summary</b>					



















HCM 2010 Signalized Intersection Summary  
2: Solano Blvd & Sonoma Blvd

Vallejo Marine Terminal  
Existing PM with VMT Project

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	16	54	9	31	13	49	8	367	44	10	325	5
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		0.99	1.00		0.99	1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1868	1900	1845	1840	1900	1900	1857	1900	1900	1881	1900
Adj Flow Rate, veh/h	18	62	3	36	15	1	9	422	45	11	374	6
Adj No. of Lanes	1	1	0	1	2	0	1	2	0	1	2	0
Peak Hour Factor	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87
Percent Heavy Veh, %	0	2	2	3	8	8	0	2	2	0	1	1
Cap, veh/h	55	200	10	95	454	30	38	1750	186	46	1975	32
Arrive On Green	0.03	0.11	0.11	0.05	0.14	0.14	0.02	0.54	0.54	0.03	0.55	0.55
Sat Flow, veh/h	1810	1767	86	1757	3326	219	1810	3214	341	1810	3600	58
Grp Volume(v), veh/h	18	0	65	36	8	8	9	231	236	11	185	195
Grp Sat Flow(s),veh/h/ln	1810	0	1853	1757	1748	1798	1810	1764	1791	1810	1787	1870
Q Serve(g_s), s	0.5	0.0	1.8	1.1	0.2	0.2	0.3	3.8	3.8	0.3	2.9	2.9
Cycle Q Clear(g_c), s	0.5	0.0	1.8	1.1	0.2	0.2	0.3	3.8	3.8	0.3	2.9	2.9
Prop In Lane	1.00		0.05	1.00		0.12	1.00		0.19	1.00		0.03
Lane Grp Cap(c), veh/h	55	0	210	95	239	245	38	960	975	46	981	1026
V/C Ratio(X)	0.33	0.00	0.31	0.38	0.03	0.03	0.24	0.24	0.24	0.24	0.19	0.19
Avail Cap(c_a), veh/h	493	0	807	558	761	783	624	960	975	591	981	1026
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	26.2	0.0	22.5	25.2	20.6	20.6	26.5	6.6	6.6	26.3	6.3	6.3
Incr Delay (d2), s/veh	1.3	0.0	0.3	0.9	0.0	0.0	1.2	0.6	0.6	1.0	0.4	0.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.3	0.0	0.9	0.6	0.1	0.1	0.1	2.0	2.0	0.2	1.5	1.6
LnGrp Delay(d),s/veh	27.4	0.0	22.8	26.1	20.7	20.7	27.7	7.2	7.2	27.3	6.7	6.7
LnGrp LOS	C		C	C	C	C	C	A	A	C	A	A
Approach Vol, veh/h		83			52			476			391	
Approach Delay, s/veh		23.8			24.4			7.6			7.3	
Approach LOS		C			C			A			A	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	4.4	34.5	6.0	10.2	4.2	34.7	4.7	11.5				
Change Period (Y+Rc), s	3.0	4.5	3.0	4.0	3.0	4.5	3.0	4.0				
Max Green Setting (Gmax), s	18.0	30.0	17.5	24.0	19.0	30.0	15.0	24.0				
Max Q Clear Time (g_c+I1), s	2.3	5.8	3.1	3.8	2.3	4.9	2.5	2.2				
Green Ext Time (p_c), s	0.0	3.4	0.0	0.2	0.0	3.4	0.0	0.2				
<b>Intersection Summary</b>												
HCM 2010 Ctrl Delay			9.7									
HCM 2010 LOS			A									
<b>Notes</b>												
User approved pedestrian interval to be less than phase max green.												



















HCM 2010 Signalized Intersection Summary  
3: Sonoma Blvd & Lemon St

Vallejo Marine Terminal  
Existing PM with VMT Project

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	9	25	12	44	22	30	9	340	113	48	324	10
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	0.98		0.98	0.98		0.98	1.00		0.98	1.00		0.97
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1738	1900	1900	1841	1900	1545	1877	1900	1900	1882	1900
Adj Flow Rate, veh/h	9	26	8	46	23	3	9	354	93	50	338	9
Adj No. of Lanes	0	1	0	0	1	0	1	2	0	1	2	0
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	9	9	9	10	10	10	23	1	1	0	1	1
Cap, veh/h	112	219	57	269	116	12	24	1407	364	125	1980	53
Arrive On Green	0.19	0.19	0.19	0.19	0.19	0.19	0.03	1.00	1.00	0.07	0.56	0.56
Sat Flow, veh/h	155	1163	301	831	614	63	1471	2789	722	1810	3555	94
Grp Volume(v), veh/h	43	0	0	72	0	0	9	224	223	50	170	177
Grp Sat Flow(s),veh/h/ln	1619	0	0	1507	0	0	1471	1783	1729	1810	1788	1861
Q Serve(g_s), s	0.0	0.0	0.0	0.8	0.0	0.0	0.3	0.0	0.0	1.4	2.4	2.5
Cycle Q Clear(g_c), s	1.1	0.0	0.0	1.9	0.0	0.0	0.3	0.0	0.0	1.4	2.4	2.5
Prop In Lane	0.21		0.19	0.64		0.04	1.00		0.42	1.00		0.05
Lane Grp Cap(c), veh/h	388	0	0	396	0	0	24	899	872	125	996	1037
V/C Ratio(X)	0.11	0.00	0.00	0.18	0.00	0.00	0.37	0.25	0.26	0.40	0.17	0.17
Avail Cap(c_a), veh/h	776	0	0	762	0	0	308	899	872	448	996	1037
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	1.00	1.00	1.00	0.97	0.97	0.97
Uniform Delay (d), s/veh	17.8	0.0	0.0	18.0	0.0	0.0	25.1	0.0	0.0	23.4	5.7	5.7
Incr Delay (d2), s/veh	0.0	0.0	0.0	0.1	0.0	0.0	3.5	0.7	0.7	0.7	0.4	0.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.5	0.0	0.0	0.9	0.0	0.0	0.1	0.2	0.2	0.7	1.3	1.3
LnGrp Delay(d),s/veh	17.8	0.0	0.0	18.1	0.0	0.0	28.7	0.7	0.7	24.2	6.1	6.0
LnGrp LOS	B			B			C	A	A	C	A	A
Approach Vol, veh/h		43			72			456			397	
Approach Delay, s/veh		17.8			18.1			1.2			8.3	
Approach LOS		B			B			A			A	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	7.6	53.5		13.9	4.9	56.2		13.9				
Change Period (Y+Rc), s	4.0	4.5		4.0	4.0	4.5		4.0				
Max Green Setting (Gmax), s	13.0	26.5		23.0	11.0	28.5		23.0				
Max Q Clear Time (g_c+I1), s	3.4	2.0		3.1	2.3	4.5		3.9				
Green Ext Time (p_c), s	0.0	7.2		0.3	0.0	7.1		0.3				
<b>Intersection Summary</b>												
HCM 2010 Ctrl Delay			6.1									
HCM 2010 LOS			A									

HCM 2010 Signalized Intersection Summary  
6: Sonoma Blvd & Magazine St






















Vallejo Marine Terminal  
Existing PM with VMT Project

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	25	52	7	21	56	82	14	317	116	82	231	24
Number	3	8	18	7	4	14	1	6	16	5	2	12
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	0.98		0.96	0.98		0.97	1.00		0.97	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1900	1900	1900	1890	1900	1900	1873	1900	1900	1866	1900
Adj Flow Rate, veh/h	27	56	2	23	60	16	15	341	92	88	248	20
Adj No. of Lanes	0	1	0	0	1	0	1	2	0	1	2	0
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Percent Heavy Veh, %	0	0	0	0	0	0	0	2	2	0	2	2
Cap, veh/h	185	339	10	143	316	72	54	1132	300	197	1623	130
Arrive On Green	0.26	0.26	0.26	0.26	0.26	0.26	0.03	0.41	0.41	0.22	0.98	0.98
Sat Flow, veh/h	375	1308	41	233	1220	280	1810	2765	734	1810	3325	266
Grp Volume(v), veh/h	85	0	0	99	0	0	15	217	216	88	131	137
Grp Sat Flow(s),veh/h/ln	1724	0	0	1733	0	0	1810	1779	1720	1810	1773	1819
Q Serve(g_s), s	0.0	0.0	0.0	0.0	0.0	0.0	0.4	4.4	4.6	2.3	0.1	0.1
Cycle Q Clear(g_c), s	1.9	0.0	0.0	2.3	0.0	0.0	0.4	4.4	4.6	2.3	0.1	0.1
Prop In Lane	0.32		0.02	0.23		0.16	1.00		0.43	1.00		0.15
Lane Grp Cap(c), veh/h	534	0	0	531	0	0	54	728	704	197	865	888
V/C Ratio(X)	0.16	0.00	0.00	0.19	0.00	0.00	0.28	0.30	0.31	0.45	0.15	0.15
Avail Cap(c_a), veh/h	968	0	0	969	0	0	370	728	704	438	865	888
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	15.5	0.0	0.0	15.6	0.0	0.0	25.5	10.7	10.7	19.6	0.3	0.3
Incr Delay (d2), s/veh	0.1	0.0	0.0	0.1	0.0	0.0	1.0	1.0	1.1	0.6	0.4	0.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.0	0.0	0.0	1.2	0.0	0.0	0.2	2.4	2.4	1.2	0.1	0.1
LnGrp Delay(d),s/veh	15.5	0.0	0.0	15.7	0.0	0.0	26.5	11.7	11.9	20.2	0.7	0.7
LnGrp LOS	B			B			C	B	B	C	A	A
Approach Vol, veh/h		85			99			448			356	
Approach Delay, s/veh		15.5			15.7			12.3			5.5	
Approach LOS		B			B			B			A	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	5.1	52.5		17.4	9.4	48.2		17.4				
Change Period (Y+Rc), s	3.5	5.0		3.5	3.5	5.0		3.5				
Max Green Setting (Gmax), s	11.0	24.0		28.0	13.0	22.0		28.0				
Max Q Clear Time (g_c+I1), s	2.4	2.1		4.3	4.3	6.6		3.9				
Green Ext Time (p_c), s	0.0	6.0		0.6	0.1	5.1		0.6				
<b>Intersection Summary</b>												
HCM 2010 Ctrl Delay			10.5									
HCM 2010 LOS			B									





















HCM 2010 Signalized Intersection Summary  
8: Sonoma Blvd & Maritime Academy Dr

Vallejo Marine Terminal  
Existing PM with VMT Project

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	110	16	14	10	39	116	15	280	42	21	183	41
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	0.99		0.98	1.00		0.98	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1900	1900	1900	1793	1900	1900	1863	1900	1810	1855	1900
Adj Flow Rate, veh/h	115	17	10	10	41	21	16	292	35	22	191	26
Adj No. of Lanes	0	1	0	0	1	1	1	2	0	1	2	0
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	0	0	0	5	5	0	0	2	2	5	3	3
Cap, veh/h	538	75	31	183	489	486	68	1025	122	86	1044	140
Arrive On Green	0.31	0.31	0.31	0.31	0.31	0.31	0.04	0.32	0.32	0.05	0.33	0.33
Sat Flow, veh/h	1072	244	100	146	1595	1586	1810	3187	379	1723	3123	419
Grp Volume(v), veh/h	142	0	0	51	0	21	16	161	166	22	107	110
Grp Sat Flow(s),veh/h/ln	1416	0	0	1740	0	1586	1810	1770	1796	1723	1762	1781
Q Serve(g_s), s	1.8	0.0	0.0	0.0	0.0	0.3	0.3	2.1	2.1	0.4	1.3	1.4
Cycle Q Clear(g_c), s	2.4	0.0	0.0	0.6	0.0	0.3	0.3	2.1	2.1	0.4	1.3	1.4
Prop In Lane	0.81		0.07	0.20		1.00	1.00		0.21	1.00		0.24
Lane Grp Cap(c), veh/h	644	0	0	672	0	486	68	569	578	86	589	595
V/C Ratio(X)	0.22	0.00	0.00	0.08	0.00	0.04	0.24	0.28	0.29	0.25	0.18	0.19
Avail Cap(c_a), veh/h	1577	0	0	1775	0	1530	1397	2277	2310	1330	2267	2291
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	8.3	0.0	0.0	7.7	0.0	7.6	14.5	7.9	7.9	14.2	7.3	7.3
Incr Delay (d2), s/veh	0.1	0.0	0.0	0.0	0.0	0.0	0.7	0.3	0.3	0.6	0.1	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.9	0.0	0.0	0.3	0.0	0.1	0.1	1.1	1.1	0.2	0.6	0.7
LnGrp Delay(d),s/veh	8.4	0.0	0.0	7.7	0.0	7.6	15.2	8.1	8.2	14.8	7.5	7.5
LnGrp LOS	A			A		A	B	A	A	B	A	A
Approach Vol, veh/h		142			72			343			239	
Approach Delay, s/veh		8.4			7.7			8.5			8.2	
Approach LOS		A			A			A			A	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	4.6	14.0		12.5	4.2	14.4		12.5				
Change Period (Y+Rc), s	3.0	4.0		3.0	3.0	4.0		3.0				
Max Green Setting (Gmax), s	24.0	40.0		30.0	24.0	40.0		30.0				
Max Q Clear Time (g_c+I1), s	2.4	4.1		4.4	2.3	3.4		2.6				
Green Ext Time (p_c), s	0.0	3.5		0.7	0.0	3.5		0.8				
<b>Intersection Summary</b>												
HCM 2010 Ctrl Delay			8.3									
HCM 2010 LOS			A									

























HCM 2010 Signalized Intersection Summary  
 16: Lemon St & Carlson St

Vallejo Marine Terminal  
 Existing PM with VMT Project

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	8	303	4	36	179	65	0	0	29	195	0	11
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	0.97		0.95	0.97		0.95	1.00		0.95	0.93		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1864	1900	1900	1759	1900	1900	1900	1900	1863	1867	1900
Adj Flow Rate, veh/h	9	326	3	39	192	50	0	0	9	213	0	0
Adj No. of Lanes	0	1	0	1	1	0	0	1	0	2	1	0
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Percent Heavy Veh, %	2	2	2	0	8	8	0	0	0	2	0	0
Cap, veh/h	139	777	7	571	569	148	0	0	437	1252	534	0
Arrive On Green	0.43	0.43	0.43	0.43	0.43	0.43	0.00	0.00	0.29	0.29	0.00	0.00
Sat Flow, veh/h	15	1818	16	1041	1331	347	0	0	1530	2613	1867	0
Grp Volume(v), veh/h	338	0	0	39	0	242	0	0	9	213	0	0
Grp Sat Flow(s),veh/h/ln	1850	0	0	1041	0	1678	0	0	1530	1307	1867	0
Q Serve(g_s), s	0.0	0.0	0.0	0.8	0.0	2.7	0.0	0.0	0.1	1.8	0.0	0.0
Cycle Q Clear(g_c), s	3.5	0.0	0.0	4.3	0.0	2.7	0.0	0.0	0.1	1.9	0.0	0.0
Prop In Lane	0.03		0.01	1.00		0.21	0.00		1.00	1.00		0.00
Lane Grp Cap(c), veh/h	923	0	0	571	0	717	0	0	437	1252	534	0
V/C Ratio(X)	0.37	0.00	0.00	0.07	0.00	0.34	0.00	0.00	0.02	0.17	0.00	0.00
Avail Cap(c_a), veh/h	2563	0	0	1505	0	2224	0	0	1644	3313	2006	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	1.00	0.00	0.00	1.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	5.6	0.0	0.0	7.1	0.0	5.3	0.0	0.0	7.2	7.8	0.0	0.0
Incr Delay (d2), s/veh	0.2	0.0	0.0	0.1	0.0	0.3	0.0	0.0	0.0	0.1	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.8	0.0	0.0	0.2	0.0	1.3	0.0	0.0	0.1	0.6	0.0	0.0
LnGrp Delay(d),s/veh	5.8	0.0	0.0	7.1	0.0	5.6	0.0	0.0	7.2	7.9	0.0	0.0
LnGrp LOS	A			A		A			A	A		
Approach Vol, veh/h		338			281			9			213	
Approach Delay, s/veh		5.8			5.8			7.2			7.9	
Approach LOS		A			A			A			A	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		15.9		12.0		15.9		12.0				
Change Period (Y+Rc), s		4.0		4.0		4.0		4.0				
Max Green Setting (Gmax), s		37.0		30.0		37.0		30.0				
Max Q Clear Time (g_c+I1), s		5.5		3.9		6.3		2.1				
Green Ext Time (p_c), s		4.1		0.8		4.1		0.8				
<b>Intersection Summary</b>												
HCM 2010 Ctrl Delay			6.4									
HCM 2010 LOS			A									
<b>Notes</b>												
User approved volume balancing among the lanes for turning movement.												

HCM 2010 Signalized Intersection Summary  
 17: Lemon St & Curtola Pkwy

Vallejo Marine Terminal  
 Existing PM with VMT Project

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	53	145	412	102	85	22	190	569	155	38	784	24
Number	3	8	18	7	4	14	1	6	16	5	2	12
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		0.92	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1759	1881	1881	1881	1863	1900	1743	1881	1900	1900	1846	1900
Adj Flow Rate, veh/h	55	178	168	105	88	8	196	587	0	39	808	0
Adj No. of Lanes	1	1	1	1	1	1	1	2	0	1	2	0
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %	8	1	1	1	2	0	9	1	1	0	3	3
Cap, veh/h	76	315	264	136	369	295	236	1674	0	67	1274	0
Arrive On Green	0.05	0.17	0.17	0.08	0.20	0.20	0.14	0.47	0.00	0.04	0.36	0.00
Sat Flow, veh/h	1675	1881	1578	1792	1863	1488	1660	3668	0	1810	3600	0
Grp Volume(v), veh/h	55	178	168	105	88	8	196	587	0	39	808	0
Grp Sat Flow(s),veh/h/ln	1675	1881	1578	1792	1863	1488	1660	1787	0	1810	1754	0
Q Serve(g_s), s	2.4	6.5	7.5	4.3	3.0	0.3	8.6	7.9	0.0	1.6	14.3	0.0
Cycle Q Clear(g_c), s	2.4	6.5	7.5	4.3	3.0	0.3	8.6	7.9	0.0	1.6	14.3	0.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.00	1.00		0.00
Lane Grp Cap(c), veh/h	76	315	264	136	369	295	236	1674	0	67	1274	0
V/C Ratio(X)	0.72	0.56	0.64	0.77	0.24	0.03	0.83	0.35	0.00	0.58	0.63	0.00
Avail Cap(c_a), veh/h	557	875	734	595	866	692	552	1674	0	601	1632	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	35.4	28.8	29.2	34.1	25.4	24.3	31.4	12.7	0.0	35.7	19.8	0.0
Incr Delay (d2), s/veh	4.8	1.7	2.6	3.4	0.4	0.0	2.9	0.2	0.0	3.0	0.6	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.2	3.6	3.4	2.3	1.6	0.1	4.2	3.9	0.0	0.9	7.1	0.0
LnGrp Delay(d),s/veh	40.2	30.5	31.8	37.6	25.8	24.4	34.3	12.9	0.0	38.6	20.4	0.0
LnGrp LOS	D	C	C	D	C	C	C	B		D	C	
Approach Vol, veh/h		401			201			783			847	
Approach Delay, s/veh		32.4			31.9			18.3			21.3	
Approach LOS		C			C			B			C	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	14.7	33.3	7.4	19.8	6.8	41.2	9.7	17.5				
Change Period (Y+Rc), s	4.0	6.0	4.0	4.9	4.0	6.0	4.0	4.9				
Max Green Setting (Gmax), s	25.0	35.0	25.0	35.0	25.0	35.0	25.0	35.0				
Max Q Clear Time (g_c+I1), s	10.6	16.3	4.4	5.0	3.6	9.9	6.3	9.5				
Green Ext Time (p_c), s	0.2	11.0	0.1	2.4	0.0	13.4	0.1	2.4				
<b>Intersection Summary</b>												
HCM 2010 Ctrl Delay			23.2									
HCM 2010 LOS			C									
<b>Notes</b>												
User approved volume balancing among the lanes for turning movement.												

**Intersection**

Int Delay, s/veh 0.6

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR
Vol, veh/h	13	3	5	4	2	5	3	448	3
Conflicting Peds, #/hr	0	0	0	0	0	0	2	0	5
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-
Peak Hour Factor	97	97	97	97	97	97	97	97	97
Heavy Vehicles, %	15	0	0	0	0	0	0	2	0
Mvmt Flow	13	3	5	4	2	5	3	462	3

Major/Minor	Minor2			Minor1			Major1		
Conflicting Flow All	625	858	196	667	863	237	382	0	0
Stage 1	387	387	-	470	470	-	-	-	-
Stage 2	238	471	-	197	393	-	-	-	-
Critical Hdwy	7.8	6.5	6.9	7.5	6.5	6.9	4.1	-	-
Critical Hdwy Stg 1	6.8	5.5	-	6.5	5.5	-	-	-	-
Critical Hdwy Stg 2	6.8	5.5	-	6.5	5.5	-	-	-	-
Follow-up Hdwy	3.65	4	3.3	3.5	4	3.3	2.2	-	-
Pot Cap-1 Maneuver	344	297	819	348	295	771	1188	-	-
Stage 1	574	613	-	548	563	-	-	-	-
Stage 2	708	563	-	792	609	-	-	-	-
Platoon blocked, %									
Mov Cap-1 Maneuver	336	294	816	339	292	768	1183	-	-
Mov Cap-2 Maneuver	336	294	-	339	292	-	-	-	-
Stage 1	572	609	-	546	561	-	-	-	-
Stage 2	696	561	-	775	605	-	-	-	-

Approach	EB	WB	NB
HCM Control Delay, s	15	13.5	0.1
HCM LOS	C	B	

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1183	-	-	382	437	1102	-	-
HCM Lane V/C Ratio	0.003	-	-	0.057	0.026	0.005	-	-
HCM Control Delay (s)	8.1	0	-	15	13.5	8.3	0	-
HCM Lane LOS	A	A	-	C	B	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0.2	0.1	0	-	-

**Intersection**

Int Delay, s/veh

Movement	SBL	SBT	SBR
Vol, veh/h	5	359	12
Conflicting Peds, #/hr	5	0	2
Sign Control	Free	Free	Free
RT Channelized	-	-	None
Storage Length	-	-	-
Veh in Median Storage, #	-	0	-
Grade, %	-	0	-
Peak Hour Factor	97	97	97
Heavy Vehicles, %	0	2	0
Mvmt Flow	5	370	12

**Major/Minor Major2**

Conflicting Flow All	465	0	0
Stage 1	-	-	-
Stage 2	-	-	-
Critical Hdwy	4.1	-	-
Critical Hdwy Stg 1	-	-	-
Critical Hdwy Stg 2	-	-	-
Follow-up Hdwy	2.2	-	-
Pot Cap-1 Maneuver	1107	-	-
Stage 1	-	-	-
Stage 2	-	-	-
Platoon blocked, %		-	-
Mov Cap-1 Maneuver	1102	-	-
Mov Cap-2 Maneuver	-	-	-
Stage 1	-	-	-
Stage 2	-	-	-

**Approach SB**

HCM Control Delay, s 0.1

HCM LOS

**Minor Lane/Major Mvmt**

**Intersection**

Int Delay, s/veh 1.1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR
Vol, veh/h	37	1	5	2	0	10	11	405	4
Conflicting Peds, #/hr	0	0	1	1	0	0	1	0	2
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-
Peak Hour Factor	97	97	97	97	97	97	97	97	97
Heavy Vehicles, %	3	0	0	0	0	0	0	2	0
Mvmt Flow	38	1	5	2	0	10	11	418	4

Major/Minor	Minor2			Minor1			Major1		
Conflicting Flow All	604	817	185	633	830	214	366	0	0
Stage 1	372	372	-	443	443	-	-	-	-
Stage 2	232	445	-	190	387	-	-	-	-
Critical Hdwy	7.56	6.5	6.9	7.5	6.5	6.9	4.1	-	-
Critical Hdwy Stg 1	6.56	5.5	-	6.5	5.5	-	-	-	-
Critical Hdwy Stg 2	6.56	5.5	-	6.5	5.5	-	-	-	-
Follow-up Hdwy	3.53	4	3.3	3.5	4	3.3	2.2	-	-
Pot Cap-1 Maneuver	380	313	832	368	308	797	1204	-	-
Stage 1	618	622	-	569	579	-	-	-	-
Stage 2	747	578	-	799	613	-	-	-	-
Platoon blocked, %									
Mov Cap-1 Maneuver	368	305	830	358	300	795	1202	-	-
Mov Cap-2 Maneuver	368	305	-	358	300	-	-	-	-
Stage 1	610	615	-	562	572	-	-	-	-
Stage 2	727	571	-	783	606	-	-	-	-

Approach	EB	WB	NB
HCM Control Delay, s	15.4	10.6	0.2
HCM LOS	C	B	

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1202	-	-	391	661	1145	-	-
HCM Lane V/C Ratio	0.009	-	-	0.113	0.019	0.009	-	-
HCM Control Delay (s)	8	0	-	15.4	10.6	8.2	0	-
HCM Lane LOS	A	A	-	C	B	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0.4	0.1	0	-	-

**Intersection**

Int Delay, s/veh

Movement	SBL	SBT	SBR
Vol, veh/h	10	326	28
Conflicting Peds, #/hr	2	0	1
Sign Control	Free	Free	Free
RT Channelized	-	-	None
Storage Length	-	-	-
Veh in Median Storage, #	-	0	-
Grade, %	-	0	-
Peak Hour Factor	97	97	97
Heavy Vehicles, %	0	2	0
Mvmt Flow	10	336	29

**Major/Minor Major2**

Conflicting Flow All	423	0	0
Stage 1	-	-	-
Stage 2	-	-	-
Critical Hdwy	4.1	-	-
Critical Hdwy Stg 1	-	-	-
Critical Hdwy Stg 2	-	-	-
Follow-up Hdwy	2.2	-	-
Pot Cap-1 Maneuver	1147	-	-
Stage 1	-	-	-
Stage 2	-	-	-
Platoon blocked, %		-	-
Mov Cap-1 Maneuver	1145	-	-
Mov Cap-2 Maneuver	-	-	-
Stage 1	-	-	-
Stage 2	-	-	-

**Approach SB**

HCM Control Delay, s	0.2
HCM LOS	

**Minor Lane/Major Mvmt**

**Intersection**

Int Delay, s/veh 2

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Vol, veh/h	39	19	100	408	224	33
Conflicting Peds, #/hr	0	0	2	0	0	2
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	60	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	0	0	0	2	2	0
Mvmt Flow	41	20	105	429	236	35

Major/Minor	Minor2	Major1	Major2
Conflicting Flow All	678	137	271
Stage 1	253	-	-
Stage 2	425	-	-
Critical Hdwy	6.8	6.9	4.1
Critical Hdwy Stg 1	5.8	-	-
Critical Hdwy Stg 2	5.8	-	-
Follow-up Hdwy	3.5	3.3	2.2
Pot Cap-1 Maneuver	390	893	1304
Stage 1	772	-	-
Stage 2	633	-	-
Platoon blocked, %			-
Mov Cap-1 Maneuver	359	892	1302
Mov Cap-2 Maneuver	359	-	-
Stage 1	772	-	-
Stage 2	582	-	-

Approach	EB	NB	SB
HCM Control Delay, s	14.3	1.6	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1302	-	446	-	-
HCM Lane V/C Ratio	0.081	-	0.137	-	-
HCM Control Delay (s)	8	-	14.3	-	-
HCM Lane LOS	A	-	B	-	-
HCM 95th %tile Q(veh)	0.3	-	0.5	-	-



**Intersection**

Int Delay, s/veh 1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR
Vol, veh/h	0	24	0	1	9	11	0	0	1
Conflicting Peds, #/hr	1	0	0	0	0	1	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-
Peak Hour Factor	80	80	80	80	80	80	80	80	80
Heavy Vehicles, %	0	17	0	0	45	0	0	0	0
Mvmt Flow	0	30	0	1	11	14	0	0	1

Major/Minor	Major1	Major2	Minor1						
Conflicting Flow All	25	0	0	30	0	0	51	58	31
Stage 1	-	-	-	-	-	-	30	30	-
Stage 2	-	-	-	-	-	-	21	28	-
Critical Hdwy	4.1	-	-	4.1	-	-	7.1	6.5	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-
Follow-up Hdwy	2.2	-	-	2.2	-	-	3.5	4	3.3
Pot Cap-1 Maneuver	1603	-	-	1596	-	-	953	837	1049
Stage 1	-	-	-	-	-	-	992	874	-
Stage 2	-	-	-	-	-	-	1003	876	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1602	-	-	1595	-	-	951	836	1048
Mov Cap-2 Maneuver	-	-	-	-	-	-	951	836	-
Stage 1	-	-	-	-	-	-	992	874	-
Stage 2	-	-	-	-	-	-	1001	875	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.3	8.4
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	1048	1602	-	-	1595	-	-	949
HCM Lane V/C Ratio	0.001	-	-	-	0.001	-	-	0.005
HCM Control Delay (s)	8.4	0	-	-	7.3	0	-	8.8
HCM Lane LOS	A	A	-	-	A	A	-	A
HCM 95th %tile Q(veh)	0	0	-	-	0	-	-	0

Intersection			
Int Delay, s/veh			
Movement	SBL	SBT	SBR
Vol, veh/h	4	0	0
Conflicting Peds, #/hr	0	0	0
Sign Control	Stop	Stop	Stop
RT Channelized	-	-	None
Storage Length	-	-	-
Veh in Median Storage, #	-	0	-
Grade, %	-	0	-
Peak Hour Factor	80	80	80
Heavy Vehicles, %	0	0	0
Mvmt Flow	5	0	0
Major/Minor	Minor2		
Conflicting Flow All	52	51	19
Stage 1	21	21	-
Stage 2	31	30	-
Critical Hdwy	7.1	6.5	6.2
Critical Hdwy Stg 1	6.1	5.5	-
Critical Hdwy Stg 2	6.1	5.5	-
Follow-up Hdwy	3.5	4	3.3
Pot Cap-1 Maneuver	952	844	1065
Stage 1	1003	882	-
Stage 2	991	874	-
Platoon blocked, %			
Mov Cap-1 Maneuver	949	843	1064
Mov Cap-2 Maneuver	949	843	-
Stage 1	1003	881	-
Stage 2	989	874	-
Approach	SB		
HCM Control Delay, s	8.8		
HCM LOS	A		
Minor Lane/Major Mvmt			

**Intersection**

Int Delay, s/veh 2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR
Vol, veh/h	0	31	0	6	23	7	1	0	12
Conflicting Peds, #/hr	0	0	1	1	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-
Peak Hour Factor	80	80	80	80	80	80	80	80	80
Heavy Vehicles, %	0	13	0	0	18	0	0	0	0
Mvmt Flow	0	39	0	8	29	9	1	0	15

Major/Minor	Major1	Major2	Minor1						
Conflicting Flow All	38	0	0	39	0	0	88	92	40
Stage 1	-	-	-	-	-	-	39	39	-
Stage 2	-	-	-	-	-	-	49	53	-
Critical Hdwy	4.1	-	-	4.1	-	-	7.1	6.5	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-
Follow-up Hdwy	2.2	-	-	2.2	-	-	3.5	4	3.3
Pot Cap-1 Maneuver	1585	-	-	1584	-	-	902	802	1037
Stage 1	-	-	-	-	-	-	981	866	-
Stage 2	-	-	-	-	-	-	969	855	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1584	-	-	1583	-	-	897	798	1036
Mov Cap-2 Maneuver	-	-	-	-	-	-	897	798	-
Stage 1	-	-	-	-	-	-	981	866	-
Stage 2	-	-	-	-	-	-	962	851	-

Approach	EB	WB	NB
HCM Control Delay, s	0	1.2	8.6
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	1024	1584	-	-	1583	-	-	803
HCM Lane V/C Ratio	0.016	-	-	-	0.005	-	-	0.002
HCM Control Delay (s)	8.6	0	-	-	7.3	0	-	9.5
HCM Lane LOS	A	A	-	-	A	A	-	A
HCM 95th %tile Q(veh)	0	0	-	-	0	-	-	0

**Intersection**

Int Delay, s/veh

Movement	SBL	SBT	SBR
Vol, veh/h	0	1	0
Conflicting Peds, #/hr	0	0	0
Sign Control	Stop	Stop	Stop
RT Channelized	-	-	None
Storage Length	-	-	-
Veh in Median Storage, #	-	0	-
Grade, %	-	0	-
Peak Hour Factor	80	80	80
Heavy Vehicles, %	0	0	0
Mvmt Flow	0	1	0

**Major/Minor**

	Minor2		
Conflicting Flow All	94	87	34
Stage 1	48	48	-
Stage 2	46	39	-
Critical Hdwy	7.1	6.5	6.2
Critical Hdwy Stg 1	6.1	5.5	-
Critical Hdwy Stg 2	6.1	5.5	-
Follow-up Hdwy	3.5	4	3.3
Pot Cap-1 Maneuver	894	807	1045
Stage 1	971	859	-
Stage 2	973	866	-
Platoon blocked, %			
Mov Cap-1 Maneuver	877	803	1044
Mov Cap-2 Maneuver	877	803	-
Stage 1	971	855	-
Stage 2	958	866	-

**Approach**

Approach	SB
HCM Control Delay, s	9.5
HCM LOS	A

**Minor Lane/Major Mvmt**

**Intersection**

Int Delay, s/veh 0.9

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR
Vol, veh/h	3	181	3	10	94	7	2	1	4
Conflicting Peds, #/hr	5	0	4	4	0	5	3	0	4
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-
Peak Hour Factor	88	88	88	88	88	88	88	88	88
Heavy Vehicles, %	0	3	0	0	4	14	0	0	0
Mvmt Flow	3	206	3	11	107	8	2	1	5

Major/Minor	Major1	Major2	Minor1						
Conflicting Flow All	119	0	0	213	0	0	359	360	216
Stage 1	-	-	-	-	-	-	218	218	-
Stage 2	-	-	-	-	-	-	141	142	-
Critical Hdwy	4.1	-	-	4.1	-	-	7.1	6.5	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-
Follow-up Hdwy	2.2	-	-	2.2	-	-	3.5	4	3.3
Pot Cap-1 Maneuver	1482	-	-	1369	-	-	600	570	829
Stage 1	-	-	-	-	-	-	789	726	-
Stage 2	-	-	-	-	-	-	867	783	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1476	-	-	1363	-	-	586	560	823
Mov Cap-2 Maneuver	-	-	-	-	-	-	586	560	-
Stage 1	-	-	-	-	-	-	785	722	-
Stage 2	-	-	-	-	-	-	849	773	-

Approach	EB	WB	NB
HCM Control Delay, s	0.1	0.7	10.2
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	696	1476	-	-	1363	-	-	681
HCM Lane V/C Ratio	0.011	0.002	-	-	0.008	-	-	0.017
HCM Control Delay (s)	10.2	7.4	0	-	7.7	0	-	10.4
HCM Lane LOS	B	A	A	-	A	A	-	B
HCM 95th %tile Q(veh)	0	0	-	-	0	-	-	0.1

**Intersection**

Int Delay, s/veh

Movement	SBL	SBT	SBR
Vol, veh/h	4	2	4
Conflicting Peds, #/hr	4	0	3
Sign Control	Stop	Stop	Stop
RT Channelized	-	-	None
Storage Length	-	-	-
Veh in Median Storage, #	-	0	-
Grade, %	-	0	-
Peak Hour Factor	88	88	88
Heavy Vehicles, %	0	0	0
Mvmt Flow	5	2	5

**Major/Minor**

	Minor2		
Conflicting Flow All	359	358	120
Stage 1	138	138	-
Stage 2	221	220	-
Critical Hdwy	7.1	6.5	6.2
Critical Hdwy Stg 1	6.1	5.5	-
Critical Hdwy Stg 2	6.1	5.5	-
Follow-up Hdwy	3.5	4	3.3
Pot Cap-1 Maneuver	600	572	937
Stage 1	870	786	-
Stage 2	786	725	-
Platoon blocked, %			
Mov Cap-1 Maneuver	586	562	930
Mov Cap-2 Maneuver	586	562	-
Stage 1	865	776	-
Stage 2	776	721	-

**Approach**

Approach	SB
HCM Control Delay, s	10.4
HCM LOS	B

**Minor Lane/Major Mvmt**

**Intersection**

Int Delay, s/veh 4.5

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR
Vol, veh/h	9	169	8	19	98	35	3	44	18
Conflicting Peds, #/hr	3	0	0	0	0	3	1	0	4
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-
Peak Hour Factor	94	94	94	94	94	94	94	94	94
Heavy Vehicles, %	0	3	0	5	5	6	0	0	0
Mvmt Flow	10	180	9	20	104	37	3	47	19

Major/Minor	Major1	Major2	Minor1						
Conflicting Flow All	145	0	0	192	0	0	398	393	191
Stage 1	-	-	-	-	-	-	207	207	-
Stage 2	-	-	-	-	-	-	191	186	-
Critical Hdwy	4.1	-	-	4.15	-	-	7.1	6.5	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-
Follow-up Hdwy	2.2	-	-	2.245	-	-	3.5	4	3.3
Pot Cap-1 Maneuver	1450	-	-	1364	-	-	566	546	856
Stage 1	-	-	-	-	-	-	800	734	-
Stage 2	-	-	-	-	-	-	815	750	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1446	-	-	1361	-	-	518	529	851
Mov Cap-2 Maneuver	-	-	-	-	-	-	518	529	-
Stage 1	-	-	-	-	-	-	791	726	-
Stage 2	-	-	-	-	-	-	753	736	-

Approach	EB	WB	NB
HCM Control Delay, s	0.4	1	11.9
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	590	1446	-	-	1361	-	-	538
HCM Lane V/C Ratio	0.117	0.007	-	-	0.015	-	-	0.184
HCM Control Delay (s)	11.9	7.5	0	-	7.7	0	-	13.2
HCM Lane LOS	B	A	A	-	A	A	-	B
HCM 95th %tile Q(veh)	0.4	0	-	-	0	-	-	0.7

**Intersection**

Int Delay, s/veh

Movement	SBL	SBT	SBR
Vol, veh/h	49	34	10
Conflicting Peds, #/hr	4	0	1
Sign Control	Stop	Stop	Stop
RT Channelized	-	-	None
Storage Length	-	-	-
Veh in Median Storage, #	-	0	-
Grade, %	-	0	-
Peak Hour Factor	94	94	94
Heavy Vehicles, %	2	0	0
Mvmt Flow	52	36	11

**Major/Minor**

	Minor2		
Conflicting Flow All	407	378	130
Stage 1	167	167	-
Stage 2	240	211	-
Critical Hdwy	7.12	6.5	6.2
Critical Hdwy Stg 1	6.12	5.5	-
Critical Hdwy Stg 2	6.12	5.5	-
Follow-up Hdwy	3.518	4	3.3
Pot Cap-1 Maneuver	555	557	925
Stage 1	835	764	-
Stage 2	763	731	-
Platoon blocked, %			
Mov Cap-1 Maneuver	494	540	920
Mov Cap-2 Maneuver	494	540	-
Stage 1	826	749	-
Stage 2	690	723	-

**Approach**

	SB
HCM Control Delay, s	13.2
HCM LOS	B

**Minor Lane/Major Mvmt**



**Intersection**

Int Delay, s/veh 1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR
Vol, veh/h	3	229	5	18	140	0	6	0	18
Conflicting Peds, #/hr	1	0	1	1	0	1	4	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	0	2	0	0	5	0	0	0	0
Mvmt Flow	3	254	6	20	156	0	7	0	20

Major/Minor	Major1	Major2	Minor1						
Conflicting Flow All	160	0	0	264	0	0	468	468	262
Stage 1	-	-	-	-	-	-	268	268	-
Stage 2	-	-	-	-	-	-	200	200	-
Critical Hdwy	4.1	-	-	4.1	-	-	7.1	6.5	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-
Follow-up Hdwy	2.2	-	-	2.2	-	-	3.5	4	3.3
Pot Cap-1 Maneuver	1432	-	-	1312	-	-	509	496	782
Stage 1	-	-	-	-	-	-	742	691	-
Stage 2	-	-	-	-	-	-	806	739	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1431	-	-	1311	-	-	499	483	779
Mov Cap-2 Maneuver	-	-	-	-	-	-	499	483	-
Stage 1	-	-	-	-	-	-	738	687	-
Stage 2	-	-	-	-	-	-	791	724	-

Approach	EB	WB	NB
HCM Control Delay, s	0.1	0.9	10.5
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	683	1431	-	-	1311	-	-	885
HCM Lane V/C Ratio	0.039	0.002	-	-	0.015	-	-	0.001
HCM Control Delay (s)	10.5	7.5	0	-	7.8	0	-	9.1
HCM Lane LOS	B	A	A	-	A	A	-	A
HCM 95th %tile Q(veh)	0.1	0	-	-	0	-	-	0

**Intersection**

Int Delay, s/veh

Movement	SBL	SBT	SBR
Vol, veh/h	0	0	1
Conflicting Peds, #/hr	0	0	4
Sign Control	Stop	Stop	Stop
RT Channelized	-	-	None
Storage Length	-	-	-
Veh in Median Storage, #	-	0	-
Grade, %	-	0	-
Peak Hour Factor	90	90	90
Heavy Vehicles, %	0	0	0
Mvmt Flow	0	0	1

**Major/Minor**

	Minor2		
Conflicting Flow All	478	471	161
Stage 1	200	200	-
Stage 2	278	271	-
Critical Hdwy	7.1	6.5	6.2
Critical Hdwy Stg 1	6.1	5.5	-
Critical Hdwy Stg 2	6.1	5.5	-
Follow-up Hdwy	3.5	4	3.3
Pot Cap-1 Maneuver	501	494	889
Stage 1	806	739	-
Stage 2	733	689	-
Platoon blocked, %			
Mov Cap-1 Maneuver	479	481	885
Mov Cap-2 Maneuver	479	481	-
Stage 1	802	724	-
Stage 2	712	685	-

**Approach**

Approach	SB
HCM Control Delay, s	9.1
HCM LOS	A

**Minor Lane/Major Mvmt**

**Intersection**

Int Delay, s/veh 0.1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR
Vol, veh/h	0	248	1	0	161	4	0	0	0
Conflicting Peds, #/hr	1	0	2	2	0	1	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-
Peak Hour Factor	87	87	87	87	87	87	87	87	87
Heavy Vehicles, %	0	2	0	0	5	0	0	0	0
Mvmt Flow	0	285	1	0	185	5	0	0	0

Major/Minor	Major1	Major2	Minor1						
Conflicting Flow All	190	0	0	286	0	0	475	476	288
Stage 1	-	-	-	-	-	-	286	286	-
Stage 2	-	-	-	-	-	-	189	190	-
Critical Hdwy	4.1	-	-	4.1	-	-	7.1	6.5	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-
Follow-up Hdwy	2.2	-	-	2.2	-	-	3.5	4	3.3
Pot Cap-1 Maneuver	1396	-	-	1288	-	-	503	491	756
Stage 1	-	-	-	-	-	-	726	679	-
Stage 2	-	-	-	-	-	-	817	747	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1394	-	-	1286	-	-	501	491	755
Mov Cap-2 Maneuver	-	-	-	-	-	-	501	491	-
Stage 1	-	-	-	-	-	-	726	679	-
Stage 2	-	-	-	-	-	-	813	747	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0	0
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	-	1394	-	-	1286	-	-	695
HCM Lane V/C Ratio	-	-	-	-	-	-	-	0.005
HCM Control Delay (s)	0	0	-	-	0	-	-	10.2
HCM Lane LOS	A	A	-	-	A	-	-	B
HCM 95th %tile Q(veh)	-	0	-	-	0	-	-	0

**Intersection**

Int Delay, s/veh

Movement	SBL	SBT	SBR
Vol, veh/h	1	0	2
Conflicting Peds, #/hr	0	0	0
Sign Control	Stop	Stop	Stop
RT Channelized	-	-	None
Storage Length	-	-	-
Veh in Median Storage, #	-	0	-
Grade, %	-	0	-
Peak Hour Factor	87	87	87
Heavy Vehicles, %	0	0	0
Mvmt Flow	1	0	2

**Major/Minor**

	Minor2		
Conflicting Flow All	473	473	189
Stage 1	187	187	-
Stage 2	286	286	-
Critical Hdwy	7.1	6.5	6.2
Critical Hdwy Stg 1	6.1	5.5	-
Critical Hdwy Stg 2	6.1	5.5	-
Follow-up Hdwy	3.5	4	3.3
Pot Cap-1 Maneuver	505	493	858
Stage 1	819	749	-
Stage 2	726	679	-
Platoon blocked, %			
Mov Cap-1 Maneuver	504	493	857
Mov Cap-2 Maneuver	504	493	-
Stage 1	819	749	-
Stage 2	725	679	-

**Approach**

	SB
HCM Control Delay, s	10.2
HCM LOS	B

**Minor Lane/Major Mvmt**

**Intersection**

Int Delay, s/veh 1.1

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Vol, veh/h	259	6	15	165	5	32
Conflicting Peds, #/hr	0	5	5	0	0	2
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	84	84	84	84	84	84
Heavy Vehicles, %	1	17	36	5	0	0
Mvmt Flow	308	7	18	196	6	38

Major/Minor	Major1	Major2	Minor1
Conflicting Flow All	0	0	317
Stage 1	-	-	314
Stage 2	-	-	232
Critical Hdwy	-	-	4.46
Critical Hdwy Stg 1	-	-	5.4
Critical Hdwy Stg 2	-	-	5.4
Follow-up Hdwy	-	-	2.524
Pot Cap-1 Maneuver	-	-	1074
Stage 1	-	-	745
Stage 2	-	-	811
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	-	-	1070
Mov Cap-2 Maneuver	-	-	-
Stage 1	-	-	744
Stage 2	-	-	792

Approach	EB	WB	NB
HCM Control Delay, s	0	0.7	10.7
HCM LOS			B

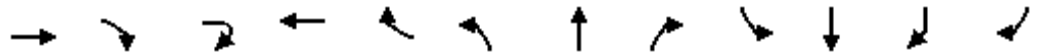
Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	679	-	-	1070	-
HCM Lane V/C Ratio	0.065	-	-	0.017	-
HCM Control Delay (s)	10.7	-	-	8.4	0
HCM Lane LOS	B	-	-	A	A
HCM 95th %tile Q(veh)	0.2	-	-	0.1	-

**APPENDIX L.4.3 — EXISTING PLUS ORCEM PROJECT**



HCM Signalized Intersection Capacity Analysis  
1: Sonoma Blvd & Curtola Pkwy

Vallejo Marine Terminal  
Existing AM with Orcem Project



Movement	EBT	EBR	EBR2	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	SBR2
Lane Configurations	↑↑	←		↑↑	←	←	↑↑			↑↑		
Volume (vph)	246	103	2	404	159	185	169	5	139	142	3	12
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	4.5		4.5	4.5	4.5	4.5			4.5		
Lane Util. Factor	0.91	0.91		0.95	1.00	1.00	0.95			0.95		
Frbp, ped/bikes	1.00	1.00		1.00	0.99	1.00	1.00			1.00		
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00			1.00		
Frt	0.99	0.85		1.00	0.85	1.00	1.00			0.99		
Flt Protected	1.00	1.00		1.00	1.00	0.95	1.00			0.98		
Satd. Flow (prot)	3336	1414		3539	1593	1752	3507			3389		
Flt Permitted	1.00	1.00		1.00	1.00	0.95	1.00			0.98		
Satd. Flow (perm)	3336	1414		3539	1593	1752	3507			3389		
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.92
Adj. Flow (vph)	265	111	2	434	171	199	182	5	149	153	3	13
RTOR Reduction (vph)	0	53	0	0	127	0	2	0	0	2	0	0
Lane Group Flow (vph)	276	49	0	434	44	199	185	0	0	316	0	0
Confl. Peds. (#/hr)						2		2	2		2	
Confl. Bikes (#/hr)					2							
Heavy Vehicles (%)	3%	4%	0%	2%	0%	3%	2%	20%	2%	4%	0%	8%
Turn Type	NA	Perm		NA	Perm	Split	NA		Split	NA		
Protected Phases	2			2		3	3		4	4		
Permitted Phases		2			2							
Actuated Green, G (s)	15.9	15.9		15.9	15.9	13.9	13.9			14.3		
Effective Green, g (s)	15.9	15.9		15.9	15.9	13.9	13.9			14.3		
Actuated g/C Ratio	0.25	0.25		0.25	0.25	0.22	0.22			0.23		
Clearance Time (s)	4.5	4.5		4.5	4.5	4.5	4.5			4.5		
Vehicle Extension (s)	2.0	2.0		2.0	2.0	2.0	2.0			2.0		
Lane Grp Cap (vph)	850	360		901	405	390	781			776		
v/s Ratio Prot	0.08			c0.12		c0.11	0.05			c0.09		
v/s Ratio Perm		0.03			0.03							
v/c Ratio	0.32	0.14		0.48	0.11	0.51	0.24			0.41		
Uniform Delay, d1	18.9	17.9		19.7	17.8	21.3	19.9			20.4		
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00			1.00		
Incremental Delay, d2	0.1	0.1		0.1	0.0	0.5	0.1			0.1		
Delay (s)	19.0	18.0		19.9	17.9	21.7	20.0			20.6		
Level of Service	B	B		B	B	C	B			C		
Approach Delay (s)	18.7			19.3			20.9			20.6		
Approach LOS	B			B			C			C		

Intersection Summary		
HCM 2000 Control Delay	19.8	HCM 2000 Level of Service
HCM 2000 Volume to Capacity ratio	0.45	B
Actuated Cycle Length (s)	62.4	Sum of lost time (s)
Intersection Capacity Utilization	56.4%	17.0
Analysis Period (min)	15	ICU Level of Service
		B

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis  
 1: Sonoma Blvd & Curtola Pkwy

Vallejo Marine Terminal  
 Existing AM with Orcem Project























Movement	NEL2	NEL	NER2
Lane Configurations			
Volume (vph)	2	2	2
Ideal Flow (vphpl)	1900	1900	1900
Total Lost time (s)		3.5	
Lane Util. Factor		1.00	
Frbp, ped/bikes		1.00	
Flpb, ped/bikes		1.00	
Frt		0.95	
Flt Protected		0.97	
Satd. Flow (prot)		1756	
Flt Permitted		0.97	
Satd. Flow (perm)		1756	
Peak-hour factor, PHF	0.92	0.92	0.92
Adj. Flow (vph)	2	2	2
RTOR Reduction (vph)	0	6	0
Lane Group Flow (vph)	0	0	0
Confl. Peds. (#/hr)			
Confl. Bikes (#/hr)			
Heavy Vehicles (%)	0%	0%	0%
Turn Type	Prot	Prot	
Protected Phases	1	1	
Permitted Phases			
Actuated Green, G (s)		1.3	
Effective Green, g (s)		1.3	
Actuated g/C Ratio		0.02	
Clearance Time (s)		3.5	
Vehicle Extension (s)		2.0	
Lane Grp Cap (vph)		36	
v/s Ratio Prot		c0.00	
v/s Ratio Perm			
v/c Ratio		0.00	
Uniform Delay, d1		29.9	
Progression Factor		1.00	
Incremental Delay, d2		0.0	
Delay (s)		29.9	
Level of Service		C	
Approach Delay (s)		29.9	
Approach LOS		C	
<b>Intersection Summary</b>			





















HCM 2010 Signalized Intersection Summary  
2: Solano Blvd & Sonoma Blvd

Vallejo Marine Terminal  
Existing AM with Orcem Project

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	5	8	14	26	16	14	12	346	48	11	224	16
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		0.99	1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1583	1545	1900	1696	1840	1900	1900	1863	1900	1610	1841	1900
Adj Flow Rate, veh/h	5	9	0	28	17	0	13	376	45	12	243	14
Adj No. of Lanes	1	1	0	1	2	0	1	2	0	1	2	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	20	13	13	12	0	0	0	2	2	18	3	3
Cap, veh/h	14	91	0	73	329	0	54	1866	222	42	1964	112
Arrive On Green	0.01	0.06	0.00	0.04	0.09	0.00	0.03	0.59	0.59	0.03	0.58	0.58
Sat Flow, veh/h	1508	1545	0	1616	3587	0	1810	3181	378	1533	3360	193
Grp Volume(v), veh/h	5	9	0	28	17	0	13	208	213	12	126	131
Grp Sat Flow(s),veh/h/ln	1508	1545	0	1616	1748	0	1810	1770	1790	1533	1749	1804
Q Serve(g_s), s	0.2	0.3	0.0	0.9	0.2	0.0	0.4	2.8	2.9	0.4	1.7	1.7
Cycle Q Clear(g_c), s	0.2	0.3	0.0	0.9	0.2	0.0	0.4	2.8	2.9	0.4	1.7	1.7
Prop In Lane	1.00		0.00	1.00		0.00	1.00		0.21	1.00		0.11
Lane Grp Cap(c), veh/h	14	91	0	73	329	0	54	1038	1050	42	1022	1054
V/C Ratio(X)	0.35	0.10	0.00	0.39	0.05	0.00	0.24	0.20	0.20	0.28	0.12	0.12
Avail Cap(c_a), veh/h	441	722	0	551	1634	0	670	1038	1050	538	1022	1054
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	25.3	22.9	0.0	23.8	21.2	0.0	24.3	5.0	5.0	24.5	4.8	4.8
Incr Delay (d2), s/veh	5.5	0.2	0.0	1.2	0.0	0.0	0.9	0.4	0.4	1.3	0.2	0.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.1	0.1	0.0	0.4	0.1	0.0	0.2	1.5	1.5	0.2	0.8	0.9
LnGrp Delay(d),s/veh	30.7	23.1	0.0	25.1	21.2	0.0	25.2	5.4	5.4	25.8	5.0	5.0
LnGrp LOS	C	C		C	C		C	A	A	C	A	A
Approach Vol, veh/h		14			45			434			269	
Approach Delay, s/veh		25.8			23.6			6.0			6.0	
Approach LOS		C			C			A			A	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	4.4	34.6	5.3	7.0	4.5	34.5	3.5	8.8				
Change Period (Y+Rc), s	3.0	4.5	3.0	4.0	3.0	4.5	3.0	4.0				
Max Green Setting (Gmax), s	18.0	30.0	17.5	24.0	19.0	30.0	15.0	24.0				
Max Q Clear Time (g_c+I1), s	2.4	4.9	2.9	2.3	2.4	3.7	2.2	2.2				
Green Ext Time (p_c), s	0.0	2.7	0.0	0.0	0.0	2.7	0.0	0.0				
<b>Intersection Summary</b>												
HCM 2010 Ctrl Delay			7.4									
HCM 2010 LOS			A									
<b>Notes</b>												
User approved pedestrian interval to be less than phase max green.												



















HCM 2010 Signalized Intersection Summary  
3: Sonoma Blvd & Lemon St

Vallejo Marine Terminal  
Existing AM with Orcem Project

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	11	27	13	55	38	33	25	338	61	20	235	13
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	0.99		0.99	0.99		0.99	1.00		0.98	1.00		0.97
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1721	1900	1900	1774	1900	1545	1845	1900	1727	1798	1900
Adj Flow Rate, veh/h	12	30	12	60	42	12	27	371	54	22	258	11
Adj No. of Lanes	0	1	0	0	1	0	1	2	0	1	2	0
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Percent Heavy Veh, %	12	12	12	8	8	8	23	3	3	10	6	6
Cap, veh/h	112	186	61	212	126	27	64	1692	244	60	1818	77
Arrive On Green	0.17	0.17	0.17	0.17	0.17	0.17	0.09	1.00	1.00	0.04	0.55	0.55
Sat Flow, veh/h	160	1078	354	618	733	159	1471	3065	442	1645	3334	142
Grp Volume(v), veh/h	54	0	0	114	0	0	27	211	214	22	132	137
Grp Sat Flow(s),veh/h/ln	1592	0	0	1510	0	0	1471	1752	1754	1645	1708	1768
Q Serve(g_s), s	0.0	0.0	0.0	1.6	0.0	0.0	0.9	0.0	0.0	0.7	2.0	2.0
Cycle Q Clear(g_c), s	1.5	0.0	0.0	3.3	0.0	0.0	0.9	0.0	0.0	0.7	2.0	2.0
Prop In Lane	0.22		0.22	0.53		0.11	1.00		0.25	1.00		0.08
Lane Grp Cap(c), veh/h	359	0	0	365	0	0	64	967	968	60	931	964
V/C Ratio(X)	0.15	0.00	0.00	0.31	0.00	0.00	0.42	0.22	0.22	0.37	0.14	0.14
Avail Cap(c_a), veh/h	767	0	0	755	0	0	310	967	968	409	931	964
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	1.00	1.00	1.00	0.99	0.99	0.99
Uniform Delay (d), s/veh	18.5	0.0	0.0	19.2	0.0	0.0	23.2	0.0	0.0	24.6	5.9	5.9
Incr Delay (d2), s/veh	0.1	0.0	0.0	0.2	0.0	0.0	1.6	0.5	0.5	1.4	0.3	0.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.7	0.0	0.0	1.5	0.0	0.0	0.4	0.1	0.1	0.3	1.0	1.0
LnGrp Delay(d),s/veh	18.6	0.0	0.0	19.4	0.0	0.0	24.9	0.5	0.5	25.9	6.2	6.2
LnGrp LOS	B			B			C	A	A	C	A	A
Approach Vol, veh/h		54			114			452			291	
Approach Delay, s/veh		18.6			19.4			2.0			7.7	
Approach LOS		B			B			A			A	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	5.9	56.1		13.0	6.3	55.7		13.0				
Change Period (Y+Rc), s	4.0	4.5		4.0	4.0	4.5		4.0				
Max Green Setting (Gmax), s	13.0	26.5		23.0	11.0	28.5		23.0				
Max Q Clear Time (g_c+I1), s	2.7	2.0		3.5	2.9	4.0		5.3				
Green Ext Time (p_c), s	0.0	6.2		0.6	0.0	6.2		0.5				
<b>Intersection Summary</b>												
HCM 2010 Ctrl Delay				7.0								
HCM 2010 LOS				A								




















HCM 2010 Signalized Intersection Summary  
6: Sonoma Blvd & Magazine St

Vallejo Marine Terminal  
Existing AM with Orcem Project

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	68	127	10	36	45	87	11	217	81	58	214	27
Number	3	8	18	7	4	14	1	6	16	5	2	12
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	0.98		0.96	0.99		0.98	1.00		0.98	1.00		0.96
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1888	1900	1900	1871	1900	1900	1841	1900	1727	1798	1900
Adj Flow Rate, veh/h	79	148	10	42	52	46	13	252	54	67	249	24
Adj No. of Lanes	0	1	0	0	1	0	1	2	0	1	2	0
Peak Hour Factor	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86
Percent Heavy Veh, %	1	1	1	0	0	0	0	4	4	10	5	5
Cap, veh/h	199	322	19	176	204	143	48	1184	249	155	1510	144
Arrive On Green	0.27	0.27	0.27	0.27	0.27	0.27	0.03	0.41	0.41	0.19	0.96	0.96
Sat Flow, veh/h	407	1204	71	331	765	536	1810	2865	602	1645	3139	299
Grp Volume(v), veh/h	237	0	0	140	0	0	13	152	154	67	134	139
Grp Sat Flow(s),veh/h/ln	1682	0	0	1632	0	0	1810	1749	1718	1645	1708	1730
Q Serve(g_s), s	2.5	0.0	0.0	0.0	0.0	0.0	0.4	3.0	3.1	1.9	0.2	0.2
Cycle Q Clear(g_c), s	6.1	0.0	0.0	3.4	0.0	0.0	0.4	3.0	3.1	1.9	0.2	0.2
Prop In Lane	0.33		0.04	0.30		0.33	1.00		0.35	1.00		0.17
Lane Grp Cap(c), veh/h	540	0	0	524	0	0	48	723	710	155	822	832
V/C Ratio(X)	0.44	0.00	0.00	0.27	0.00	0.00	0.27	0.21	0.22	0.43	0.16	0.17
Avail Cap(c_a), veh/h	958	0	0	917	0	0	374	723	710	401	822	832
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	16.4	0.0	0.0	15.5	0.0	0.0	25.4	10.0	10.1	20.3	0.5	0.5
Incr Delay (d2), s/veh	0.2	0.0	0.0	0.1	0.0	0.0	1.1	0.7	0.7	0.7	0.4	0.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.9	0.0	0.0	1.6	0.0	0.0	0.2	1.6	1.6	0.9	0.2	0.2
LnGrp Delay(d),s/veh	16.6	0.0	0.0	15.6	0.0	0.0	26.6	10.7	10.8	21.0	0.9	1.0
LnGrp LOS	B			B			C	B	B	C	A	A
Approach Vol, veh/h		237			140			319			340	
Approach Delay, s/veh		16.6			15.6			11.4			4.9	
Approach LOS		B			B			B			A	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	4.9	52.4		17.7	8.5	48.7		17.7				
Change Period (Y+Rc), s	3.5	5.0		3.5	3.5	5.0		3.5				
Max Green Setting (Gmax), s	11.0	24.0		28.0	13.0	22.0		28.0				
Max Q Clear Time (g_c+I1), s	2.4	2.2		5.4	3.9	5.1		8.1				
Green Ext Time (p_c), s	0.0	4.9		1.5	0.0	4.4		1.5				
<b>Intersection Summary</b>												
HCM 2010 Ctrl Delay				11.0								
HCM 2010 LOS				B								



















HCM 2010 Signalized Intersection Summary  
8: Sonoma Blvd & Maritime Academy Dr

Vallejo Marine Terminal  
Existing AM with Orcem Project

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	22	10	8	13	79	93	8	173	11	32	149	32
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		1.00	1.00		1.00	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1719	1900	1900	1786	1863	1900	1799	1900	1900	1792	1900
Adj Flow Rate, veh/h	24	11	2	14	86	22	9	188	8	35	162	17
Adj No. of Lanes	0	1	0	0	1	1	1	2	0	1	2	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	0	0	0	5	5	2	0	6	6	0	6	6
Cap, veh/h	371	136	18	164	404	389	39	1142	48	138	1231	127
Arrive On Green	0.25	0.25	0.25	0.25	0.25	0.25	0.02	0.34	0.34	0.08	0.40	0.40
Sat Flow, veh/h	699	554	72	106	1644	1583	1810	3340	141	1810	3108	322
Grp Volume(v), veh/h	37	0	0	100	0	22	9	96	100	35	88	91
Grp Sat Flow(s),veh/h/ln	1324	0	0	1750	0	1583	1810	1709	1773	1810	1703	1727
Q Serve(g_s), s	0.0	0.0	0.0	0.0	0.0	0.3	0.1	1.2	1.2	0.5	1.0	1.0
Cycle Q Clear(g_c), s	1.3	0.0	0.0	1.3	0.0	0.3	0.1	1.2	1.2	0.5	1.0	1.0
Prop In Lane	0.65		0.05	0.14		1.00	1.00		0.08	1.00		0.19
Lane Grp Cap(c), veh/h	525	0	0	568	0	389	39	584	606	138	674	684
V/C Ratio(X)	0.07	0.00	0.00	0.18	0.00	0.06	0.23	0.16	0.17	0.25	0.13	0.13
Avail Cap(c_a), veh/h	1531	0	0	1870	0	1598	1461	2299	2386	1461	2291	2324
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	8.6	0.0	0.0	9.0	0.0	8.6	14.3	6.8	6.8	12.9	5.7	5.7
Incr Delay (d2), s/veh	0.0	0.0	0.0	0.1	0.0	0.0	1.1	0.1	0.1	0.4	0.1	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.2	0.0	0.0	0.6	0.0	0.1	0.1	0.6	0.6	0.3	0.5	0.5
LnGrp Delay(d),s/veh	8.7	0.0	0.0	9.0	0.0	8.6	15.4	7.0	7.0	13.3	5.8	5.8
LnGrp LOS	A			A		A	B	A	A	B	A	A
Approach Vol, veh/h		37			122			205			214	
Approach Delay, s/veh		8.7			8.9			7.3			7.0	
Approach LOS		A			A			A			A	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	5.3	14.2		10.3	3.6	15.8		10.3				
Change Period (Y+Rc), s	3.0	4.0		3.0	3.0	4.0		3.0				
Max Green Setting (Gmax), s	24.0	40.0		30.0	24.0	40.0		30.0				
Max Q Clear Time (g_c+I1), s	2.5	3.2		3.3	2.1	3.0		3.3				
Green Ext Time (p_c), s	0.0	2.3		0.5	0.0	2.3		0.5				
<b>Intersection Summary</b>												
HCM 2010 Ctrl Delay			7.6									
HCM 2010 LOS			A									

























HCM 2010 Signalized Intersection Summary  
 16: Lemon St & Carlson St

Vallejo Marine Terminal  
 Existing AM with Orcem Project

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	2	162	5	11	172	139	3	4	16	136	1	7
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	0.99		0.98	0.99		0.96	0.99		0.98	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1770	1900	1743	1829	1900	1900	1614	1900	1881	1883	1900
Adj Flow Rate, veh/h	2	191	4	13	202	109	4	5	4	163	0	0
Adj No. of Lanes	0	1	0	1	1	0	0	1	0	2	1	0
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85
Percent Heavy Veh, %	7	7	7	9	7	7	50	50	50	1	0	0
Cap, veh/h	174	727	15	724	466	251	270	151	88	1220	373	0
Arrive On Green	0.42	0.42	0.42	0.42	0.42	0.42	0.20	0.20	0.20	0.20	0.00	0.00
Sat Flow, veh/h	5	1719	36	1093	1101	594	238	765	446	2815	1883	0
Grp Volume(v), veh/h	197	0	0	13	0	311	13	0	0	163	0	0
Grp Sat Flow(s),veh/h/ln	1760	0	0	1093	0	1695	1449	0	0	1407	1883	0
Q Serve(g_s), s	0.0	0.0	0.0	0.2	0.0	2.7	0.0	0.0	0.0	1.0	0.0	0.0
Cycle Q Clear(g_c), s	1.5	0.0	0.0	1.7	0.0	2.7	0.1	0.0	0.0	1.2	0.0	0.0
Prop In Lane	0.01		0.02	1.00		0.35	0.31		0.31	1.00		0.00
Lane Grp Cap(c), veh/h	916	0	0	724	0	717	510	0	0	1220	373	0
V/C Ratio(X)	0.21	0.00	0.00	0.02	0.00	0.43	0.03	0.00	0.00	0.13	0.00	0.00
Avail Cap(c_a), veh/h	3245	0	0	2179	0	2973	2212	0	0	4665	2678	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	1.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	4.0	0.0	0.0	4.5	0.0	4.3	6.8	0.0	0.0	7.3	0.0	0.0
Incr Delay (d2), s/veh	0.1	0.0	0.0	0.0	0.0	0.4	0.0	0.0	0.0	0.0	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.7	0.0	0.0	0.0	0.0	1.3	0.1	0.0	0.0	0.4	0.0	0.0
LnGrp Delay(d),s/veh	4.1	0.0	0.0	4.5	0.0	4.7	6.9	0.0	0.0	7.4	0.0	0.0
LnGrp LOS	A			A		A	A			A		
Approach Vol, veh/h		197			324			13			163	
Approach Delay, s/veh		4.1			4.7			6.9			7.4	
Approach LOS		A			A			A			A	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		12.9		8.2		12.9		8.2				
Change Period (Y+Rc), s		4.0		4.0		4.0		4.0				
Max Green Setting (Gmax), s		37.0		30.0		37.0		30.0				
Max Q Clear Time (g_c+I1), s		3.5		3.2		4.7		2.1				
Green Ext Time (p_c), s		3.5		0.6		3.5		0.6				
<b>Intersection Summary</b>												
HCM 2010 Ctrl Delay				5.2								
HCM 2010 LOS				A								
<b>Notes</b>												
User approved volume balancing among the lanes for turning movement.												

HCM 2010 Signalized Intersection Summary  
 17: Lemon St & Curtola Pkwy

Vallejo Marine Terminal  
 Existing AM with Orcem Project

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	26	70	217	120	90	25	214	730	106	23	412	30
Number	3	8	18	7	4	14	1	6	16	5	2	12
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		0.93	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1696	1851	1810	1827	1827	1900	1827	1849	1900	1827	1845	1900
Adj Flow Rate, veh/h	29	78	75	133	100	6	238	811	0	26	458	0
Adj No. of Lanes	1	1	1	1	1	1	1	2	0	1	2	0
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	12	0	5	4	4	0	4	3	3	4	3	3
Cap, veh/h	51	209	171	171	328	269	288	1645	0	50	1163	0
Arrive On Green	0.03	0.11	0.11	0.10	0.18	0.18	0.17	0.47	0.00	0.03	0.33	0.00
Sat Flow, veh/h	1616	1851	1517	1740	1827	1498	1740	3606	0	1740	3597	0
Grp Volume(v), veh/h	29	78	75	133	100	6	238	811	0	26	458	0
Grp Sat Flow(s),veh/h/ln	1616	1851	1517	1740	1827	1498	1740	1757	0	1740	1752	0
Q Serve(g_s), s	1.1	2.5	3.0	4.8	3.1	0.2	8.6	10.3	0.0	1.0	6.5	0.0
Cycle Q Clear(g_c), s	1.1	2.5	3.0	4.8	3.1	0.2	8.6	10.3	0.0	1.0	6.5	0.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.00	1.00		0.00
Lane Grp Cap(c), veh/h	51	209	171	171	328	269	288	1645	0	50	1163	0
V/C Ratio(X)	0.57	0.37	0.44	0.78	0.30	0.02	0.83	0.49	0.00	0.52	0.39	0.00
Avail Cap(c_a), veh/h	624	1001	820	672	988	810	672	1900	0	672	1895	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	30.9	26.6	26.8	28.5	23.0	21.9	26.1	11.9	0.0	31.0	16.6	0.0
Incr Delay (d2), s/veh	3.7	1.2	1.8	2.9	0.7	0.0	2.3	0.3	0.0	3.1	0.3	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.6	1.3	1.3	2.5	1.6	0.1	4.3	5.0	0.0	0.5	3.2	0.0
LnGrp Delay(d),s/veh	34.7	27.7	28.6	31.4	23.7	21.9	28.5	12.2	0.0	34.0	16.9	0.0
LnGrp LOS	C	C	C	C	C	C	C	B		C	B	
Approach Vol, veh/h		182			239			1049			484	
Approach Delay, s/veh		29.2			28.0			15.9			17.8	
Approach LOS		C			C			B			B	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	14.7	27.5	6.0	16.5	5.9	36.3	10.3	12.2				
Change Period (Y+Rc), s	4.0	6.0	4.0	4.9	4.0	6.0	4.0	4.9				
Max Green Setting (Gmax), s	25.0	35.0	25.0	35.0	25.0	35.0	25.0	35.0				
Max Q Clear Time (g_c+I1), s	10.6	8.5	3.1	5.1	3.0	12.3	6.8	5.0				
Green Ext Time (p_c), s	0.3	13.0	0.0	1.5	0.0	11.9	0.2	1.5				
<b>Intersection Summary</b>												
HCM 2010 Ctrl Delay			19.1									
HCM 2010 LOS			B									
<b>Notes</b>												
User approved volume balancing among the lanes for turning movement.												

**Intersection**

Int Delay, s/veh 0.7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR
Vol, veh/h	15	1	4	2	3	7	6	406	3
Conflicting Peds, #/hr	0	0	2	2	0	0	6	0	3
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-
Peak Hour Factor	89	89	89	89	89	89	89	89	89
Heavy Vehicles, %	13	0	0	0	0	0	0	3	33
Mvmt Flow	17	1	4	2	3	8	7	456	3

Major/Minor	Minor2			Minor1			Major1		
Conflicting Flow All	597	827	180	654	828	238	346	0	0
Stage 1	352	352	-	473	473	-	-	-	-
Stage 2	245	475	-	181	355	-	-	-	-
Critical Hdwy	7.76	6.5	6.9	7.5	6.5	6.9	4.1	-	-
Critical Hdwy Stg 1	6.76	5.5	-	6.5	5.5	-	-	-	-
Critical Hdwy Stg 2	6.76	5.5	-	6.5	5.5	-	-	-	-
Follow-up Hdwy	3.63	4	3.3	3.5	4	3.3	2.2	-	-
Pot Cap-1 Maneuver	364	309	838	356	309	769	1224	-	-
Stage 1	608	635	-	546	562	-	-	-	-
Stage 2	707	561	-	809	633	-	-	-	-
Platoon blocked, %									
Mov Cap-1 Maneuver	352	304	832	348	304	764	1218	-	-
Mov Cap-2 Maneuver	352	304	-	348	304	-	-	-	-
Stage 1	602	631	-	541	557	-	-	-	-
Stage 2	686	556	-	796	629	-	-	-	-

Approach	EB	WB	NB
HCM Control Delay, s	14.7	12.7	0.1
HCM LOS	B	B	

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1218	-	-	394	484	1104	-	-
HCM Lane V/C Ratio	0.006	-	-	0.057	0.028	0.004	-	-
HCM Control Delay (s)	8	0	-	14.7	12.7	8.3	0	-
HCM Lane LOS	A	A	-	B	B	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0.2	0.1	0	-	-

**Intersection**

Int Delay, s/veh

Movement	SBL	SBT	SBR
Vol, veh/h	4	301	5
Conflicting Peds, #/hr	3	0	6
Sign Control	Free	Free	Free
RT Channelized	-	-	None
Storage Length	-	-	-
Veh in Median Storage, #	-	0	-
Grade, %	-	0	-
Peak Hour Factor	89	89	89
Heavy Vehicles, %	0	7	20
Mvmt Flow	4	338	6

**Major/Minor Major2**

Conflicting Flow All	462	0	0
Stage 1	-	-	-
Stage 2	-	-	-
Critical Hdwy	4.1	-	-
Critical Hdwy Stg 1	-	-	-
Critical Hdwy Stg 2	-	-	-
Follow-up Hdwy	2.2	-	-
Pot Cap-1 Maneuver	1110	-	-
Stage 1	-	-	-
Stage 2	-	-	-
Platoon blocked, %		-	-
Mov Cap-1 Maneuver	1104	-	-
Mov Cap-2 Maneuver	-	-	-
Stage 1	-	-	-
Stage 2	-	-	-

**Approach SB**

HCM Control Delay, s 0.1

HCM LOS

**Minor Lane/Major Mvmt**



**Intersection**

Int Delay, s/veh 1.2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR
Vol, veh/h	26	4	7	3	1	13	7	362	4
Conflicting Peds, #/hr	1	0	4	4	0	1	13	0	5
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-
Peak Hour Factor	91	91	91	91	91	91	91	91	91
Heavy Vehicles, %	0	0	0	0	0	15	0	4	0
Mvmt Flow	29	4	8	3	1	14	8	398	4

Major/Minor	Minor2			Minor1			Major1		
Conflicting Flow All	570	773	181	608	778	218	333	0	0
Stage 1	351	351	-	419	419	-	-	-	-
Stage 2	219	422	-	189	359	-	-	-	-
Critical Hdwy	7.5	6.5	6.9	7.5	6.5	7.2	4.1	-	-
Critical Hdwy Stg 1	6.5	5.5	-	6.5	5.5	-	-	-	-
Critical Hdwy Stg 2	6.5	5.5	-	6.5	5.5	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	3.5	4	3.45	2.2	-	-
Pot Cap-1 Maneuver	409	332	837	384	330	748	1238	-	-
Stage 1	644	636	-	588	593	-	-	-	-
Stage 2	769	592	-	800	631	-	-	-	-
Platoon blocked, %									
Mov Cap-1 Maneuver	387	322	825	365	320	737	1225	-	-
Mov Cap-2 Maneuver	387	322	-	365	320	-	-	-	-
Stage 1	637	624	-	581	586	-	-	-	-
Stage 2	739	585	-	767	619	-	-	-	-

Approach	EB	WB	NB
HCM Control Delay, s	14.5	11.3	0.1
HCM LOS	B	B	

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1225	-	-	420	587	1082	-	-
HCM Lane V/C Ratio	0.006	-	-	0.097	0.032	0.012	-	-
HCM Control Delay (s)	8	0	-	14.5	11.3	8.4	0.1	-
HCM Lane LOS	A	A	-	B	B	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0.3	0.1	0	-	-

**Intersection**

Int Delay, s/veh

Movement	SBL	SBT	SBR
Vol, veh/h	12	284	15
Conflicting Peds, #/hr	5	0	13
Sign Control	Free	Free	Free
RT Channelized	-	-	None
Storage Length	-	-	-
Veh in Median Storage, #	-	0	-
Grade, %	-	0	-
Peak Hour Factor	91	91	91
Heavy Vehicles, %	10	7	0
Mvmt Flow	13	312	16

**Major/Minor Major2**

Conflicting Flow All	406	0	0
Stage 1	-	-	-
Stage 2	-	-	-
Critical Hdwy	4.3	-	-
Critical Hdwy Stg 1	-	-	-
Critical Hdwy Stg 2	-	-	-
Follow-up Hdwy	2.3	-	-
Pot Cap-1 Maneuver	1094	-	-
Stage 1	-	-	-
Stage 2	-	-	-
Platoon blocked, %		-	-
Mov Cap-1 Maneuver	1082	-	-
Mov Cap-2 Maneuver	-	-	-
Stage 1	-	-	-
Stage 2	-	-	-

**Approach SB**

HCM Control Delay, s	0.4
HCM LOS	

**Minor Lane/Major Mvmt**

**Intersection**

Int Delay, s/veh 4.2

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Vol, veh/h	94	41	87	203	172	90
Conflicting Peds, #/hr	0	0	8	0	0	8
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	60	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	85	85	85	85	85	85
Heavy Vehicles, %	3	3	3	4	5	3
Mvmt Flow	111	48	102	239	202	106

Major/Minor	Minor2	Major1	Major2
Conflicting Flow All	579	162	308
Stage 1	255	-	-
Stage 2	324	-	-
Critical Hdwy	6.86	6.96	4.16
Critical Hdwy Stg 1	5.86	-	-
Critical Hdwy Stg 2	5.86	-	-
Follow-up Hdwy	3.53	3.33	2.23
Pot Cap-1 Maneuver	443	851	1242
Stage 1	761	-	-
Stage 2	702	-	-
Platoon blocked, %			-
Mov Cap-1 Maneuver	406	845	1234
Mov Cap-2 Maneuver	406	-	-
Stage 1	761	-	-
Stage 2	644	-	-

Approach	EB	NB	SB
HCM Control Delay, s	16.1	2.5	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1234	-	482	-	-
HCM Lane V/C Ratio	0.083	-	0.33	-	-
HCM Control Delay (s)	8.2	-	16.1	-	-
HCM Lane LOS	A	-	C	-	-
HCM 95th %tile Q(veh)	0.3	-	1.4	-	-

**Intersection**

Int Delay, s/veh 0.4

Movement	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBL	NBT	NBR
Vol, veh/h	0	34	0	3	0	52	4	0	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	-	0	-	-	0	-
Grade, %	-	0	-	-	-	0	-	-	0	-
Peak Hour Factor	82	82	82	82	82	82	82	82	82	82
Heavy Vehicles, %	0	18	0	0	0	12	0	0	0	0
Mvmt Flow	0	41	0	4	0	63	5	0	0	0

**Major/Minor**

	Major1	Major2	Minor1
Conflicting Flow All	68	0	0
Stage 1	-	-	-
Stage 2	-	-	-
Critical Hdwy	4.1	-	-
Critical Hdwy Stg 1	-	-	-
Critical Hdwy Stg 2	-	-	-
Follow-up Hdwy	2.2	-	-
Pot Cap-1 Maneuver	1546	-	-
Stage 1	-	-	-
Stage 2	-	-	-
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	1546	-	-
Mov Cap-2 Maneuver	-	-	-
Stage 1	-	-	-
Stage 2	-	-	-

**Approach**

	EB	WB	NB
HCM Control Delay, s	0	0	0
HCM LOS			A

**Minor Lane/Major Mvmt**

	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	-	1546	-	-	-	-	-	905
HCM Lane V/C Ratio	-	-	-	-	-	-	-	0.005
HCM Control Delay (s)	0	0	-	-	-	-	-	9
HCM Lane LOS	A	A	-	-	-	-	-	A
HCM 95th %tile Q(veh)	-	0	-	-	-	-	-	0

**Intersection**

Int Delay, s/veh

Movement	SBL	SBT	SBR
Vol, veh/h	3	0	1
Conflicting Peds, #/hr	0	0	0
Sign Control	Stop	Stop	Stop
RT Channelized	-	-	None
Storage Length	-	-	-
Veh in Median Storage, #	-	0	-
Grade, %	-	0	-
Peak Hour Factor	82	82	82
Heavy Vehicles, %	0	0	0
Mvmt Flow	4	0	1

**Major/Minor**

	Minor2		
Conflicting Flow All	107	114	66
Stage 1	66	73	-
Stage 2	41	41	-
Critical Hdwy	7.1	6.5	6.2
Critical Hdwy Stg 1	6.1	5.5	-
Critical Hdwy Stg 2	6.1	5.5	-
Follow-up Hdwy	3.5	4	3.3
Pot Cap-1 Maneuver	877	780	1003
Stage 1	950	838	-
Stage 2	979	865	-
Platoon blocked, %			
Mov Cap-1 Maneuver	877	780	1003
Mov Cap-2 Maneuver	877	780	-
Stage 1	950	838	-
Stage 2	979	865	-

**Approach**

	SB
HCM Control Delay, s	9
HCM LOS	A

**Minor Lane/Major Mvmt**

**Intersection**

Int Delay, s/veh 1.7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR
Vol, veh/h	3	37	0	6	59	5	1	4	9
Conflicting Peds, #/hr	0	0	0	0	0	0	2	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-
Peak Hour Factor	88	88	88	88	88	88	88	88	88
Heavy Vehicles, %	0	17	0	0	11	0	0	0	0
Mvmt Flow	3	42	0	7	67	6	1	5	10

Major/Minor	Major1	Major2	Minor1						
Conflicting Flow All	75	0	0	44	0	0	137	139	44
Stage 1	-	-	-	-	-	-	51	51	-
Stage 2	-	-	-	-	-	-	86	88	-
Critical Hdwy	4.1	-	-	4.1	-	-	7.1	6.5	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-
Follow-up Hdwy	2.2	-	-	2.2	-	-	3.5	4	3.3
Pot Cap-1 Maneuver	1537	-	-	1577	-	-	838	756	1032
Stage 1	-	-	-	-	-	-	967	856	-
Stage 2	-	-	-	-	-	-	927	826	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1537	-	-	1577	-	-	832	748	1030
Mov Cap-2 Maneuver	-	-	-	-	-	-	832	748	-
Stage 1	-	-	-	-	-	-	963	853	-
Stage 2	-	-	-	-	-	-	922	821	-

Approach	EB	WB	NB
HCM Control Delay, s	0.6	0.6	9
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	916	1537	-	-	1577	-	-	812
HCM Lane V/C Ratio	0.017	0.002	-	-	0.004	-	-	0.004
HCM Control Delay (s)	9	7.3	0	-	7.3	0	-	9.5
HCM Lane LOS	A	A	A	-	A	A	-	A
HCM 95th %tile Q(veh)	0.1	0	-	-	0	-	-	0

**Intersection**

Int Delay, s/veh

Movement	SBL	SBT	SBR
Vol, veh/h	3	0	0
Conflicting Peds, #/hr	0	0	2
Sign Control	Stop	Stop	Stop
RT Channelized	-	-	None
Storage Length	-	-	-
Veh in Median Storage, #	-	0	-
Grade, %	-	0	-
Peak Hour Factor	88	88	88
Heavy Vehicles, %	0	0	0
Mvmt Flow	3	0	0

**Major/Minor**

	Minor2		
Conflicting Flow All	144	137	72
Stage 1	86	86	-
Stage 2	58	51	-
Critical Hdwy	7.1	6.5	6.2
Critical Hdwy Stg 1	6.1	5.5	-
Critical Hdwy Stg 2	6.1	5.5	-
Follow-up Hdwy	3.5	4	3.3
Pot Cap-1 Maneuver	830	758	996
Stage 1	927	827	-
Stage 2	959	856	-
Platoon blocked, %			
Mov Cap-1 Maneuver	812	750	994
Mov Cap-2 Maneuver	812	750	-
Stage 1	924	821	-
Stage 2	943	853	-

**Approach**

Approach	SB
HCM Control Delay, s	9.5
HCM LOS	A

**Minor Lane/Major Mvmt**

Intersection	
Int Delay, s/veh	1.4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR
Vol, veh/h	7	101	1	6	115	4	3	3	4
Conflicting Peds, #/hr	2	0	2	2	0	2	0	0	1
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-
Peak Hour Factor	85	85	85	85	85	85	85	85	85
Heavy Vehicles, %	0	8	0	17	10	0	0	0	25
Mvmt Flow	8	119	1	7	135	5	4	4	5

Major/Minor	Major1	Major2	Minor1						
Conflicting Flow All	141	0	0	121	0	0	294	292	122
Stage 1	-	-	-	-	-	-	137	137	-
Stage 2	-	-	-	-	-	-	157	155	-
Critical Hdwy	4.1	-	-	4.27	-	-	7.1	6.5	6.45
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-
Follow-up Hdwy	2.2	-	-	2.353	-	-	3.5	4	3.525
Pot Cap-1 Maneuver	1455	-	-	1379	-	-	662	622	871
Stage 1	-	-	-	-	-	-	871	787	-
Stage 2	-	-	-	-	-	-	850	773	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1453	-	-	1377	-	-	647	614	869
Mov Cap-2 Maneuver	-	-	-	-	-	-	647	614	-
Stage 1	-	-	-	-	-	-	865	782	-
Stage 2	-	-	-	-	-	-	834	768	-

Approach	EB	WB	NB
HCM Control Delay, s	0.5	0.4	10.2
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	708	1453	-	-	1377	-	-	709
HCM Lane V/C Ratio	0.017	0.006	-	-	0.005	-	-	0.025
HCM Control Delay (s)	10.2	7.5	0	-	7.6	0	-	10.2
HCM Lane LOS	B	A	A	-	A	A	-	B
HCM 95th %tile Q(veh)	0.1	0	-	-	0	-	-	0.1



**Intersection**

Int Delay, s/veh

Movement	SBL	SBT	SBR
Vol, veh/h	7	3	5
Conflicting Peds, #/hr	1	0	0
Sign Control	Stop	Stop	Stop
RT Channelized	-	-	None
Storage Length	-	-	-
Veh in Median Storage, #	-	0	-
Grade, %	-	0	-
Peak Hour Factor	85	85	85
Heavy Vehicles, %	0	0	0
Mvmt Flow	8	4	6

**Major/Minor**

	Minor2		
Conflicting Flow All	294	290	141
Stage 1	153	153	-
Stage 2	141	137	-
Critical Hdwy	7.1	6.5	6.2
Critical Hdwy Stg 1	6.1	5.5	-
Critical Hdwy Stg 2	6.1	5.5	-
Follow-up Hdwy	3.5	4	3.3
Pot Cap-1 Maneuver	662	624	912
Stage 1	854	775	-
Stage 2	867	787	-
Platoon blocked, %			
Mov Cap-1 Maneuver	648	616	910
Mov Cap-2 Maneuver	648	616	-
Stage 1	848	770	-
Stage 2	852	782	-

**Approach**

	SB
HCM Control Delay, s	10.2
HCM LOS	B

**Minor Lane/Major Mvmt**

Intersection									
Int Delay, s/veh	3.8								

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR
Vol, veh/h	12	98	3	13	106	17	5	25	24
Conflicting Peds, #/hr	1	0	3	3	0	1	1	0	1
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	8	8	0	0	11	6	0	4	0
Mvmt Flow	13	109	3	14	118	19	6	28	27

Major/Minor	Major1			Major2			Minor1		
Conflicting Flow All	138	0	0	113	0	0	316	305	115
Stage 1	-	-	-	-	-	-	138	138	-
Stage 2	-	-	-	-	-	-	178	167	-
Critical Hdwy	4.18	-	-	4.1	-	-	7.1	6.54	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.54	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.54	-
Follow-up Hdwy	2.272	-	-	2.2	-	-	3.5	4.036	3.3
Pot Cap-1 Maneuver	1410	-	-	1489	-	-	641	605	943
Stage 1	-	-	-	-	-	-	870	779	-
Stage 2	-	-	-	-	-	-	828	756	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1406	-	-	1485	-	-	597	592	940
Mov Cap-2 Maneuver	-	-	-	-	-	-	597	592	-
Stage 1	-	-	-	-	-	-	861	771	-
Stage 2	-	-	-	-	-	-	775	748	-

Approach	EB	WB	NB
HCM Control Delay, s	0.8	0.7	10.5
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	709	1406	-	-	1485	-	-	652
HCM Lane V/C Ratio	0.085	0.009	-	-	0.01	-	-	0.09
HCM Control Delay (s)	10.5	7.6	0	-	7.4	0	-	11.1
HCM Lane LOS	B	A	A	-	A	A	-	B
HCM 95th %tile Q(veh)	0.3	0	-	-	0	-	-	0.3

**Intersection**

Int Delay, s/veh

Movement	SBL	SBT	SBR
Vol, veh/h	15	24	14
Conflicting Peds, #/hr	1	0	1
Sign Control	Stop	Stop	Stop
RT Channelized	-	-	None
Storage Length	-	-	-
Veh in Median Storage, #	-	0	-
Grade, %	-	0	-
Peak Hour Factor	90	90	90
Heavy Vehicles, %	0	4	7
Mvmt Flow	17	27	16

**Major/Minor**

	Minor2		
Conflicting Flow All	322	297	131
Stage 1	157	157	-
Stage 2	165	140	-
Critical Hdwy	7.1	6.54	6.27
Critical Hdwy Stg 1	6.1	5.54	-
Critical Hdwy Stg 2	6.1	5.54	-
Follow-up Hdwy	3.5	4.036	3.363
Pot Cap-1 Maneuver	635	611	905
Stage 1	850	764	-
Stage 2	842	777	-
Platoon blocked, %			
Mov Cap-1 Maneuver	584	598	902
Mov Cap-2 Maneuver	584	598	-
Stage 1	841	756	-
Stage 2	779	769	-

**Approach**

Approach	SB
HCM Control Delay, s	11.1
HCM LOS	B

**Minor Lane/Major Mvmt**

**Intersection**

Int Delay, s/veh 1.4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR
Vol, veh/h	2	130	2	13	126	3	5	0	21
Conflicting Peds, #/hr	4	0	7	7	0	4	4	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-
Peak Hour Factor	81	81	81	81	81	81	81	81	81
Heavy Vehicles, %	0	6	0	0	9	33	0	5	0
Mvmt Flow	2	160	2	16	156	4	6	0	26

Major/Minor	Major1	Major2	Minor1						
Conflicting Flow All	163	0	0	167	0	0	367	366	173
Stage 1	-	-	-	-	-	-	171	171	-
Stage 2	-	-	-	-	-	-	196	195	-
Critical Hdwy	4.1	-	-	4.1	-	-	7.1	6.55	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.55	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.55	-
Follow-up Hdwy	2.2	-	-	2.2	-	-	3.5	4.045	3.3
Pot Cap-1 Maneuver	1428	-	-	1423	-	-	593	558	876
Stage 1	-	-	-	-	-	-	836	752	-
Stage 2	-	-	-	-	-	-	810	734	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1420	-	-	1415	-	-	578	547	868
Mov Cap-2 Maneuver	-	-	-	-	-	-	578	547	-
Stage 1	-	-	-	-	-	-	832	748	-
Stage 2	-	-	-	-	-	-	791	723	-

Approach	EB	WB	NB
HCM Control Delay, s	0.1	0.7	9.7
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	792	1420	-	-	1415	-	-	653
HCM Lane V/C Ratio	0.041	0.002	-	-	0.011	-	-	0.011
HCM Control Delay (s)	9.7	7.5	0	-	7.6	0	-	10.6
HCM Lane LOS	A	A	A	-	A	A	-	B
HCM 95th %tile Q(veh)	0.1	0	-	-	0	-	-	0

**Intersection**

Int Delay, s/veh

Movement	SBL	SBT	SBR
Vol, veh/h	2	1	3
Conflicting Peds, #/hr	0	0	4
Sign Control	Stop	Stop	Stop
RT Channelized	-	-	None
Storage Length	-	-	-
Veh in Median Storage, #	-	0	-
Grade, %	-	0	-
Peak Hour Factor	81	81	81
Heavy Vehicles, %	0	0	33
Mvmt Flow	2	1	4

**Major/Minor**

	Minor2		
Conflicting Flow All	378	366	168
Stage 1	194	194	-
Stage 2	184	172	-
Critical Hdwy	7.1	6.5	6.53
Critical Hdwy Stg 1	6.1	5.5	-
Critical Hdwy Stg 2	6.1	5.5	-
Follow-up Hdwy	3.5	4	3.597
Pot Cap-1 Maneuver	583	566	802
Stage 1	812	744	-
Stage 2	822	760	-
Platoon blocked, %			
Mov Cap-1 Maneuver	554	554	795
Mov Cap-2 Maneuver	554	554	-
Stage 1	808	733	-
Stage 2	791	756	-

**Approach**

Approach	SB
HCM Control Delay, s	10.6
HCM LOS	B

**Minor Lane/Major Mvmt**

**Intersection**

Int Delay, s/veh 0.1

Movement	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBL	NBT	NBR
Vol, veh/h	0	157	0	5	0	146	1	1	0	0
Conflicting Peds, #/hr	7	0	3	0	3	0	7	3	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	-	0	-	-	0	-
Grade, %	-	0	-	-	-	0	-	-	0	-
Peak Hour Factor	83	83	83	83	83	83	83	83	83	83
Heavy Vehicles, %	0	5	0	0	0	8	0	0	0	0
Mvmt Flow	0	189	0	6	0	176	1	1	0	0

Major/Minor	Major1	Major2	Minor1
Conflicting Flow All	180	0	0
Stage 1	-	-	-
Stage 2	-	-	-
Critical Hdwy	4.1	-	-
Critical Hdwy Stg 1	-	-	-
Critical Hdwy Stg 2	-	-	-
Follow-up Hdwy	2.2	-	-
Pot Cap-1 Maneuver	1408	-	-
Stage 1	-	-	-
Stage 2	-	-	-
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	1400	-	-
Mov Cap-2 Maneuver	-	-	-
Stage 1	-	-	-
Stage 2	-	-	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0	11.2
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	584	1400	-	-	-	-	-	584
HCM Lane V/C Ratio	0.002	-	-	-	-	-	-	0.004
HCM Control Delay (s)	11.2	0	-	-	-	-	-	11.2
HCM Lane LOS	B	A	-	-	-	-	-	B
HCM 95th %tile Q(veh)	0	0	-	-	-	-	-	0

**Intersection**

Int Delay, s/veh

Movement	SBL	SBT	SBR
Vol, veh/h	2	0	0
Conflicting Peds, #/hr	0	0	3
Sign Control	Stop	Stop	Stop
RT Channelized	-	-	None
Storage Length	-	-	-
Veh in Median Storage, #	-	0	-
Grade, %	-	0	-
Peak Hour Factor	83	83	83
Heavy Vehicles, %	0	0	0
Mvmt Flow	2	0	0

**Major/Minor**

	Minor2		
Conflicting Flow All	372	384	187
Stage 1	180	192	-
Stage 2	192	192	-
Critical Hdwy	7.1	6.5	6.2
Critical Hdwy Stg 1	6.1	5.5	-
Critical Hdwy Stg 2	6.1	5.5	-
Follow-up Hdwy	3.5	4	3.3
Pot Cap-1 Maneuver	589	553	860
Stage 1	826	745	-
Stage 2	814	745	-
Platoon blocked, %			
Mov Cap-1 Maneuver	584	550	853
Mov Cap-2 Maneuver	584	550	-
Stage 1	824	743	-
Stage 2	809	743	-

**Approach**

	SB
HCM Control Delay, s	11.2
HCM LOS	B

**Minor Lane/Major Mvmt**

**Intersection**

Int Delay, s/veh 0.3

Movement	EBT	EBR	WBU	WBL	WBT	NBL	NBR
Vol, veh/h	156	1	2	15	154	2	10
Conflicting Peds, #/hr	0	4	0	4	0	0	1
Sign Control	Free	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	-	None	-	None
Storage Length	-	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	-	0	0	-
Grade, %	0	-	-	-	0	0	-
Peak Hour Factor	88	88	88	88	88	88	88
Heavy Vehicles, %	5	0	0	13	6	40	0
Mvmt Flow	177	1	2	17	175	2	11

Major/Minor	Major1	Major2	Minor1				
Conflicting Flow All	0	0	190	179	0	388	185
Stage 1	-	-	-	-	-	179	-
Stage 2	-	-	-	-	-	209	-
Critical Hdwy	-	-	-	4.23	-	6.8	6.2
Critical Hdwy Stg 1	-	-	-	-	-	5.8	-
Critical Hdwy Stg 2	-	-	-	-	-	5.8	-
Follow-up Hdwy	-	-	-	2.317	-	3.86	3.3
Pot Cap-1 Maneuver	-	-	-	1333	-	548	862
Stage 1	-	-	-	-	-	768	-
Stage 2	-	-	-	-	-	743	-
Platoon blocked, %	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	-9	-9	-	546	858
Mov Cap-2 Maneuver	-	-	-	-	-	546	-
Stage 1	-	-	-	-	-	767	-
Stage 2	-	-	-	-	-	741	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0	9.7
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	783	-	-	+	-
HCM Lane V/C Ratio	0.017	-	-	-	-
HCM Control Delay (s)	9.7	-	-	-	-
HCM Lane LOS	A	-	-	-	-
HCM 95th %tile Q(veh)	0.1	-	-	-	-

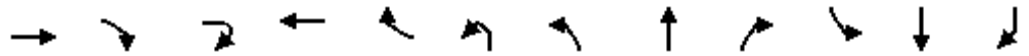
**Notes**

-: Volume exceeds capacity    \$: Delay exceeds 300s    +: Computation Not Defined    \*: All major volume in platoon



HCM Signalized Intersection Capacity Analysis  
1: Sonoma Blvd & Curtola Pkwy

Vallejo Marine Terminal  
Existing PM with Orcem Project



Movement	EBT	EBR	EBR2	WBT	WBR	NBL2	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↑↑	↑		↑↑	↑		↑	↑↑			↑↑	
Volume (vph)	497	170	3	288	195	12	160	248	5	187	172	6
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	4.5		4.5	4.5		4.5	4.5			4.5	
Lane Util. Factor	0.91	0.91		0.95	1.00		1.00	0.95			0.95	
Frbp, ped/bikes	1.00	1.00		1.00	0.98		1.00	1.00			1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00			1.00	
Frt	0.99	0.85		1.00	0.85		1.00	1.00			0.99	
Flt Protected	1.00	1.00		1.00	1.00		0.95	1.00			0.98	
Satd. Flow (prot)	3374	1455		3539	1589		1756	3564			3443	
Flt Permitted	1.00	1.00		1.00	1.00		0.95	1.00			0.98	
Satd. Flow (perm)	3374	1455		3539	1589		1756	3564			3443	
Peak-hour factor, PHF	0.91	0.91	0.91	0.91	0.91	0.92	0.91	0.91	0.91	0.91	0.91	0.91
Adj. Flow (vph)	546	187	3	316	214	13	176	273	5	205	189	7
RTOR Reduction (vph)	0	49	0	0	149	0	0	1	0	0	2	0
Lane Group Flow (vph)	565	122	0	316	65	0	189	277	0	0	420	0
Confl. Peds. (#/hr)					4		1		4	4		1
Confl. Bikes (#/hr)									1			1
Heavy Vehicles (%)	2%	1%	0%	2%	0%	0%	3%	1%	0%	1%	1%	0%
Turn Type	NA	Perm		NA	Perm	Split	Split	NA		Split	NA	
Protected Phases	2			2		3	3	3		4		4
Permitted Phases		2			2							
Actuated Green, G (s)	22.7	22.7		22.7	22.7		15.4	15.4			16.6	
Effective Green, g (s)	22.7	22.7		22.7	22.7		15.4	15.4			16.6	
Actuated g/C Ratio	0.30	0.30		0.30	0.30		0.21	0.21			0.22	
Clearance Time (s)	4.5	4.5		4.5	4.5		4.5	4.5			4.5	
Vehicle Extension (s)	2.0	2.0		2.0	2.0		2.0	2.0			2.0	
Lane Grp Cap (vph)	1022	440		1072	481		361	732			763	
v/s Ratio Prot	c0.17			0.09			c0.11	0.08			c0.12	
v/s Ratio Perm		0.08			0.04							
v/c Ratio	0.55	0.28		0.29	0.13		0.52	0.38			0.55	
Uniform Delay, d1	21.9	19.9		20.0	19.0		26.5	25.6			25.8	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00			1.00	
Incremental Delay, d2	0.4	0.1		0.1	0.0		0.6	0.1			0.5	
Delay (s)	22.2	20.0		20.0	19.0		27.1	25.7			26.3	
Level of Service	C	B		C	B		C	C			C	
Approach Delay (s)	21.7			19.6			26.3				26.3	
Approach LOS	C			B			C				C	

Intersection Summary

HCM 2000 Control Delay	23.2	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.51		
Actuated Cycle Length (s)	74.9	Sum of lost time (s)	17.0
Intersection Capacity Utilization	61.6%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis  
 1: Sonoma Blvd & Curtola Pkwy






















Vallejo Marine Terminal  
 Existing PM with Orcem Project



Movement	SBR2	NEL2	NEL	NER	NER2
Lane Configurations					
Volume (vph)	19	6	4	5	4
Ideal Flow (vphpl)	1900	1900	1900	1900	1900
Total Lost time (s)			3.5		
Lane Util. Factor			1.00		
Frbp, ped/bikes			1.00		
Flpb, ped/bikes			1.00		
Frt			0.94		
Flt Protected			0.97		
Satd. Flow (prot)			1737		
Flt Permitted			0.97		
Satd. Flow (perm)			1737		
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	21	7	4	5	4
RTOR Reduction (vph)	0	0	19	0	0
Lane Group Flow (vph)	0	0	1	0	0
Confl. Peds. (#/hr)					
Confl. Bikes (#/hr)					
Heavy Vehicles (%)	5%	0%	0%	0%	0%
Turn Type		Prot	Prot		
Protected Phases		1	1		
Permitted Phases					
Actuated Green, G (s)			3.2		
Effective Green, g (s)			3.2		
Actuated g/C Ratio			0.04		
Clearance Time (s)			3.5		
Vehicle Extension (s)			2.0		
Lane Grp Cap (vph)			74		
v/s Ratio Prot			c0.00		
v/s Ratio Perm					
v/c Ratio			0.01		
Uniform Delay, d1			34.3		
Progression Factor			1.00		
Incremental Delay, d2			0.0		
Delay (s)			34.4		
Level of Service			C		
Approach Delay (s)			34.4		
Approach LOS			C		
<b>Intersection Summary</b>					



















HCM 2010 Signalized Intersection Summary  
2: Solano Blvd & Sonoma Blvd

Vallejo Marine Terminal  
Existing PM with Orcem Project

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	16	54	9	31	13	49	8	368	44	10	326	5
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		0.99	1.00		0.99	1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1868	1900	1845	1840	1900	1900	1857	1900	1900	1881	1900
Adj Flow Rate, veh/h	18	62	3	36	15	1	9	423	45	11	375	6
Adj No. of Lanes	1	1	0	1	2	0	1	2	0	1	2	0
Peak Hour Factor	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87
Percent Heavy Veh, %	0	2	2	3	8	8	0	2	2	0	1	1
Cap, veh/h	55	200	10	95	454	30	38	1750	185	46	1976	32
Arrive On Green	0.03	0.11	0.11	0.05	0.14	0.14	0.02	0.54	0.54	0.03	0.55	0.55
Sat Flow, veh/h	1810	1767	86	1757	3326	219	1810	3215	340	1810	3600	58
Grp Volume(v), veh/h	18	0	65	36	8	8	9	231	237	11	186	195
Grp Sat Flow(s),veh/h/ln	1810	0	1853	1757	1748	1798	1810	1764	1791	1810	1787	1870
Q Serve(g_s), s	0.5	0.0	1.8	1.1	0.2	0.2	0.3	3.8	3.8	0.3	2.9	2.9
Cycle Q Clear(g_c), s	0.5	0.0	1.8	1.1	0.2	0.2	0.3	3.8	3.8	0.3	2.9	2.9
Prop In Lane	1.00		0.05	1.00		0.12	1.00		0.19	1.00		0.03
Lane Grp Cap(c), veh/h	55	0	210	95	239	245	38	960	975	46	981	1026
V/C Ratio(X)	0.33	0.00	0.31	0.38	0.03	0.03	0.24	0.24	0.24	0.24	0.19	0.19
Avail Cap(c_a), veh/h	493	0	807	558	761	783	624	960	975	591	981	1026
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	26.2	0.0	22.5	25.2	20.6	20.6	26.5	6.6	6.6	26.3	6.3	6.3
Incr Delay (d2), s/veh	1.3	0.0	0.3	0.9	0.0	0.0	1.2	0.6	0.6	1.0	0.4	0.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.3	0.0	0.9	0.6	0.1	0.1	0.1	2.0	2.0	0.2	1.5	1.6
LnGrp Delay(d),s/veh	27.4	0.0	22.8	26.1	20.7	20.7	27.7	7.2	7.2	27.3	6.7	6.7
LnGrp LOS	C		C	C	C	C	C	A	A	C	A	A
Approach Vol, veh/h		83			52			477			392	
Approach Delay, s/veh		23.8			24.4			7.6			7.3	
Approach LOS		C			C			A			A	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	4.4	34.5	6.0	10.2	4.2	34.7	4.7	11.5				
Change Period (Y+Rc), s	3.0	4.5	3.0	4.0	3.0	4.5	3.0	4.0				
Max Green Setting (Gmax), s	18.0	30.0	17.5	24.0	19.0	30.0	15.0	24.0				
Max Q Clear Time (g_c+I1), s	2.3	5.8	3.1	3.8	2.3	4.9	2.5	2.2				
Green Ext Time (p_c), s	0.0	3.4	0.0	0.2	0.0	3.4	0.0	0.2				
<b>Intersection Summary</b>												
HCM 2010 Ctrl Delay			9.7									
HCM 2010 LOS			A									
<b>Notes</b>												
User approved pedestrian interval to be less than phase max green.												



















HCM 2010 Signalized Intersection Summary  
 3: Sonoma Blvd & Lemon St

Vallejo Marine Terminal  
 Existing PM with Orcem Project

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	10	42	23	44	30	30	14	340	113	48	324	11
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	0.98		0.98	0.98		0.98	1.00		0.98	1.00		0.97
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1799	1900	1900	1847	1900	1652	1877	1900	1900	1882	1900
Adj Flow Rate, veh/h	10	44	20	46	31	3	15	354	93	50	338	10
Adj No. of Lanes	0	1	0	0	1	0	1	2	0	1	2	0
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	5	5	5	7	7	7	15	1	1	0	1	1
Cap, veh/h	95	224	90	254	148	11	41	1389	360	124	1915	57
Arrive On Green	0.20	0.20	0.20	0.20	0.20	0.20	0.05	1.00	1.00	0.07	0.54	0.54
Sat Flow, veh/h	92	1130	452	741	744	58	1573	2789	722	1810	3542	105
Grp Volume(v), veh/h	74	0	0	80	0	0	15	224	223	50	170	178
Grp Sat Flow(s),veh/h/ln	1674	0	0	1543	0	0	1573	1783	1729	1810	1788	1859
Q Serve(g_s), s	0.0	0.0	0.0	0.0	0.0	0.0	0.5	0.0	0.0	1.4	2.6	2.6
Cycle Q Clear(g_c), s	1.9	0.0	0.0	2.0	0.0	0.0	0.5	0.0	0.0	1.4	2.6	2.6
Prop In Lane	0.14		0.27	0.57		0.04	1.00		0.42	1.00		0.06
Lane Grp Cap(c), veh/h	409	0	0	413	0	0	41	888	861	124	966	1005
V/C Ratio(X)	0.18	0.00	0.00	0.19	0.00	0.00	0.36	0.25	0.26	0.40	0.18	0.18
Avail Cap(c_a), veh/h	789	0	0	758	0	0	325	888	861	442	966	1005
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	1.00	1.00	1.00	0.97	0.97	0.97
Uniform Delay (d), s/veh	17.9	0.0	0.0	17.9	0.0	0.0	24.8	0.1	0.1	23.7	6.2	6.2
Incr Delay (d2), s/veh	0.1	0.0	0.0	0.1	0.0	0.0	2.0	0.7	0.7	0.8	0.4	0.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.9	0.0	0.0	1.0	0.0	0.0	0.2	0.2	0.2	0.7	1.3	1.4
LnGrp Delay(d),s/veh	18.0	0.0	0.0	18.0	0.0	0.0	26.8	0.7	0.8	24.5	6.6	6.6
LnGrp LOS	B			B			C	A	A	C	A	A
Approach Vol, veh/h		74			80			462			398	
Approach Delay, s/veh		18.0			18.0			1.6			8.8	
Approach LOS		B			B			A			A	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	7.7	52.8		14.6	5.4	55.1		14.6				
Change Period (Y+Rc), s	4.0	4.5		4.0	4.0	4.5		4.0				
Max Green Setting (Gmax), s	13.0	26.5		23.0	11.0	28.5		23.0				
Max Q Clear Time (g_c+I1), s	3.4	2.0		3.9	2.5	4.6		4.0				
Green Ext Time (p_c), s	0.0	7.2		0.5	0.0	7.1		0.5				
<b>Intersection Summary</b>												
HCM 2010 Ctrl Delay			6.9									
HCM 2010 LOS			A									




















HCM 2010 Signalized Intersection Summary  
6: Sonoma Blvd & Magazine St

Vallejo Marine Terminal  
Existing PM with Orcem Project

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	25	52	7	21	56	82	14	322	116	82	242	24
Number	3	8	18	7	4	14	1	6	16	5	2	12
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	0.98		0.96	0.98		0.97	1.00		0.97	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1900	1900	1900	1890	1900	1900	1872	1900	1900	1866	1900
Adj Flow Rate, veh/h	27	56	2	23	60	16	15	346	92	88	260	20
Adj No. of Lanes	0	1	0	0	1	0	1	2	0	1	2	0
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Percent Heavy Veh, %	0	0	0	0	0	0	0	2	2	0	2	2
Cap, veh/h	185	339	10	143	316	72	54	1135	297	197	1629	125
Arrive On Green	0.26	0.26	0.26	0.26	0.26	0.26	0.03	0.41	0.41	0.22	0.98	0.98
Sat Flow, veh/h	375	1308	41	233	1220	280	1810	2774	726	1810	3338	255
Grp Volume(v), veh/h	85	0	0	99	0	0	15	220	218	88	137	143
Grp Sat Flow(s),veh/h/ln	1724	0	0	1733	0	0	1810	1779	1722	1810	1773	1820
Q Serve(g_s), s	0.0	0.0	0.0	0.0	0.0	0.0	0.4	4.5	4.6	2.3	0.1	0.1
Cycle Q Clear(g_c), s	1.9	0.0	0.0	2.3	0.0	0.0	0.4	4.5	4.6	2.3	0.1	0.1
Prop In Lane	0.32		0.02	0.23		0.16	1.00		0.42	1.00		0.14
Lane Grp Cap(c), veh/h	534	0	0	531	0	0	54	728	705	197	865	889
V/C Ratio(X)	0.16	0.00	0.00	0.19	0.00	0.00	0.28	0.30	0.31	0.45	0.16	0.16
Avail Cap(c_a), veh/h	968	0	0	969	0	0	370	728	705	438	865	889
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	15.5	0.0	0.0	15.6	0.0	0.0	25.5	10.7	10.7	19.6	0.3	0.3
Incr Delay (d2), s/veh	0.1	0.0	0.0	0.1	0.0	0.0	1.0	1.1	1.1	0.6	0.4	0.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.0	0.0	0.0	1.2	0.0	0.0	0.2	2.4	2.4	1.2	0.1	0.1
LnGrp Delay(d),s/veh	15.5	0.0	0.0	15.7	0.0	0.0	26.5	11.8	11.9	20.2	0.7	0.7
LnGrp LOS	B			B			C	B	B	C	A	A
Approach Vol, veh/h		85			99			453			368	
Approach Delay, s/veh		15.5			15.7			12.3			5.4	
Approach LOS		B			B			B			A	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	5.1	52.5		17.4	9.4	48.2		17.4				
Change Period (Y+Rc), s	3.5	5.0		3.5	3.5	5.0		3.5				
Max Green Setting (Gmax), s	11.0	24.0		28.0	13.0	22.0		28.0				
Max Q Clear Time (g_c+I1), s	2.4	2.1		4.3	4.3	6.6		3.9				
Green Ext Time (p_c), s	0.0	6.2		0.6	0.1	5.2		0.6				
<b>Intersection Summary</b>												
HCM 2010 Ctrl Delay			10.4									
HCM 2010 LOS			B									



















HCM 2010 Signalized Intersection Summary  
 8: Sonoma Blvd & Maritime Academy Dr

Vallejo Marine Terminal  
 Existing PM with Orcem Project

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	110	16	14	10	39	116	15	285	42	21	194	41
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	0.99		0.98	1.00		0.98	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1900	1900	1900	1793	1900	1900	1863	1900	1810	1854	1900
Adj Flow Rate, veh/h	115	17	10	10	41	21	16	297	35	22	202	26
Adj No. of Lanes	0	1	0	0	1	1	1	2	0	1	2	0
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	0	0	0	5	5	0	0	2	2	5	3	3
Cap, veh/h	538	75	31	183	489	486	68	1027	120	86	1052	134
Arrive On Green	0.31	0.31	0.31	0.31	0.31	0.31	0.04	0.32	0.32	0.05	0.33	0.33
Sat Flow, veh/h	1072	244	100	146	1595	1586	1810	3193	373	1723	3145	400
Grp Volume(v), veh/h	142	0	0	51	0	21	16	163	169	22	112	116
Grp Sat Flow(s),veh/h/ln	1416	0	0	1740	0	1586	1810	1770	1797	1723	1761	1784
Q Serve(g_s), s	1.8	0.0	0.0	0.0	0.0	0.3	0.3	2.1	2.2	0.4	1.4	1.4
Cycle Q Clear(g_c), s	2.4	0.0	0.0	0.6	0.0	0.3	0.3	2.1	2.2	0.4	1.4	1.4
Prop In Lane	0.81		0.07	0.20		1.00	1.00		0.21	1.00		0.22
Lane Grp Cap(c), veh/h	644	0	0	672	0	486	68	569	578	86	589	596
V/C Ratio(X)	0.22	0.00	0.00	0.08	0.00	0.04	0.24	0.29	0.29	0.25	0.19	0.19
Avail Cap(c_a), veh/h	1577	0	0	1775	0	1530	1397	2277	2312	1330	2266	2295
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	8.3	0.0	0.0	7.7	0.0	7.6	14.5	7.9	7.9	14.2	7.4	7.4
Incr Delay (d2), s/veh	0.1	0.0	0.0	0.0	0.0	0.0	0.7	0.3	0.3	0.6	0.2	0.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.9	0.0	0.0	0.3	0.0	0.1	0.1	1.1	1.1	0.2	0.7	0.7
LnGrp Delay(d),s/veh	8.4	0.0	0.0	7.7	0.0	7.6	15.2	8.2	8.2	14.8	7.5	7.5
LnGrp LOS	A			A		A	B	A	A	B	A	A
Approach Vol, veh/h		142			72			348			250	
Approach Delay, s/veh		8.4			7.7			8.5			8.2	
Approach LOS		A			A			A			A	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	4.6	14.0		12.5	4.2	14.4		12.5				
Change Period (Y+Rc), s	3.0	4.0		3.0	3.0	4.0		3.0				
Max Green Setting (Gmax), s	24.0	40.0		30.0	24.0	40.0		30.0				
Max Q Clear Time (g_c+I1), s	2.4	4.2		4.4	2.3	3.4		2.6				
Green Ext Time (p_c), s	0.0	3.6		0.7	0.0	3.6		0.8				
<b>Intersection Summary</b>												
HCM 2010 Ctrl Delay			8.3									
HCM 2010 LOS			A									

























HCM 2010 Signalized Intersection Summary  
 16: Lemon St & Carlson St

Vallejo Marine Terminal  
 Existing PM with Orcem Project

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	8	320	4	36	187	65	0	0	29	195	0	11
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	0.97		0.95	0.98		0.95	1.00		0.95	0.93		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1864	1900	1900	1759	1900	1900	1900	1900	1863	1867	1900
Adj Flow Rate, veh/h	9	344	3	39	201	50	0	0	9	213	0	0
Adj No. of Lanes	0	1	0	1	1	0	0	1	0	2	1	0
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Percent Heavy Veh, %	2	2	2	0	8	8	0	0	0	2	0	0
Cap, veh/h	136	791	7	562	585	145	0	0	433	1237	529	0
Arrive On Green	0.43	0.43	0.43	0.43	0.43	0.43	0.00	0.00	0.28	0.28	0.00	0.00
Sat Flow, veh/h	14	1820	16	1025	1346	335	0	0	1529	2612	1867	0
Grp Volume(v), veh/h	356	0	0	39	0	251	0	0	9	213	0	0
Grp Sat Flow(s),veh/h/ln	1850	0	0	1025	0	1681	0	0	1529	1306	1867	0
Q Serve(g_s), s	0.0	0.0	0.0	0.8	0.0	2.8	0.0	0.0	0.1	1.8	0.0	0.0
Cycle Q Clear(g_c), s	3.8	0.0	0.0	4.6	0.0	2.8	0.0	0.0	0.1	1.9	0.0	0.0
Prop In Lane	0.03		0.01	1.00		0.20	0.00		1.00	1.00		0.00
Lane Grp Cap(c), veh/h	934	0	0	562	0	730	0	0	433	1237	529	0
V/C Ratio(X)	0.38	0.00	0.00	0.07	0.00	0.34	0.00	0.00	0.02	0.17	0.00	0.00
Avail Cap(c_a), veh/h	2526	0	0	1455	0	2195	0	0	1618	3261	1976	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	1.00	0.00	0.00	1.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	5.6	0.0	0.0	7.2	0.0	5.3	0.0	0.0	7.3	8.0	0.0	0.0
Incr Delay (d2), s/veh	0.3	0.0	0.0	0.1	0.0	0.3	0.0	0.0	0.0	0.1	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.9	0.0	0.0	0.2	0.0	1.3	0.0	0.0	0.1	0.7	0.0	0.0
LnGrp Delay(d),s/veh	5.9	0.0	0.0	7.3	0.0	5.6	0.0	0.0	7.3	8.1	0.0	0.0
LnGrp LOS	A			A		A			A	A		
Approach Vol, veh/h		356			290			9			213	
Approach Delay, s/veh		5.9			5.8			7.3			8.1	
Approach LOS		A			A			A			A	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		16.3		12.0		16.3		12.0				
Change Period (Y+Rc), s		4.0		4.0		4.0		4.0				
Max Green Setting (Gmax), s		37.0		30.0		37.0		30.0				
Max Q Clear Time (g_c+I1), s		5.8		3.9		6.6		2.1				
Green Ext Time (p_c), s		4.4		0.8		4.3		0.8				
<b>Intersection Summary</b>												
HCM 2010 Ctrl Delay			6.4									
HCM 2010 LOS			A									
<b>Notes</b>												
User approved volume balancing among the lanes for turning movement.												

HCM 2010 Signalized Intersection Summary  
 17: Lemon St & Curtola Pkwy

Vallejo Marine Terminal  
 Existing PM with Orcem Project

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	53	145	429	102	85	22	198	569	155	38	784	24
Number	3	8	18	7	4	14	1	6	16	5	2	12
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		0.92	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1759	1881	1881	1881	1863	1900	1743	1881	1900	1900	1846	1900
Adj Flow Rate, veh/h	55	191	177	105	88	8	204	587	0	39	808	0
Adj No. of Lanes	1	1	1	1	1	1	1	2	0	1	2	0
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %	8	1	1	1	2	0	9	1	1	0	3	3
Cap, veh/h	76	316	265	136	370	295	244	1678	0	67	1261	0
Arrive On Green	0.05	0.17	0.17	0.08	0.20	0.20	0.15	0.47	0.00	0.04	0.36	0.00
Sat Flow, veh/h	1675	1881	1578	1792	1863	1488	1660	3668	0	1810	3600	0
Grp Volume(v), veh/h	55	191	177	105	88	8	204	587	0	39	808	0
Grp Sat Flow(s),veh/h/ln	1675	1881	1578	1792	1863	1488	1660	1787	0	1810	1754	0
Q Serve(g_s), s	2.5	7.1	8.0	4.4	3.0	0.3	9.0	7.9	0.0	1.6	14.5	0.0
Cycle Q Clear(g_c), s	2.5	7.1	8.0	4.4	3.0	0.3	9.0	7.9	0.0	1.6	14.5	0.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.00	1.00		0.00
Lane Grp Cap(c), veh/h	76	316	265	136	370	295	244	1678	0	67	1261	0
V/C Ratio(X)	0.73	0.61	0.67	0.77	0.24	0.03	0.84	0.35	0.00	0.58	0.64	0.00
Avail Cap(c_a), veh/h	553	870	729	592	861	688	548	1678	0	598	1622	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	35.7	29.2	29.5	34.3	25.5	24.4	31.4	12.7	0.0	35.9	20.2	0.0
Incr Delay (d2), s/veh	4.8	1.9	3.0	3.4	0.4	0.0	2.9	0.2	0.0	3.0	0.6	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.2	3.9	3.7	2.3	1.6	0.1	4.3	3.9	0.0	0.9	7.1	0.0
LnGrp Delay(d),s/veh	40.5	31.1	32.6	37.8	25.9	24.5	34.3	12.9	0.0	38.8	20.8	0.0
LnGrp LOS	D	C	C	D	C	C	C	B		D	C	
Approach Vol, veh/h		423			201			791			847	
Approach Delay, s/veh		32.9			32.1			18.4			21.6	
Approach LOS		C			C			B			C	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	15.1	33.2	7.4	19.9	6.8	41.5	9.8	17.6				
Change Period (Y+Rc), s	4.0	6.0	4.0	4.9	4.0	6.0	4.0	4.9				
Max Green Setting (Gmax), s	25.0	35.0	25.0	35.0	25.0	35.0	25.0	35.0				
Max Q Clear Time (g_c+I1), s	11.0	16.5	4.5	5.0	3.6	9.9	6.4	10.0				
Green Ext Time (p_c), s	0.2	10.7	0.1	2.6	0.0	13.4	0.1	2.5				
<b>Intersection Summary</b>												
HCM 2010 Ctrl Delay			23.6									
HCM 2010 LOS			C									
<b>Notes</b>												
User approved volume balancing among the lanes for turning movement.												



**Intersection**

Int Delay, s/veh 0.6

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR
Vol, veh/h	13	3	5	4	2	5	3	453	3
Conflicting Peds, #/hr	0	0	0	0	0	0	2	0	5
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-
Peak Hour Factor	97	97	97	97	97	97	97	97	97
Heavy Vehicles, %	15	0	0	0	0	0	0	2	0
Mvmt Flow	13	3	5	4	2	5	3	467	3

Major/Minor	Minor2			Minor1			Major1		
Conflicting Flow All	639	874	202	678	879	240	394	0	0
Stage 1	398	398	-	475	475	-	-	-	-
Stage 2	241	476	-	203	404	-	-	-	-
Critical Hdwy	7.8	6.5	6.9	7.5	6.5	6.9	4.1	-	-
Critical Hdwy Stg 1	6.8	5.5	-	6.5	5.5	-	-	-	-
Critical Hdwy Stg 2	6.8	5.5	-	6.5	5.5	-	-	-	-
Follow-up Hdwy	3.65	4	3.3	3.5	4	3.3	2.2	-	-
Pot Cap-1 Maneuver	336	290	811	342	288	767	1176	-	-
Stage 1	565	606	-	545	561	-	-	-	-
Stage 2	705	560	-	786	603	-	-	-	-
Platoon blocked, %									
Mov Cap-1 Maneuver	328	287	808	333	285	764	1171	-	-
Mov Cap-2 Maneuver	328	287	-	333	285	-	-	-	-
Stage 1	563	602	-	543	559	-	-	-	-
Stage 2	693	558	-	769	599	-	-	-	-

Approach	EB	WB	NB
HCM Control Delay, s	15.2	13.6	0.1
HCM LOS	C	B	

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1171	-	-	373	430	1097	-	-
HCM Lane V/C Ratio	0.003	-	-	0.058	0.026	0.005	-	-
HCM Control Delay (s)	8.1	0	-	15.2	13.6	8.3	0	-
HCM Lane LOS	A	A	-	C	B	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0.2	0.1	0	-	-

**Intersection**

Int Delay, s/veh

Movement	SBL	SBT	SBR
Vol, veh/h	5	370	12
Conflicting Peds, #/hr	5	0	2
Sign Control	Free	Free	Free
RT Channelized	-	-	None
Storage Length	-	-	-
Veh in Median Storage, #	-	0	-
Grade, %	-	0	-
Peak Hour Factor	97	97	97
Heavy Vehicles, %	0	2	0
Mvmt Flow	5	381	12

**Major/Minor Major2**

Conflicting Flow All	470	0	0
Stage 1	-	-	-
Stage 2	-	-	-
Critical Hdwy	4.1	-	-
Critical Hdwy Stg 1	-	-	-
Critical Hdwy Stg 2	-	-	-
Follow-up Hdwy	2.2	-	-
Pot Cap-1 Maneuver	1102	-	-
Stage 1	-	-	-
Stage 2	-	-	-
Platoon blocked, %		-	-
Mov Cap-1 Maneuver	1097	-	-
Mov Cap-2 Maneuver	-	-	-
Stage 1	-	-	-
Stage 2	-	-	-

**Approach SB**

HCM Control Delay, s 0.1

HCM LOS

**Minor Lane/Major Mvmt**

**Intersection**

Int Delay, s/veh 1.1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR
Vol, veh/h	37	1	5	2	0	10	11	410	4
Conflicting Peds, #/hr	0	0	1	1	0	0	1	0	2
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-
Peak Hour Factor	97	97	97	97	97	97	97	97	97
Heavy Vehicles, %	3	0	0	0	0	0	0	2	0
Mvmt Flow	38	1	5	2	0	10	11	423	4

Major/Minor	Minor2	Minor1	Major1
Conflicting Flow All	618	833	191
Stage 1	383	383	-
Stage 2	235	450	-
Critical Hdwy	7.56	6.5	6.9
Critical Hdwy Stg 1	6.56	5.5	-
Critical Hdwy Stg 2	6.56	5.5	-
Follow-up Hdwy	3.53	4	3.3
Pot Cap-1 Maneuver	371	307	825
Stage 1	609	616	-
Stage 2	744	575	-
Platoon blocked, %			
Mov Cap-1 Maneuver	359	299	823
Mov Cap-2 Maneuver	359	299	-
Stage 1	601	609	-
Stage 2	724	568	-

Approach	EB	WB	NB
HCM Control Delay, s	15.7	10.6	0.2
HCM LOS	C	B	

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1191	-	-	382	656	1140	-	-
HCM Lane V/C Ratio	0.01	-	-	0.116	0.019	0.009	-	-
HCM Control Delay (s)	8.1	0	-	15.7	10.6	8.2	0	-
HCM Lane LOS	A	A	-	C	B	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0.4	0.1	0	-	-

**Intersection**

Int Delay, s/veh

Movement	SBL	SBT	SBR
Vol, veh/h	10	337	28
Conflicting Peds, #/hr	2	0	1
Sign Control	Free	Free	Free
RT Channelized	-	-	None
Storage Length	-	-	-
Veh in Median Storage, #	-	0	-
Grade, %	-	0	-
Peak Hour Factor	97	97	97
Heavy Vehicles, %	0	2	0
Mvmt Flow	10	347	29

**Major/Minor Major2**

Conflicting Flow All	428	0	0
Stage 1	-	-	-
Stage 2	-	-	-
Critical Hdwy	4.1	-	-
Critical Hdwy Stg 1	-	-	-
Critical Hdwy Stg 2	-	-	-
Follow-up Hdwy	2.2	-	-
Pot Cap-1 Maneuver	1142	-	-
Stage 1	-	-	-
Stage 2	-	-	-
Platoon blocked, %		-	-
Mov Cap-1 Maneuver	1140	-	-
Mov Cap-2 Maneuver	-	-	-
Stage 1	-	-	-
Stage 2	-	-	-

**Approach SB**

HCM Control Delay, s	0.2
HCM LOS	

**Minor Lane/Major Mvmt**

**Intersection**

Int Delay, s/veh 2

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Vol, veh/h	39	19	100	413	235	33
Conflicting Peds, #/hr	0	0	2	0	0	2
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	60	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	0	0	0	2	2	0
Mvmt Flow	41	20	105	435	247	35

Major/Minor	Minor2	Major1	Major2
Conflicting Flow All	693	143	282
Stage 1	265	-	-
Stage 2	428	-	-
Critical Hdwy	6.8	6.9	4.1
Critical Hdwy Stg 1	5.8	-	-
Critical Hdwy Stg 2	5.8	-	-
Follow-up Hdwy	3.5	3.3	2.2
Pot Cap-1 Maneuver	382	885	1292
Stage 1	761	-	-
Stage 2	631	-	-
Platoon blocked, %			-
Mov Cap-1 Maneuver	351	884	1290
Mov Cap-2 Maneuver	351	-	-
Stage 1	761	-	-
Stage 2	580	-	-

Approach	EB	NB	SB
HCM Control Delay, s	14.6	1.6	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1290	-	437	-	-
HCM Lane V/C Ratio	0.082	-	0.14	-	-
HCM Control Delay (s)	8	-	14.6	-	-
HCM Lane LOS	A	-	B	-	-
HCM 95th %tile Q(veh)	0.3	-	0.5	-	-

**Intersection**

Int Delay, s/veh 0.6

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR
Vol, veh/h	0	52	0	1	22	11	0	0	1
Conflicting Peds, #/hr	1	0	0	0	0	1	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-
Peak Hour Factor	80	80	80	80	80	80	80	80	80
Heavy Vehicles, %	0	8	0	0	19	0	0	0	0
Mvmt Flow	0	65	0	1	28	14	0	0	1

Major/Minor	Major1	Major2	Minor1						
Conflicting Flow All	41	0	0	65	0	0	102	109	66
Stage 1	-	-	-	-	-	-	65	65	-
Stage 2	-	-	-	-	-	-	37	44	-
Critical Hdwy	4.1	-	-	4.1	-	-	7.1	6.5	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-
Follow-up Hdwy	2.2	-	-	2.2	-	-	3.5	4	3.3
Pot Cap-1 Maneuver	1581	-	-	1550	-	-	884	785	1003
Stage 1	-	-	-	-	-	-	951	845	-
Stage 2	-	-	-	-	-	-	984	862	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1580	-	-	1549	-	-	883	784	1002
Mov Cap-2 Maneuver	-	-	-	-	-	-	883	784	-
Stage 1	-	-	-	-	-	-	951	845	-
Stage 2	-	-	-	-	-	-	982	861	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.2	8.6
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	1002	1580	-	-	1549	-	-	879
HCM Lane V/C Ratio	0.001	-	-	-	0.001	-	-	0.006
HCM Control Delay (s)	8.6	0	-	-	7.3	0	-	9.1
HCM Lane LOS	A	A	-	-	A	A	-	A
HCM 95th %tile Q(veh)	0	0	-	-	0	-	-	0

**Intersection**

Int Delay, s/veh

Movement	SBL	SBT	SBR
Vol, veh/h	4	0	0
Conflicting Peds, #/hr	0	0	0
Sign Control	Stop	Stop	Stop
RT Channelized	-	-	None
Storage Length	-	-	-
Veh in Median Storage, #	-	0	-
Grade, %	-	0	-
Peak Hour Factor	80	80	80
Heavy Vehicles, %	0	0	0
Mvmt Flow	5	0	0

**Major/Minor**

	Minor2		
Conflicting Flow All	103	102	35
Stage 1	37	37	-
Stage 2	66	65	-
Critical Hdwy	7.1	6.5	6.2
Critical Hdwy Stg 1	6.1	5.5	-
Critical Hdwy Stg 2	6.1	5.5	-
Follow-up Hdwy	3.5	4	3.3
Pot Cap-1 Maneuver	882	792	1044
Stage 1	984	868	-
Stage 2	950	845	-
Platoon blocked, %			
Mov Cap-1 Maneuver	879	791	1043
Mov Cap-2 Maneuver	879	791	-
Stage 1	984	867	-
Stage 2	948	845	-

**Approach**

Approach	SB
HCM Control Delay, s	9.1
HCM LOS	A

**Minor Lane/Major Mvmt**

**Intersection**

Int Delay, s/veh 1.4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR
Vol, veh/h	0	59	0	6	36	7	1	0	12
Conflicting Peds, #/hr	0	0	1	1	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-
Peak Hour Factor	80	80	80	80	80	80	80	80	80
Heavy Vehicles, %	0	7	0	0	12	0	0	0	0
Mvmt Flow	0	74	0	8	45	9	1	0	15

Major/Minor	Major1	Major2	Minor1						
Conflicting Flow All	54	0	0	74	0	0	139	143	75
Stage 1	-	-	-	-	-	-	74	74	-
Stage 2	-	-	-	-	-	-	65	69	-
Critical Hdwy	4.1	-	-	4.1	-	-	7.1	6.5	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-
Follow-up Hdwy	2.2	-	-	2.2	-	-	3.5	4	3.3
Pot Cap-1 Maneuver	1564	-	-	1538	-	-	836	752	992
Stage 1	-	-	-	-	-	-	940	837	-
Stage 2	-	-	-	-	-	-	951	841	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1563	-	-	1537	-	-	831	748	991
Mov Cap-2 Maneuver	-	-	-	-	-	-	831	748	-
Stage 1	-	-	-	-	-	-	940	837	-
Stage 2	-	-	-	-	-	-	944	837	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.9	8.7
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	977	1563	-	-	1537	-	-	753
HCM Lane V/C Ratio	0.017	-	-	-	0.005	-	-	0.002
HCM Control Delay (s)	8.7	0	-	-	7.4	0	-	9.8
HCM Lane LOS	A	A	-	-	A	A	-	A
HCM 95th %tile Q(veh)	0.1	0	-	-	0	-	-	0



**Intersection**

Int Delay, s/veh

Movement	SBL	SBT	SBR
Vol, veh/h	0	1	0
Conflicting Peds, #/hr	0	0	0
Sign Control	Stop	Stop	Stop
RT Channelized	-	-	None
Storage Length	-	-	-
Veh in Median Storage, #	-	0	-
Grade, %	-	0	-
Peak Hour Factor	80	80	80
Heavy Vehicles, %	0	0	0
Mvmt Flow	0	1	0

**Major/Minor**

**Minor2**

Conflicting Flow All	145	138	50
Stage 1	64	64	-
Stage 2	81	74	-
Critical Hdwy	7.1	6.5	6.2
Critical Hdwy Stg 1	6.1	5.5	-
Critical Hdwy Stg 2	6.1	5.5	-
Follow-up Hdwy	3.5	4	3.3
Pot Cap-1 Maneuver	828	757	1024
Stage 1	952	846	-
Stage 2	932	837	-
Platoon blocked, %			
Mov Cap-1 Maneuver	812	753	1023
Mov Cap-2 Maneuver	812	753	-
Stage 1	952	842	-
Stage 2	917	837	-

**Approach**

SB

HCM Control Delay, s	9.8
HCM LOS	A

**Minor Lane/Major Mvmt**

**Intersection**

Int Delay, s/veh 0.8

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR
Vol, veh/h	3	198	3	10	102	7	2	1	4
Conflicting Peds, #/hr	5	0	4	4	0	5	3	0	4
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-
Peak Hour Factor	88	88	88	88	88	88	88	88	88
Heavy Vehicles, %	0	3	0	0	3	14	0	0	0
Mvmt Flow	3	225	3	11	116	8	2	1	5

Major/Minor	Major1	Major2	Minor1						
Conflicting Flow All	128	0	0	232	0	0	388	389	236
Stage 1	-	-	-	-	-	-	238	238	-
Stage 2	-	-	-	-	-	-	150	151	-
Critical Hdwy	4.1	-	-	4.1	-	-	7.1	6.5	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-
Follow-up Hdwy	2.2	-	-	2.2	-	-	3.5	4	3.3
Pot Cap-1 Maneuver	1470	-	-	1348	-	-	574	549	808
Stage 1	-	-	-	-	-	-	770	712	-
Stage 2	-	-	-	-	-	-	857	776	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1464	-	-	1342	-	-	560	539	802
Mov Cap-2 Maneuver	-	-	-	-	-	-	560	539	-
Stage 1	-	-	-	-	-	-	766	708	-
Stage 2	-	-	-	-	-	-	839	766	-

Approach	EB	WB	NB
HCM Control Delay, s	0.1	0.6	10.4
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	672	1464	-	-	1342	-	-	659
HCM Lane V/C Ratio	0.012	0.002	-	-	0.008	-	-	0.017
HCM Control Delay (s)	10.4	7.5	0	-	7.7	0	-	10.6
HCM Lane LOS	B	A	A	-	A	A	-	B
HCM 95th %tile Q(veh)	0	0	-	-	0	-	-	0.1

**Intersection**

Int Delay, s/veh

Movement	SBL	SBT	SBR
Vol, veh/h	4	2	4
Conflicting Peds, #/hr	4	0	3
Sign Control	Stop	Stop	Stop
RT Channelized	-	-	None
Storage Length	-	-	-
Veh in Median Storage, #	-	0	-
Grade, %	-	0	-
Peak Hour Factor	88	88	88
Heavy Vehicles, %	0	0	0
Mvmt Flow	5	2	5

**Major/Minor**

	Minor2		
Conflicting Flow All	387	386	129
Stage 1	147	147	-
Stage 2	240	239	-
Critical Hdwy	7.1	6.5	6.2
Critical Hdwy Stg 1	6.1	5.5	-
Critical Hdwy Stg 2	6.1	5.5	-
Follow-up Hdwy	3.5	4	3.3
Pot Cap-1 Maneuver	575	551	926
Stage 1	860	779	-
Stage 2	768	711	-
Platoon blocked, %			
Mov Cap-1 Maneuver	562	541	919
Mov Cap-2 Maneuver	562	541	-
Stage 1	855	769	-
Stage 2	758	707	-

**Approach**

Approach	SB
HCM Control Delay, s	10.6
HCM LOS	B

**Minor Lane/Major Mvmt**

**Intersection**

Int Delay, s/veh 4.3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR
Vol, veh/h	9	186	8	19	106	35	3	44	18
Conflicting Peds, #/hr	3	0	0	0	0	3	1	0	4
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-
Peak Hour Factor	94	94	94	94	94	94	94	94	94
Heavy Vehicles, %	0	3	0	5	4	6	0	0	0
Mvmt Flow	10	198	9	20	113	37	3	47	19

Major/Minor	Major1	Major2	Minor1						
Conflicting Flow All	154	0	0	210	0	0	424	419	209
Stage 1	-	-	-	-	-	-	225	225	-
Stage 2	-	-	-	-	-	-	199	194	-
Critical Hdwy	4.1	-	-	4.15	-	-	7.1	6.5	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-
Follow-up Hdwy	2.2	-	-	2.245	-	-	3.5	4	3.3
Pot Cap-1 Maneuver	1439	-	-	1343	-	-	544	528	836
Stage 1	-	-	-	-	-	-	782	721	-
Stage 2	-	-	-	-	-	-	807	744	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1435	-	-	1340	-	-	497	512	831
Mov Cap-2 Maneuver	-	-	-	-	-	-	497	512	-
Stage 1	-	-	-	-	-	-	773	713	-
Stage 2	-	-	-	-	-	-	745	730	-

Approach	EB	WB	NB
HCM Control Delay, s	0.3	0.9	12.2
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	572	1435	-	-	1340	-	-	517
HCM Lane V/C Ratio	0.121	0.007	-	-	0.015	-	-	0.191
HCM Control Delay (s)	12.2	7.5	0	-	7.7	0	-	13.6
HCM Lane LOS	B	A	A	-	A	A	-	B
HCM 95th %tile Q(veh)	0.4	0	-	-	0	-	-	0.7

**Intersection**

Int Delay, s/veh

Movement	SBL	SBT	SBR
Vol, veh/h	49	34	10
Conflicting Peds, #/hr	4	0	1
Sign Control	Stop	Stop	Stop
RT Channelized	-	-	None
Storage Length	-	-	-
Veh in Median Storage, #	-	0	-
Grade, %	-	0	-
Peak Hour Factor	94	94	94
Heavy Vehicles, %	2	0	0
Mvmt Flow	52	36	11

**Major/Minor**

	Minor2		
Conflicting Flow All	434	406	138
Stage 1	176	176	-
Stage 2	258	230	-
Critical Hdwy	7.12	6.5	6.2
Critical Hdwy Stg 1	6.12	5.5	-
Critical Hdwy Stg 2	6.12	5.5	-
Follow-up Hdwy	3.518	4	3.3
Pot Cap-1 Maneuver	532	537	916
Stage 1	826	757	-
Stage 2	747	718	-
Platoon blocked, %			
Mov Cap-1 Maneuver	472	521	911
Mov Cap-2 Maneuver	472	521	-
Stage 1	817	742	-
Stage 2	675	710	-

**Approach**

	SB
HCM Control Delay, s	13.6
HCM LOS	B

**Minor Lane/Major Mvmt**

**Intersection**

Int Delay, s/veh 1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR
Vol, veh/h	3	246	5	18	148	0	6	0	18
Conflicting Peds, #/hr	1	0	1	1	0	1	4	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	0	2	0	0	5	0	0	0	0
Mvmt Flow	3	273	6	20	164	0	7	0	20

Major/Minor	Major1	Major2	Minor1						
Conflicting Flow All	168	0	0	283	0	0	496	495	281
Stage 1	-	-	-	-	-	-	287	287	-
Stage 2	-	-	-	-	-	-	209	208	-
Critical Hdwy	4.1	-	-	4.1	-	-	7.1	6.5	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-
Follow-up Hdwy	2.2	-	-	2.2	-	-	3.5	4	3.3
Pot Cap-1 Maneuver	1422	-	-	1291	-	-	487	479	763
Stage 1	-	-	-	-	-	-	725	678	-
Stage 2	-	-	-	-	-	-	798	734	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1421	-	-	1290	-	-	477	466	760
Mov Cap-2 Maneuver	-	-	-	-	-	-	477	466	-
Stage 1	-	-	-	-	-	-	720	674	-
Stage 2	-	-	-	-	-	-	783	719	-

Approach	EB	WB	NB
HCM Control Delay, s	0.1	0.8	10.7
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	662	1421	-	-	1290	-	-	876
HCM Lane V/C Ratio	0.04	0.002	-	-	0.016	-	-	0.001
HCM Control Delay (s)	10.7	7.5	0	-	7.8	0	-	9.1
HCM Lane LOS	B	A	A	-	A	A	-	A
HCM 95th %tile Q(veh)	0.1	0	-	-	0	-	-	0

**Intersection**

Int Delay, s/veh

Movement	SBL	SBT	SBR
Vol, veh/h	0	0	1
Conflicting Peds, #/hr	0	0	4
Sign Control	Stop	Stop	Stop
RT Channelized	-	-	None
Storage Length	-	-	-
Veh in Median Storage, #	-	0	-
Grade, %	-	0	-
Peak Hour Factor	90	90	90
Heavy Vehicles, %	0	0	0
Mvmt Flow	0	0	1

**Major/Minor**

**Minor2**

Conflicting Flow All	505	498	169
Stage 1	208	208	-
Stage 2	297	290	-
Critical Hdwy	7.1	6.5	6.2
Critical Hdwy Stg 1	6.1	5.5	-
Critical Hdwy Stg 2	6.1	5.5	-
Follow-up Hdwy	3.5	4	3.3
Pot Cap-1 Maneuver	481	477	880
Stage 1	799	734	-
Stage 2	716	676	-
Platoon blocked, %			
Mov Cap-1 Maneuver	459	464	876
Mov Cap-2 Maneuver	459	464	-
Stage 1	794	719	-
Stage 2	694	672	-

**Approach**

SB

HCM Control Delay, s	9.1
HCM LOS	A

**Minor Lane/Major Mvmt**

**Intersection**

Int Delay, s/veh 0.1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR
Vol, veh/h	0	265	1	0	169	4	0	0	0
Conflicting Peds, #/hr	1	0	2	2	0	1	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-
Peak Hour Factor	87	87	87	87	87	87	87	87	87
Heavy Vehicles, %	0	2	0	0	5	0	0	0	0
Mvmt Flow	0	305	1	0	194	5	0	0	0

Major/Minor	Major1	Major2	Minor1						
Conflicting Flow All	199	0	0	306	0	0	503	504	307
Stage 1	-	-	-	-	-	-	305	305	-
Stage 2	-	-	-	-	-	-	198	199	-
Critical Hdwy	4.1	-	-	4.1	-	-	7.1	6.5	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-
Follow-up Hdwy	2.2	-	-	2.2	-	-	3.5	4	3.3
Pot Cap-1 Maneuver	1385	-	-	1266	-	-	482	473	738
Stage 1	-	-	-	-	-	-	709	666	-
Stage 2	-	-	-	-	-	-	808	740	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1383	-	-	1264	-	-	480	473	737
Mov Cap-2 Maneuver	-	-	-	-	-	-	480	473	-
Stage 1	-	-	-	-	-	-	709	666	-
Stage 2	-	-	-	-	-	-	804	740	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0	0
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	-	1383	-	-	1264	-	-	676
HCM Lane V/C Ratio	-	-	-	-	-	-	-	0.005
HCM Control Delay (s)	0	0	-	-	0	-	-	10.4
HCM Lane LOS	A	A	-	-	A	-	-	B
HCM 95th %tile Q(veh)	-	0	-	-	0	-	-	0



**Intersection**

Int Delay, s/veh

Movement	SBL	SBT	SBR
Vol, veh/h	1	0	2
Conflicting Peds, #/hr	0	0	0
Sign Control	Stop	Stop	Stop
RT Channelized	-	-	None
Storage Length	-	-	-
Veh in Median Storage, #	-	0	-
Grade, %	-	0	-
Peak Hour Factor	87	87	87
Heavy Vehicles, %	0	0	0
Mvmt Flow	1	0	2

Major/Minor	Minor2		
Conflicting Flow All	502	503	199
Stage 1	197	197	-
Stage 2	305	306	-
Critical Hdwy	7.1	6.5	6.2
Critical Hdwy Stg 1	6.1	5.5	-
Critical Hdwy Stg 2	6.1	5.5	-
Follow-up Hdwy	3.5	4	3.3
Pot Cap-1 Maneuver	483	474	847
Stage 1	809	742	-
Stage 2	709	665	-
Platoon blocked, %			
Mov Cap-1 Maneuver	482	474	846
Mov Cap-2 Maneuver	482	474	-
Stage 1	809	742	-
Stage 2	708	665	-

**Approach** SB

HCM Control Delay, s	10.4
HCM LOS	B

**Minor Lane/Major Mvmt**

**Intersection**

Int Delay, s/veh 1

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Vol, veh/h	276	6	15	173	5	32
Conflicting Peds, #/hr	0	5	5	0	0	2
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	84	84	84	84	84	84
Heavy Vehicles, %	1	17	36	5	0	0
Mvmt Flow	329	7	18	206	6	38

Major/Minor	Major1	Major2	Minor1
Conflicting Flow All	0	0	338
Stage 1	-	-	334
Stage 2	-	-	242
Critical Hdwy	-	-	4.46
Critical Hdwy Stg 1	-	-	5.4
Critical Hdwy Stg 2	-	-	5.4
Follow-up Hdwy	-	-	2.524
Pot Cap-1 Maneuver	-	-	1054
Stage 1	-	-	730
Stage 2	-	-	803
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	-	-	1050
Mov Cap-2 Maneuver	-	-	-
Stage 1	-	-	729
Stage 2	-	-	784

Approach	EB	WB	NB
HCM Control Delay, s	0	0.7	10.8
HCM LOS			B

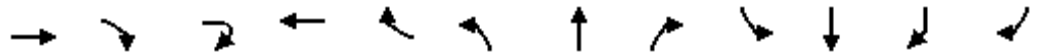
Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	660	-	-	1050	-
HCM Lane V/C Ratio	0.067	-	-	0.017	-
HCM Control Delay (s)	10.8	-	-	8.5	0
HCM Lane LOS	B	-	-	A	A
HCM 95th %tile Q(veh)	0.2	-	-	0.1	-

**APPENDIX L.4.4 — EXISTING PLUS COMBINED PROJECTS**



HCM Signalized Intersection Capacity Analysis  
1: Sonoma Blvd & Curtola Pkwy

Vallejo Marine Terminal  
Existing AM with VMT and Orcem Projects



Movement	EBT	EBR	EBR2	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	SBR2
Lane Configurations	↑↑	←		↑↑	←	←	↑↑			←↑		
Volume (vph)	246	103	2	404	159	185	170	5	139	143	3	12
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	4.5		4.5	4.5	4.5	4.5			4.5		
Lane Util. Factor	0.91	0.91		0.95	1.00	1.00	0.95			0.95		
Frbp, ped/bikes	1.00	1.00		1.00	0.99	1.00	1.00			1.00		
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00			1.00		
Frt	0.99	0.85		1.00	0.85	1.00	1.00			0.99		
Flt Protected	1.00	1.00		1.00	1.00	0.95	1.00			0.98		
Satd. Flow (prot)	3336	1414		3539	1593	1752	3507			3389		
Flt Permitted	1.00	1.00		1.00	1.00	0.95	1.00			0.98		
Satd. Flow (perm)	3336	1414		3539	1593	1752	3507			3389		
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.92
Adj. Flow (vph)	265	111	2	434	171	199	183	5	149	154	3	13
RTOR Reduction (vph)	0	53	0	0	127	0	2	0	0	2	0	0
Lane Group Flow (vph)	276	49	0	434	44	199	186	0	0	317	0	0
Confl. Peds. (#/hr)						2		2	2		2	
Confl. Bikes (#/hr)					2							
Heavy Vehicles (%)	3%	4%	0%	2%	0%	3%	2%	20%	2%	4%	0%	8%
Turn Type	NA	Perm		NA	Perm	Split	NA		Split	NA		
Protected Phases	2			2		3	3		4	4		
Permitted Phases		2			2							
Actuated Green, G (s)	15.9	15.9		15.9	15.9	13.9	13.9			14.3		
Effective Green, g (s)	15.9	15.9		15.9	15.9	13.9	13.9			14.3		
Actuated g/C Ratio	0.25	0.25		0.25	0.25	0.22	0.22			0.23		
Clearance Time (s)	4.5	4.5		4.5	4.5	4.5	4.5			4.5		
Vehicle Extension (s)	2.0	2.0		2.0	2.0	2.0	2.0			2.0		
Lane Grp Cap (vph)	850	360		901	405	390	781			776		
v/s Ratio Prot	0.08			c0.12		c0.11	0.05			c0.09		
v/s Ratio Perm		0.03			0.03							
v/c Ratio	0.32	0.14		0.48	0.11	0.51	0.24			0.41		
Uniform Delay, d1	18.9	17.9		19.7	17.8	21.3	19.9			20.5		
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00			1.00		
Incremental Delay, d2	0.1	0.1		0.1	0.0	0.5	0.1			0.1		
Delay (s)	19.0	18.0		19.9	17.9	21.7	20.0			20.6		
Level of Service	B	B		B	B	C	B			C		
Approach Delay (s)	18.7			19.3			20.9			20.6		
Approach LOS	B			B			C			C		

Intersection Summary

HCM 2000 Control Delay	19.8	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.45		
Actuated Cycle Length (s)	62.4	Sum of lost time (s)	17.0
Intersection Capacity Utilization	56.4%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis  
 1: Sonoma Blvd & Curtola Pkwy

Vallejo Marine Terminal  
 Existing AM with VMT and Orcem Projects























Movement	NEL2	NEL	NER2
Lane Configurations			
Volume (vph)	2	2	2
Ideal Flow (vphpl)	1900	1900	1900
Total Lost time (s)		3.5	
Lane Util. Factor		1.00	
Frbp, ped/bikes		1.00	
Flpb, ped/bikes		1.00	
Frt		0.95	
Flt Protected		0.97	
Satd. Flow (prot)		1756	
Flt Permitted		0.97	
Satd. Flow (perm)		1756	
Peak-hour factor, PHF	0.92	0.92	0.92
Adj. Flow (vph)	2	2	2
RTOR Reduction (vph)	0	6	0
Lane Group Flow (vph)	0	0	0
Confl. Peds. (#/hr)			
Confl. Bikes (#/hr)			
Heavy Vehicles (%)	0%	0%	0%
Turn Type	Prot	Prot	
Protected Phases	1	1	
Permitted Phases			
Actuated Green, G (s)		1.3	
Effective Green, g (s)		1.3	
Actuated g/C Ratio		0.02	
Clearance Time (s)		3.5	
Vehicle Extension (s)		2.0	
Lane Grp Cap (vph)		36	
v/s Ratio Prot		c0.00	
v/s Ratio Perm			
v/c Ratio		0.00	
Uniform Delay, d1		29.9	
Progression Factor		1.00	
Incremental Delay, d2		0.0	
Delay (s)		29.9	
Level of Service		C	
Approach Delay (s)		29.9	
Approach LOS		C	
<b>Intersection Summary</b>			

# HCM 2010 Signalized Intersection Summary

## 2: Solano Blvd & Sonoma Blvd



















Vallejo Marine Terminal  
Existing AM with VMT and Orcem Projects

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	5	8	14	26	16	14	12	347	48	11	225	16
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		0.99	1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1583	1545	1900	1696	1840	1900	1900	1863	1900	1610	1841	1900
Adj Flow Rate, veh/h	5	9	0	28	17	0	13	377	45	12	245	14
Adj No. of Lanes	1	1	0	1	2	0	1	2	0	1	2	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	20	13	13	12	0	0	0	2	2	18	3	3
Cap, veh/h	14	91	0	73	329	0	54	1866	221	42	1965	112
Arrive On Green	0.01	0.06	0.00	0.04	0.09	0.00	0.03	0.59	0.59	0.03	0.58	0.58
Sat Flow, veh/h	1508	1545	0	1616	3587	0	1810	3182	377	1533	3362	191
Grp Volume(v), veh/h	5	9	0	28	17	0	13	208	214	12	127	132
Grp Sat Flow(s),veh/h/ln	1508	1545	0	1616	1748	0	1810	1770	1790	1533	1749	1804
Q Serve(g_s), s	0.2	0.3	0.0	0.9	0.2	0.0	0.4	2.8	2.9	0.4	1.7	1.7
Cycle Q Clear(g_c), s	0.2	0.3	0.0	0.9	0.2	0.0	0.4	2.8	2.9	0.4	1.7	1.7
Prop In Lane	1.00		0.00	1.00		0.00	1.00		0.21	1.00		0.11
Lane Grp Cap(c), veh/h	14	91	0	73	329	0	54	1038	1050	42	1022	1054
V/C Ratio(X)	0.35	0.10	0.00	0.39	0.05	0.00	0.24	0.20	0.20	0.28	0.12	0.13
Avail Cap(c_a), veh/h	441	722	0	551	1634	0	670	1038	1050	538	1022	1054
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	25.3	22.9	0.0	23.8	21.2	0.0	24.3	5.0	5.0	24.5	4.8	4.8
Incr Delay (d2), s/veh	5.5	0.2	0.0	1.2	0.0	0.0	0.9	0.4	0.4	1.3	0.2	0.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.1	0.1	0.0	0.4	0.1	0.0	0.2	1.5	1.6	0.2	0.8	0.9
LnGrp Delay(d),s/veh	30.7	23.1	0.0	25.1	21.2	0.0	25.2	5.4	5.4	25.8	5.0	5.0
LnGrp LOS	C	C		C	C		C	A	A	C	A	A
Approach Vol, veh/h		14			45			435			271	
Approach Delay, s/veh		25.8			23.6			6.0			6.0	
Approach LOS		C			C			A			A	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	4.4	34.6	5.3	7.0	4.5	34.5	3.5	8.8				
Change Period (Y+Rc), s	3.0	4.5	3.0	4.0	3.0	4.5	3.0	4.0				
Max Green Setting (Gmax), s	18.0	30.0	17.5	24.0	19.0	30.0	15.0	24.0				
Max Q Clear Time (g_c+I1), s	2.4	4.9	2.9	2.3	2.4	3.7	2.2	2.2				
Green Ext Time (p_c), s	0.0	2.7	0.0	0.0	0.0	2.7	0.0	0.0				
<b>Intersection Summary</b>												
HCM 2010 Ctrl Delay			7.4									
HCM 2010 LOS			A									
<b>Notes</b>												
User approved pedestrian interval to be less than phase max green.												

# HCM 2010 Signalized Intersection Summary



















## 3: Sonoma Blvd & Lemon St

Vallejo Marine Terminal  
Existing AM with VMT and Orcem Projects

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	12	38	21	55	48	33	33	338	61	20	235	14
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	0.99		0.99	0.99		0.99	1.00		0.98	1.00		0.97
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1771	1900	1900	1778	1900	1570	1845	1900	1727	1798	1900
Adj Flow Rate, veh/h	13	42	21	60	53	12	36	371	54	22	258	12
Adj No. of Lanes	0	1	0	0	1	0	1	2	0	1	2	0
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Percent Heavy Veh, %	8	8	8	7	7	7	21	3	3	10	6	6
Cap, veh/h	102	185	79	196	146	26	81	1696	245	60	1778	82
Arrive On Green	0.18	0.18	0.18	0.18	0.18	0.18	0.11	1.00	1.00	0.04	0.54	0.54
Sat Flow, veh/h	129	1055	452	549	834	147	1495	3065	442	1645	3320	154
Grp Volume(v), veh/h	76	0	0	125	0	0	36	211	214	22	132	138
Grp Sat Flow(s),veh/h/ln	1636	0	0	1530	0	0	1495	1752	1754	1645	1708	1766
Q Serve(g_s), s	0.0	0.0	0.0	1.6	0.0	0.0	1.2	0.0	0.0	0.7	2.1	2.1
Cycle Q Clear(g_c), s	2.1	0.0	0.0	3.7	0.0	0.0	1.2	0.0	0.0	0.7	2.1	2.1
Prop In Lane	0.17		0.28	0.48		0.10	1.00		0.25	1.00		0.09
Lane Grp Cap(c), veh/h	366	0	0	368	0	0	81	970	971	60	915	946
V/C Ratio(X)	0.21	0.00	0.00	0.34	0.00	0.00	0.44	0.22	0.22	0.37	0.14	0.15
Avail Cap(c_a), veh/h	772	0	0	745	0	0	309	970	971	402	915	946
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	1.00	1.00	1.00	0.99	0.99	0.99
Uniform Delay (d), s/veh	19.0	0.0	0.0	19.5	0.0	0.0	23.0	0.0	0.0	25.0	6.2	6.2
Incr Delay (d2), s/veh	0.1	0.0	0.0	0.2	0.0	0.0	1.4	0.5	0.5	1.4	0.3	0.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.0	0.0	0.0	1.7	0.0	0.0	0.5	0.1	0.1	0.3	1.0	1.1
LnGrp Delay(d),s/veh	19.1	0.0	0.0	19.7	0.0	0.0	24.4	0.5	0.5	26.4	6.5	6.5
LnGrp LOS	B			B			C	A	A	C	A	A
Approach Vol, veh/h		76			125			461			292	
Approach Delay, s/veh		19.1			19.7			2.4			8.0	
Approach LOS		B			B			A			A	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	5.9	55.7		13.3	6.9	54.8		13.3				
Change Period (Y+Rc), s	4.0	4.5		4.0	4.0	4.5		4.0				
Max Green Setting (Gmax), s	13.0	26.5		23.0	11.0	28.5		23.0				
Max Q Clear Time (g_c+I1), s	2.7	2.0		4.1	3.2	4.1		5.7				
Green Ext Time (p_c), s	0.0	6.2		0.7	0.0	6.2		0.7				
<b>Intersection Summary</b>												
HCM 2010 Ctrl Delay			7.7									
HCM 2010 LOS			A									

HCM 2010 Signalized Intersection Summary  
6: Sonoma Blvd & Magazine St




















Vallejo Marine Terminal  
Existing AM with VMT and Orcem Projects

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	68	127	10	36	45	87	11	225	81	58	222	27
Number	3	8	18	7	4	14	1	6	16	5	2	12
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	0.98		0.96	0.99		0.98	1.00		0.98	1.00		0.96
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1888	1900	1900	1871	1900	1900	1841	1900	1727	1798	1900
Adj Flow Rate, veh/h	79	148	10	42	52	46	13	262	54	67	258	24
Adj No. of Lanes	0	1	0	0	1	0	1	2	0	1	2	0
Peak Hour Factor	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86
Percent Heavy Veh, %	1	1	1	0	0	0	0	4	4	10	5	5
Cap, veh/h	199	322	19	176	204	143	48	1192	241	155	1516	140
Arrive On Green	0.27	0.27	0.27	0.27	0.27	0.27	0.03	0.41	0.41	0.19	0.96	0.96
Sat Flow, veh/h	407	1204	71	331	765	536	1810	2886	584	1645	3150	290
Grp Volume(v), veh/h	237	0	0	140	0	0	13	157	159	67	139	143
Grp Sat Flow(s),veh/h/ln	1682	0	0	1632	0	0	1810	1749	1722	1645	1709	1732
Q Serve(g_s), s	2.5	0.0	0.0	0.0	0.0	0.0	0.4	3.1	3.2	1.9	0.2	0.2
Cycle Q Clear(g_c), s	6.1	0.0	0.0	3.4	0.0	0.0	0.4	3.1	3.2	1.9	0.2	0.2
Prop In Lane	0.33		0.04	0.30		0.33	1.00		0.34	1.00		0.17
Lane Grp Cap(c), veh/h	540	0	0	524	0	0	48	722	711	155	822	833
V/C Ratio(X)	0.44	0.00	0.00	0.27	0.00	0.00	0.27	0.22	0.22	0.43	0.17	0.17
Avail Cap(c_a), veh/h	958	0	0	917	0	0	374	722	711	401	822	833
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	16.4	0.0	0.0	15.5	0.0	0.0	25.4	10.1	10.1	20.3	0.5	0.5
Incr Delay (d2), s/veh	0.2	0.0	0.0	0.1	0.0	0.0	1.1	0.7	0.7	0.7	0.4	0.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.9	0.0	0.0	1.6	0.0	0.0	0.2	1.6	1.6	0.9	0.2	0.2
LnGrp Delay(d),s/veh	16.6	0.0	0.0	15.6	0.0	0.0	26.6	10.8	10.8	21.0	1.0	1.0
LnGrp LOS	B			B			C	B	B	C	A	A
Approach Vol, veh/h		237			140			329			349	
Approach Delay, s/veh		16.6			15.6			11.4			4.8	
Approach LOS		B			B			B			A	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	4.9	52.4		17.7	8.5	48.7		17.7				
Change Period (Y+Rc), s	3.5	5.0		3.5	3.5	5.0		3.5				
Max Green Setting (Gmax), s	11.0	24.0		28.0	13.0	22.0		28.0				
Max Q Clear Time (g_c+I1), s	2.4	2.2		5.4	3.9	5.2		8.1				
Green Ext Time (p_c), s	0.0	5.0		1.5	0.0	4.5		1.5				
<b>Intersection Summary</b>												
HCM 2010 Ctrl Delay			11.0									
HCM 2010 LOS			B									





















HCM 2010 Signalized Intersection Summary  
8: Sonoma Blvd & Maritime Academy Dr

Vallejo Marine Terminal  
Existing AM with VMT and Orcem Projects

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	22	10	8	13	79	93	8	181	11	32	157	32
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		1.00	1.00		1.00	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1719	1900	1900	1786	1863	1900	1798	1900	1900	1792	1900
Adj Flow Rate, veh/h	24	11	2	14	86	22	9	197	8	35	171	17
Adj No. of Lanes	0	1	0	0	1	1	1	2	0	1	2	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	0	0	0	5	5	2	0	6	6	0	6	6
Cap, veh/h	371	136	18	164	404	389	39	1144	46	138	1238	122
Arrive On Green	0.25	0.25	0.25	0.25	0.25	0.25	0.02	0.34	0.34	0.08	0.40	0.40
Sat Flow, veh/h	699	554	72	106	1644	1583	1810	3347	135	1810	3126	307
Grp Volume(v), veh/h	37	0	0	100	0	22	9	100	105	35	92	96
Grp Sat Flow(s),veh/h/ln	1324	0	0	1750	0	1583	1810	1708	1774	1810	1703	1730
Q Serve(g_s), s	0.0	0.0	0.0	0.0	0.0	0.3	0.1	1.2	1.2	0.5	1.0	1.1
Cycle Q Clear(g_c), s	1.3	0.0	0.0	1.3	0.0	0.3	0.1	1.2	1.2	0.5	1.0	1.1
Prop In Lane	0.65		0.05	0.14		1.00	1.00		0.08	1.00		0.18
Lane Grp Cap(c), veh/h	525	0	0	568	0	389	39	584	606	138	674	685
V/C Ratio(X)	0.07	0.00	0.00	0.18	0.00	0.06	0.23	0.17	0.17	0.25	0.14	0.14
Avail Cap(c_a), veh/h	1531	0	0	1870	0	1598	1461	2299	2387	1461	2291	2328
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	8.6	0.0	0.0	9.0	0.0	8.6	14.3	6.8	6.8	12.9	5.7	5.7
Incr Delay (d2), s/veh	0.0	0.0	0.0	0.1	0.0	0.0	1.1	0.1	0.1	0.4	0.1	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.2	0.0	0.0	0.6	0.0	0.1	0.1	0.6	0.6	0.3	0.5	0.5
LnGrp Delay(d),s/veh	8.7	0.0	0.0	9.0	0.0	8.6	15.4	7.0	7.0	13.3	5.8	5.8
LnGrp LOS	A			A		A	B	A	A	B	A	A
Approach Vol, veh/h		37			122			214			223	
Approach Delay, s/veh		8.7			8.9			7.3			7.0	
Approach LOS		A			A			A			A	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	5.3	14.2		10.3	3.6	15.8		10.3				
Change Period (Y+Rc), s	3.0	4.0		3.0	3.0	4.0		3.0				
Max Green Setting (Gmax), s	24.0	40.0		30.0	24.0	40.0		30.0				
Max Q Clear Time (g_c+I1), s	2.5	3.2		3.3	2.1	3.1		3.3				
Green Ext Time (p_c), s	0.0	2.4		0.5	0.0	2.4		0.5				
<b>Intersection Summary</b>												
HCM 2010 Ctrl Delay			7.6									
HCM 2010 LOS			A									

























HCM 2010 Signalized Intersection Summary  
 16: Lemon St & Carlson St

Vallejo Marine Terminal  
 Existing AM with VMT and Orcem Projects

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	2	173	5	11	182	139	3	4	16	136	1	7
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	0.99		1.00	0.99		0.96	0.99		0.98	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1771	1900	1743	1828	1900	1900	1614	1900	1881	1883	1900
Adj Flow Rate, veh/h	2	204	0	13	214	140	4	5	12	164	0	0
Adj No. of Lanes	0	1	0	1	1	0	0	1	0	2	1	0
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85
Percent Heavy Veh, %	7	7	7	9	7	7	50	50	50	1	0	0
Cap, veh/h	167	787	0	732	453	296	222	87	153	1152	358	0
Arrive On Green	0.45	0.45	0.00	0.45	0.45	0.45	0.19	0.19	0.19	0.19	0.00	0.00
Sat Flow, veh/h	4	1763	0	1085	1015	664	146	458	805	2794	1883	0
Grp Volume(v), veh/h	206	0	0	13	0	354	21	0	0	164	0	0
Grp Sat Flow(s),veh/h/ln	1767	0	0	1085	0	1679	1408	0	0	1397	1883	0
Q Serve(g_s), s	0.0	0.0	0.0	0.2	0.0	3.3	0.0	0.0	0.0	1.1	0.0	0.0
Cycle Q Clear(g_c), s	1.6	0.0	0.0	1.8	0.0	3.3	0.3	0.0	0.0	1.4	0.0	0.0
Prop In Lane	0.01		0.00	1.00		0.40	0.19		0.57	1.00		0.00
Lane Grp Cap(c), veh/h	954	0	0	732	0	749	463	0	0	1152	358	0
V/C Ratio(X)	0.22	0.00	0.00	0.02	0.00	0.47	0.05	0.00	0.00	0.14	0.00	0.00
Avail Cap(c_a), veh/h	3122	0	0	2072	0	2822	2074	0	0	4429	2567	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	1.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	3.8	0.0	0.0	4.4	0.0	4.3	7.3	0.0	0.0	7.9	0.0	0.0
Incr Delay (d2), s/veh	0.1	0.0	0.0	0.0	0.0	0.5	0.0	0.0	0.0	0.1	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.8	0.0	0.0	0.0	0.0	1.6	0.1	0.0	0.0	0.4	0.0	0.0
LnGrp Delay(d),s/veh	3.9	0.0	0.0	4.4	0.0	4.7	7.4	0.0	0.0	8.0	0.0	0.0
LnGrp LOS	A			A		A	A			A		
Approach Vol, veh/h		206			367			21			164	
Approach Delay, s/veh		3.9			4.7			7.4			8.0	
Approach LOS		A			A			A			A	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		13.8		8.2		13.8		8.2				
Change Period (Y+Rc), s		4.0		4.0		4.0		4.0				
Max Green Setting (Gmax), s		37.0		30.0		37.0		30.0				
Max Q Clear Time (g_c+I1), s		3.6		3.4		5.3		2.3				
Green Ext Time (p_c), s		4.0		0.7		4.0		0.7				
<b>Intersection Summary</b>												
HCM 2010 Ctrl Delay				5.3								
HCM 2010 LOS				A								
<b>Notes</b>												
User approved volume balancing among the lanes for turning movement.												

HCM 2010 Signalized Intersection Summary  
 17: Lemon St & Curtola Pkwy

Vallejo Marine Terminal  
 Existing AM with VMT and Orcem Projects

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	26	70	228	120	90	25	224	730	106	23	412	30
Number	3	8	18	7	4	14	1	6	16	5	2	12
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		0.93	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1696	1849	1810	1827	1827	1900	1827	1849	1900	1827	1845	1900
Adj Flow Rate, veh/h	29	85	83	133	100	6	249	811	0	26	458	0
Adj No. of Lanes	1	1	1	1	1	1	1	2	0	1	2	0
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	12	0	5	4	4	0	4	3	3	4	3	3
Cap, veh/h	51	209	171	170	328	269	299	1658	0	50	1153	0
Arrive On Green	0.03	0.11	0.11	0.10	0.18	0.18	0.17	0.47	0.00	0.03	0.33	0.00
Sat Flow, veh/h	1616	1849	1517	1740	1827	1498	1740	3606	0	1740	3597	0
Grp Volume(v), veh/h	29	85	83	133	100	6	249	811	0	26	458	0
Grp Sat Flow(s),veh/h/ln	1616	1849	1517	1740	1827	1498	1740	1757	0	1740	1752	0
Q Serve(g_s), s	1.2	2.8	3.4	4.9	3.1	0.2	9.1	10.4	0.0	1.0	6.6	0.0
Cycle Q Clear(g_c), s	1.2	2.8	3.4	4.9	3.1	0.2	9.1	10.4	0.0	1.0	6.6	0.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.00	1.00		0.00
Lane Grp Cap(c), veh/h	51	209	171	170	328	269	299	1658	0	50	1153	0
V/C Ratio(X)	0.57	0.41	0.49	0.78	0.31	0.02	0.83	0.49	0.00	0.52	0.40	0.00
Avail Cap(c_a), veh/h	617	988	810	664	976	800	664	1877	0	664	1873	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	31.3	27.0	27.3	28.9	23.3	22.1	26.2	11.9	0.0	31.4	17.0	0.0
Incr Delay (d2), s/veh	3.8	1.3	2.2	2.9	0.7	0.0	2.4	0.3	0.0	3.1	0.3	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.6	1.5	1.5	2.5	1.6	0.1	4.6	5.0	0.0	0.5	3.2	0.0
LnGrp Delay(d),s/veh	35.1	28.4	29.5	31.8	24.0	22.2	28.6	12.2	0.0	34.4	17.2	0.0
LnGrp LOS	D	C	C	C	C	C	C	B		C	B	
Approach Vol, veh/h		197			239			1060			484	
Approach Delay, s/veh		29.8			28.3			16.0			18.1	
Approach LOS		C			C			B			B	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	15.2	27.6	6.1	16.7	5.9	36.9	10.4	12.3				
Change Period (Y+Rc), s	4.0	6.0	4.0	4.9	4.0	6.0	4.0	4.9				
Max Green Setting (Gmax), s	25.0	35.0	25.0	35.0	25.0	35.0	25.0	35.0				
Max Q Clear Time (g_c+I1), s	11.1	8.6	3.2	5.1	3.0	12.4	6.9	5.4				
Green Ext Time (p_c), s	0.3	12.9	0.0	1.6	0.0	11.9	0.2	1.6				
<b>Intersection Summary</b>												
HCM 2010 Ctrl Delay			19.4									
HCM 2010 LOS			B									
<b>Notes</b>												
User approved volume balancing among the lanes for turning movement.												

**Intersection**

Int Delay, s/veh 0.7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR
Vol, veh/h	15	1	4	2	3	7	6	414	3
Conflicting Peds, #/hr	0	0	2	2	0	0	6	0	3
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-
Peak Hour Factor	89	89	89	89	89	89	89	89	89
Heavy Vehicles, %	13	0	0	0	0	0	0	3	33
Mvmt Flow	17	1	4	2	3	8	7	465	3

Major/Minor	Minor2			Minor1			Major1		
Conflicting Flow All	611	845	184	667	846	242	355	0	0
Stage 1	361	361	-	482	482	-	-	-	-
Stage 2	250	484	-	185	364	-	-	-	-
Critical Hdwy	7.76	6.5	6.9	7.5	6.5	6.9	4.1	-	-
Critical Hdwy Stg 1	6.76	5.5	-	6.5	5.5	-	-	-	-
Critical Hdwy Stg 2	6.76	5.5	-	6.5	5.5	-	-	-	-
Follow-up Hdwy	3.63	4	3.3	3.5	4	3.3	2.2	-	-
Pot Cap-1 Maneuver	356	302	833	348	301	765	1215	-	-
Stage 1	601	629	-	540	557	-	-	-	-
Stage 2	702	555	-	805	627	-	-	-	-
Platoon blocked, %									
Mov Cap-1 Maneuver	344	297	827	339	296	760	1209	-	-
Mov Cap-2 Maneuver	344	297	-	339	296	-	-	-	-
Stage 1	595	625	-	535	552	-	-	-	-
Stage 2	682	550	-	791	623	-	-	-	-

Approach	EB	WB	NB
HCM Control Delay, s	14.9	12.8	0.1
HCM LOS	B	B	

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1209	-	-	386	475	1095	-	-
HCM Lane V/C Ratio	0.006	-	-	0.058	0.028	0.004	-	-
HCM Control Delay (s)	8	0	-	14.9	12.8	8.3	0	-
HCM Lane LOS	A	A	-	B	B	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0.2	0.1	0	-	-

**Intersection**

Int Delay, s/veh

Movement	SBL	SBT	SBR
Vol, veh/h	4	309	5
Conflicting Peds, #/hr	3	0	6
Sign Control	Free	Free	Free
RT Channelized	-	-	None
Storage Length	-	-	-
Veh in Median Storage, #	-	0	-
Grade, %	-	0	-
Peak Hour Factor	89	89	89
Heavy Vehicles, %	0	7	20
Mvmt Flow	4	347	6

**Major/Minor Major2**

Conflicting Flow All	471	0	0
Stage 1	-	-	-
Stage 2	-	-	-
Critical Hdwy	4.1	-	-
Critical Hdwy Stg 1	-	-	-
Critical Hdwy Stg 2	-	-	-
Follow-up Hdwy	2.2	-	-
Pot Cap-1 Maneuver	1101	-	-
Stage 1	-	-	-
Stage 2	-	-	-
Platoon blocked, %		-	-
Mov Cap-1 Maneuver	1095	-	-
Mov Cap-2 Maneuver	-	-	-
Stage 1	-	-	-
Stage 2	-	-	-

**Approach SB**

HCM Control Delay, s	0.1
HCM LOS	

**Minor Lane/Major Mvmt**

**Intersection**

Int Delay, s/veh 1.2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR
Vol, veh/h	26	4	7	3	1	13	7	370	4
Conflicting Peds, #/hr	1	0	4	4	0	1	13	0	5
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-
Peak Hour Factor	91	91	91	91	91	91	91	91	91
Heavy Vehicles, %	0	0	0	0	0	15	0	4	0
Mvmt Flow	29	4	8	3	1	14	8	407	4

Major/Minor	Minor2			Minor1			Major1		
Conflicting Flow All	582	789	186	621	796	222	341	0	0
Stage 1	359	359	-	428	428	-	-	-	-
Stage 2	223	430	-	193	368	-	-	-	-
Critical Hdwy	7.5	6.5	6.9	7.5	6.5	7.2	4.1	-	-
Critical Hdwy Stg 1	6.5	5.5	-	6.5	5.5	-	-	-	-
Critical Hdwy Stg 2	6.5	5.5	-	6.5	5.5	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	3.5	4	3.45	2.2	-	-
Pot Cap-1 Maneuver	401	325	831	376	322	743	1229	-	-
Stage 1	637	631	-	581	588	-	-	-	-
Stage 2	765	587	-	796	625	-	-	-	-
Platoon blocked, %									
Mov Cap-1 Maneuver	380	315	819	357	312	733	1216	-	-
Mov Cap-2 Maneuver	380	315	-	357	312	-	-	-	-
Stage 1	629	619	-	574	581	-	-	-	-
Stage 2	734	580	-	763	614	-	-	-	-

Approach	EB	WB	NB
HCM Control Delay, s	14.7	11.4	0.1
HCM LOS	B	B	

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1216	-	-	413	579	1073	-	-
HCM Lane V/C Ratio	0.006	-	-	0.098	0.032	0.012	-	-
HCM Control Delay (s)	8	0	-	14.7	11.4	8.4	0.1	-
HCM Lane LOS	A	A	-	B	B	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0.3	0.1	0	-	-

**Intersection**

Int Delay, s/veh

Movement	SBL	SBT	SBR
Vol, veh/h	12	292	15
Conflicting Peds, #/hr	5	0	13
Sign Control	Free	Free	Free
RT Channelized	-	-	None
Storage Length	-	-	-
Veh in Median Storage, #	-	0	-
Grade, %	-	0	-
Peak Hour Factor	91	91	91
Heavy Vehicles, %	10	7	0
Mvmt Flow	13	321	16

**Major/Minor Major2**

Conflicting Flow All	415	0	0
Stage 1	-	-	-
Stage 2	-	-	-
Critical Hdwy	4.3	-	-
Critical Hdwy Stg 1	-	-	-
Critical Hdwy Stg 2	-	-	-
Follow-up Hdwy	2.3	-	-
Pot Cap-1 Maneuver	1085	-	-
Stage 1	-	-	-
Stage 2	-	-	-
Platoon blocked, %		-	-
Mov Cap-1 Maneuver	1073	-	-
Mov Cap-2 Maneuver	-	-	-
Stage 1	-	-	-
Stage 2	-	-	-

**Approach SB**

HCM Control Delay, s	0.4
HCM LOS	

**Minor Lane/Major Mvmt**

**Intersection**

Int Delay, s/veh 4.2

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Vol, veh/h	94	41	87	211	180	90
Conflicting Peds, #/hr	0	0	8	0	0	8
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	60	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	85	85	85	85	85	85
Heavy Vehicles, %	3	3	3	4	5	3
Mvmt Flow	111	48	102	248	212	106

Major/Minor	Minor2	Major1	Major2
Conflicting Flow All	594	167	318
Stage 1	265	-	-
Stage 2	329	-	-
Critical Hdwy	6.86	6.96	4.16
Critical Hdwy Stg 1	5.86	-	-
Critical Hdwy Stg 2	5.86	-	-
Follow-up Hdwy	3.53	3.33	2.23
Pot Cap-1 Maneuver	434	845	1232
Stage 1	752	-	-
Stage 2	698	-	-
Platoon blocked, %			-
Mov Cap-1 Maneuver	398	839	1224
Mov Cap-2 Maneuver	398	-	-
Stage 1	752	-	-
Stage 2	640	-	-

Approach	EB	NB	SB
HCM Control Delay, s	16.4	2.4	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1224	-	474	-	-
HCM Lane V/C Ratio	0.084	-	0.335	-	-
HCM Control Delay (s)	8.2	-	16.4	-	-
HCM Lane LOS	A	-	C	-	-
HCM 95th %tile Q(veh)	0.3	-	1.5	-	-



**Intersection**

Int Delay, s/veh 0.3

Movement	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBL	NBT	NBR
Vol, veh/h	0	53	0	3	0	71	4	0	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	-	0	-	-	0	-
Grade, %	-	0	-	-	-	0	-	-	0	-
Peak Hour Factor	82	82	82	82	82	82	82	82	82	82
Heavy Vehicles, %	0	12	0	0	0	9	0	0	0	0
Mvmt Flow	0	65	0	4	0	87	5	0	0	0

Major/Minor	Major1	Major2	Minor1							
Conflicting Flow All	91	0	0	65	65	0	0	155	164	68
Stage 1	-	-	-	-	-	-	-	65	65	-
Stage 2	-	-	-	-	-	-	-	90	99	-
Critical Hdwy	4.1	-	-	-	4.1	-	-	7.1	6.5	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	-	6.1	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	-	6.1	5.5	-
Follow-up Hdwy	2.2	-	-	-	2.2	-	-	3.5	4	3.3
Pot Cap-1 Maneuver	1517	-	-	-	1550	-	-	816	732	1001
Stage 1	-	-	-	-	-	-	-	951	845	-
Stage 2	-	-	-	-	-	-	-	922	817	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1517	-	-	-	-	-	-	815	732	1001
Mov Cap-2 Maneuver	-	-	-	-	-	-	-	815	732	-
Stage 1	-	-	-	-	-	-	-	951	845	-
Stage 2	-	-	-	-	-	-	-	921	817	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0	0
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	-	1517	-	-	-	-	-	851
HCM Lane V/C Ratio	-	-	-	-	-	-	-	0.006
HCM Control Delay (s)	0	0	-	-	-	-	-	9.3
HCM Lane LOS	A	A	-	-	-	-	-	A
HCM 95th %tile Q(veh)	-	0	-	-	-	-	-	0

Intersection			
Int Delay, s/veh			
Movement	SBL	SBT	SBR
Vol, veh/h	3	0	1
Conflicting Peds, #/hr	0	0	0
Sign Control	Stop	Stop	Stop
RT Channelized	-	-	None
Storage Length	-	-	-
Veh in Median Storage, #	-	0	-
Grade, %	-	0	-
Peak Hour Factor	82	82	82
Heavy Vehicles, %	0	0	0
Mvmt Flow	4	0	1
Major/Minor	Minor2		
Conflicting Flow All	154	161	89
Stage 1	89	96	-
Stage 2	65	65	-
Critical Hdwy	7.1	6.5	6.2
Critical Hdwy Stg 1	6.1	5.5	-
Critical Hdwy Stg 2	6.1	5.5	-
Follow-up Hdwy	3.5	4	3.3
Pot Cap-1 Maneuver	817	735	975
Stage 1	923	819	-
Stage 2	951	845	-
Platoon blocked, %			
Mov Cap-1 Maneuver	817	735	975
Mov Cap-2 Maneuver	817	735	-
Stage 1	923	819	-
Stage 2	951	845	-
Approach	SB		
HCM Control Delay, s	9.3		
HCM LOS	A		
Minor Lane/Major Mvmt			

**Intersection**

Int Delay, s/veh 1.4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR
Vol, veh/h	3	56	0	6	78	5	1	4	9
Conflicting Peds, #/hr	0	0	0	0	0	0	2	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-
Peak Hour Factor	88	88	88	88	88	88	88	88	88
Heavy Vehicles, %	0	11	0	0	8	0	0	0	0
Mvmt Flow	3	64	0	7	89	6	1	5	10

Major/Minor	Major1	Major2	Minor1						
Conflicting Flow All	96	0	0	66	0	0	179	182	66
Stage 1	-	-	-	-	-	-	72	72	-
Stage 2	-	-	-	-	-	-	107	110	-
Critical Hdwy	4.1	-	-	4.1	-	-	7.1	6.5	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-
Follow-up Hdwy	2.2	-	-	2.2	-	-	3.5	4	3.3
Pot Cap-1 Maneuver	1510	-	-	1549	-	-	787	716	1003
Stage 1	-	-	-	-	-	-	943	839	-
Stage 2	-	-	-	-	-	-	903	808	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1510	-	-	1549	-	-	781	709	1001
Mov Cap-2 Maneuver	-	-	-	-	-	-	781	709	-
Stage 1	-	-	-	-	-	-	940	836	-
Stage 2	-	-	-	-	-	-	898	803	-

Approach	EB	WB	NB
HCM Control Delay, s	0.4	0.5	9.2
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	880	1510	-	-	1549	-	-	761
HCM Lane V/C Ratio	0.018	0.002	-	-	0.004	-	-	0.004
HCM Control Delay (s)	9.2	7.4	0	-	7.3	0	-	9.8
HCM Lane LOS	A	A	A	-	A	A	-	A
HCM 95th %tile Q(veh)	0.1	0	-	-	0	-	-	0

**Intersection**

Int Delay, s/veh

Movement	SBL	SBT	SBR
Vol, veh/h	3	0	0
Conflicting Peds, #/hr	0	0	2
Sign Control	Stop	Stop	Stop
RT Channelized	-	-	None
Storage Length	-	-	-
Veh in Median Storage, #	-	0	-
Grade, %	-	0	-
Peak Hour Factor	88	88	88
Heavy Vehicles, %	0	0	0
Mvmt Flow	3	0	0

**Major/Minor**                      **Minor2**

Conflicting Flow All	187	179	93
Stage 1	107	107	-
Stage 2	80	72	-
Critical Hdwy	7.1	6.5	6.2
Critical Hdwy Stg 1	6.1	5.5	-
Critical Hdwy Stg 2	6.1	5.5	-
Follow-up Hdwy	3.5	4	3.3
Pot Cap-1 Maneuver	778	718	970
Stage 1	903	811	-
Stage 2	934	839	-
Platoon blocked, %			
Mov Cap-1 Maneuver	761	711	968
Mov Cap-2 Maneuver	761	711	-
Stage 1	900	806	-
Stage 2	918	836	-

**Approach**                      **SB**

HCM Control Delay, s	9.8
HCM LOS	A

**Minor Lane/Major Mvmt**

**Intersection**

Int Delay, s/veh 1.2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR
Vol, veh/h	7	112	1	6	125	4	3	3	4
Conflicting Peds, #/hr	2	0	2	2	0	2	0	0	1
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-
Peak Hour Factor	85	85	85	85	85	85	85	85	85
Heavy Vehicles, %	0	8	0	17	10	0	0	0	25
Mvmt Flow	8	132	1	7	147	5	4	4	5

Major/Minor	Major1	Major2	Minor1						
Conflicting Flow All	153	0	0	134	0	0	319	317	135
Stage 1	-	-	-	-	-	-	150	150	-
Stage 2	-	-	-	-	-	-	169	167	-
Critical Hdwy	4.1	-	-	4.27	-	-	7.1	6.5	6.45
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-
Follow-up Hdwy	2.2	-	-	2.353	-	-	3.5	4	3.525
Pot Cap-1 Maneuver	1440	-	-	1363	-	-	638	602	856
Stage 1	-	-	-	-	-	-	857	777	-
Stage 2	-	-	-	-	-	-	838	764	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1438	-	-	1361	-	-	624	594	854
Mov Cap-2 Maneuver	-	-	-	-	-	-	624	594	-
Stage 1	-	-	-	-	-	-	851	772	-
Stage 2	-	-	-	-	-	-	822	759	-

Approach	EB	WB	NB
HCM Control Delay, s	0.4	0.3	10.3
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	688	1438	-	-	1361	-	-	687
HCM Lane V/C Ratio	0.017	0.006	-	-	0.005	-	-	0.026
HCM Control Delay (s)	10.3	7.5	0	-	7.7	0	-	10.4
HCM Lane LOS	B	A	A	-	A	A	-	B
HCM 95th %tile Q(veh)	0.1	0	-	-	0	-	-	0.1

**Intersection**

Int Delay, s/veh

Movement	SBL	SBT	SBR
Vol, veh/h	7	3	5
Conflicting Peds, #/hr	1	0	0
Sign Control	Stop	Stop	Stop
RT Channelized	-	-	None
Storage Length	-	-	-
Veh in Median Storage, #	-	0	-
Grade, %	-	0	-
Peak Hour Factor	85	85	85
Heavy Vehicles, %	0	0	0
Mvmt Flow	8	4	6

Major/Minor	Minor2		
Conflicting Flow All	319	315	152
Stage 1	165	165	-
Stage 2	154	150	-
Critical Hdwy	7.1	6.5	6.2
Critical Hdwy Stg 1	6.1	5.5	-
Critical Hdwy Stg 2	6.1	5.5	-
Follow-up Hdwy	3.5	4	3.3
Pot Cap-1 Maneuver	638	604	900
Stage 1	842	766	-
Stage 2	853	777	-
Platoon blocked, %			
Mov Cap-1 Maneuver	624	596	898
Mov Cap-2 Maneuver	624	596	-
Stage 1	836	761	-
Stage 2	838	772	-

**Approach** SB

HCM Control Delay, s	10.4
HCM LOS	B

**Minor Lane/Major Mvmt**

Intersection										
Int Delay, s/veh	3.6									

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR
Vol, veh/h	12	109	3	13	116	17	5	25	24
Conflicting Peds, #/hr	1	0	3	3	0	1	1	0	1
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	8	7	0	0	11	6	0	4	0
Mvmt Flow	13	121	3	14	129	19	6	28	27

Major/Minor	Major1			Major2			Minor1		
Conflicting Flow All	149	0	0	125	0	0	339	328	127
Stage 1	-	-	-	-	-	-	150	150	-
Stage 2	-	-	-	-	-	-	189	178	-
Critical Hdwy	4.18	-	-	4.1	-	-	7.1	6.54	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.54	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.54	-
Follow-up Hdwy	2.272	-	-	2.2	-	-	3.5	4.036	3.3
Pot Cap-1 Maneuver	1396	-	-	1474	-	-	619	587	929
Stage 1	-	-	-	-	-	-	857	769	-
Stage 2	-	-	-	-	-	-	817	748	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1393	-	-	1470	-	-	576	574	926
Mov Cap-2 Maneuver	-	-	-	-	-	-	576	574	-
Stage 1	-	-	-	-	-	-	848	761	-
Stage 2	-	-	-	-	-	-	764	740	-

Approach	EB	WB	NB
HCM Control Delay, s	0.7	0.7	10.7
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	691	1393	-	-	1470	-	-	633
HCM Lane V/C Ratio	0.087	0.01	-	-	0.01	-	-	0.093
HCM Control Delay (s)	10.7	7.6	0	-	7.5	0	-	11.3
HCM Lane LOS	B	A	A	-	A	A	-	B
HCM 95th %tile Q(veh)	0.3	0	-	-	0	-	-	0.3

**Intersection**

Int Delay, s/veh

Movement	SBL	SBT	SBR
Vol, veh/h	15	24	14
Conflicting Peds, #/hr	1	0	1
Sign Control	Stop	Stop	Stop
RT Channelized	-	-	None
Storage Length	-	-	-
Veh in Median Storage, #	-	0	-
Grade, %	-	0	-
Peak Hour Factor	90	90	90
Heavy Vehicles, %	0	4	7
Mvmt Flow	17	27	16

**Major/Minor**

	Minor2		
Conflicting Flow All	346	320	142
Stage 1	168	168	-
Stage 2	178	152	-
Critical Hdwy	7.1	6.54	6.27
Critical Hdwy Stg 1	6.1	5.54	-
Critical Hdwy Stg 2	6.1	5.54	-
Follow-up Hdwy	3.5	4.036	3.363
Pot Cap-1 Maneuver	612	594	893
Stage 1	839	756	-
Stage 2	828	768	-
Platoon blocked, %			
Mov Cap-1 Maneuver	562	581	890
Mov Cap-2 Maneuver	562	581	-
Stage 1	830	748	-
Stage 2	765	760	-

**Approach**

	SB
HCM Control Delay, s	11.3
HCM LOS	B

**Minor Lane/Major Mvmt**



**Intersection**

Int Delay, s/veh 1.3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR
Vol, veh/h	2	141	2	13	136	3	5	0	21
Conflicting Peds, #/hr	4	0	7	7	0	4	4	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-
Peak Hour Factor	81	81	81	81	81	81	81	81	81
Heavy Vehicles, %	0	6	0	0	9	33	0	5	0
Mvmt Flow	2	174	2	16	168	4	6	0	26

Major/Minor	Major1	Major2	Minor1						
Conflicting Flow All	176	0	0	181	0	0	392	392	186
Stage 1	-	-	-	-	-	-	184	184	-
Stage 2	-	-	-	-	-	-	208	208	-
Critical Hdwy	4.1	-	-	4.1	-	-	7.1	6.55	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.55	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.55	-
Follow-up Hdwy	2.2	-	-	2.2	-	-	3.5	4.045	3.3
Pot Cap-1 Maneuver	1412	-	-	1407	-	-	571	539	861
Stage 1	-	-	-	-	-	-	822	742	-
Stage 2	-	-	-	-	-	-	799	724	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1404	-	-	1399	-	-	556	527	853
Mov Cap-2 Maneuver	-	-	-	-	-	-	556	527	-
Stage 1	-	-	-	-	-	-	818	738	-
Stage 2	-	-	-	-	-	-	779	712	-

Approach	EB	WB	NB
HCM Control Delay, s	0.1	0.7	9.9
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	774	1404	-	-	1399	-	-	635
HCM Lane V/C Ratio	0.041	0.002	-	-	0.011	-	-	0.012
HCM Control Delay (s)	9.9	7.6	0	-	7.6	0	-	10.7
HCM Lane LOS	A	A	A	-	A	A	-	B
HCM 95th %tile Q(veh)	0.1	0	-	-	0	-	-	0

**Intersection**

Int Delay, s/veh

Movement	SBL	SBT	SBR
Vol, veh/h	2	1	3
Conflicting Peds, #/hr	0	0	4
Sign Control	Stop	Stop	Stop
RT Channelized	-	-	None
Storage Length	-	-	-
Veh in Median Storage, #	-	0	-
Grade, %	-	0	-
Peak Hour Factor	81	81	81
Heavy Vehicles, %	0	0	33
Mvmt Flow	2	1	4

**Major/Minor**

Minor2

Conflicting Flow All	403	391	181
Stage 1	206	206	-
Stage 2	197	185	-
Critical Hdwy	7.1	6.5	6.53
Critical Hdwy Stg 1	6.1	5.5	-
Critical Hdwy Stg 2	6.1	5.5	-
Follow-up Hdwy	3.5	4	3.597
Pot Cap-1 Maneuver	562	548	788
Stage 1	801	735	-
Stage 2	809	751	-
Platoon blocked, %			
Mov Cap-1 Maneuver	534	536	781
Mov Cap-2 Maneuver	534	536	-
Stage 1	797	723	-
Stage 2	778	747	-

**Approach**

SB

HCM Control Delay, s	10.7
HCM LOS	B

**Minor Lane/Major Mvmt**

**Intersection**

Int Delay, s/veh 0.1

Movement	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBL	NBT	NBR
Vol, veh/h	0	168	0	5	0	156	1	1	0	0
Conflicting Peds, #/hr	7	0	3	0	3	0	7	3	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	-	0	-	-	0	-
Grade, %	-	0	-	-	-	0	-	-	0	-
Peak Hour Factor	83	83	83	83	83	83	83	83	83	83
Heavy Vehicles, %	0	5	0	0	0	7	0	0	0	0
Mvmt Flow	0	202	0	6	0	188	1	1	0	0

Major/Minor	Major1	Major2	Minor1
Conflicting Flow All	192	0	0
Stage 1	-	-	-
Stage 2	-	-	-
Critical Hdwy	4.1	-	-
Critical Hdwy Stg 1	-	-	-
Critical Hdwy Stg 2	-	-	-
Follow-up Hdwy	2.2	-	-
Pot Cap-1 Maneuver	1394	-	-
Stage 1	-	-	-
Stage 2	-	-	-
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	1386	-	-
Mov Cap-2 Maneuver	-	-	-
Stage 1	-	-	-
Stage 2	-	-	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0	11.4
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	562	1386	-	-	-	-	-	562
HCM Lane V/C Ratio	0.002	-	-	-	-	-	-	0.004
HCM Control Delay (s)	11.4	0	-	-	-	-	-	11.4
HCM Lane LOS	B	A	-	-	-	-	-	B
HCM 95th %tile Q(veh)	0	0	-	-	-	-	-	0

**Intersection**

Int Delay, s/veh

Movement	SBL	SBT	SBR
Vol, veh/h	2	0	0
Conflicting Peds, #/hr	0	0	3
Sign Control	Stop	Stop	Stop
RT Channelized	-	-	None
Storage Length	-	-	-
Veh in Median Storage, #	-	0	-
Grade, %	-	0	-
Peak Hour Factor	83	83	83
Heavy Vehicles, %	0	0	0
Mvmt Flow	2	0	0

**Major/Minor**

	Minor2		
Conflicting Flow All	397	409	199
Stage 1	192	204	-
Stage 2	205	205	-
Critical Hdwy	7.1	6.5	6.2
Critical Hdwy Stg 1	6.1	5.5	-
Critical Hdwy Stg 2	6.1	5.5	-
Follow-up Hdwy	3.5	4	3.3
Pot Cap-1 Maneuver	567	535	847
Stage 1	814	737	-
Stage 2	802	736	-
Platoon blocked, %			
Mov Cap-1 Maneuver	562	532	840
Mov Cap-2 Maneuver	562	532	-
Stage 1	812	735	-
Stage 2	797	734	-

**Approach**

Approach	SB
HCM Control Delay, s	11.4
HCM LOS	B

**Minor Lane/Major Mvmt**

**Intersection**

Int Delay, s/veh 0.3

Movement	EBT	EBR	WBU	WBL	WBT	NBL	NBR
Vol, veh/h	167	1	2	15	164	2	10
Conflicting Peds, #/hr	0	4	0	4	0	0	1
Sign Control	Free	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	-	None	-	None
Storage Length	-	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	-	0	0	-
Grade, %	0	-	-	-	0	0	-
Peak Hour Factor	88	88	88	88	88	88	88
Heavy Vehicles, %	5	0	0	13	6	40	0
Mvmt Flow	190	1	2	17	186	2	11

Major/Minor	Major1	Major2	Minor1
Conflicting Flow All	0	0 202	411 198
Stage 1	-	-	191 -
Stage 2	-	-	220 -
Critical Hdwy	-	- 4.23	6.8 6.2
Critical Hdwy Stg 1	-	-	5.8 -
Critical Hdwy Stg 2	-	-	5.8 -
Follow-up Hdwy	-	- 2.317	3.86 3.3
Pot Cap-1 Maneuver	-	- 1318	531 848
Stage 1	-	-	758 -
Stage 2	-	-	735 -
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	-	- -9 -9	529 844
Mov Cap-2 Maneuver	-	-	529 -
Stage 1	-	-	757 -
Stage 2	-	-	733 -

Approach	EB	WB	NB
HCM Control Delay, s	0	0	9.8
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	768	-	-	+	-
HCM Lane V/C Ratio	0.018	-	-	-	-
HCM Control Delay (s)	9.8	-	-	-	-
HCM Lane LOS	A	-	-	-	-
HCM 95th %tile Q(veh)	0.1	-	-	-	-

**Notes**

-: Volume exceeds capacity    \$: Delay exceeds 300s    +: Computation Not Defined    \*: All major volume in platoon

HCM Signalized Intersection Capacity Analysis  
1: Sonoma Blvd & Curtola Pkwy

Vallejo Marine Terminal  
Existing PM with VMT and Orcem Projects



Movement	EBT	EBR	EBR2	WBT	WBR	NBL2	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↑↑	←		↑↑	↑		↑	↑↑			↑↑	
Volume (vph)	497	170	3	288	195	12	160	249	5	187	172	6
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	4.5		4.5	4.5		4.5	4.5			4.5	
Lane Util. Factor	0.91	0.91		0.95	1.00		1.00	0.95			0.95	
Frbp, ped/bikes	1.00	1.00		1.00	0.98		1.00	1.00			1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00			1.00	
Frt	0.99	0.85		1.00	0.85		1.00	1.00			0.99	
Flt Protected	1.00	1.00		1.00	1.00		0.95	1.00			0.98	
Satd. Flow (prot)	3374	1455		3539	1589		1756	3564			3443	
Flt Permitted	1.00	1.00		1.00	1.00		0.95	1.00			0.98	
Satd. Flow (perm)	3374	1455		3539	1589		1756	3564			3443	
Peak-hour factor, PHF	0.91	0.91	0.91	0.91	0.91	0.92	0.91	0.91	0.91	0.91	0.91	0.91
Adj. Flow (vph)	546	187	3	316	214	13	176	274	5	205	189	7
RTOR Reduction (vph)	0	49	0	0	149	0	0	1	0	0	2	0
Lane Group Flow (vph)	565	122	0	316	65	0	189	278	0	0	420	0
Confl. Peds. (#/hr)					4		1		4	4		1
Confl. Bikes (#/hr)									1			1
Heavy Vehicles (%)	2%	1%	0%	2%	0%	0%	3%	1%	0%	1%	1%	0%
Turn Type	NA	Perm		NA	Perm	Split	Split	NA		Split	NA	
Protected Phases	2			2		3	3	3		4	4	
Permitted Phases		2			2							
Actuated Green, G (s)	22.7	22.7		22.7	22.7		15.4	15.4			16.6	
Effective Green, g (s)	22.7	22.7		22.7	22.7		15.4	15.4			16.6	
Actuated g/C Ratio	0.30	0.30		0.30	0.30		0.21	0.21			0.22	
Clearance Time (s)	4.5	4.5		4.5	4.5		4.5	4.5			4.5	
Vehicle Extension (s)	2.0	2.0		2.0	2.0		2.0	2.0			2.0	
Lane Grp Cap (vph)	1022	440		1072	481		361	732			763	
v/s Ratio Prot	c0.17			0.09			c0.11	0.08			c0.12	
v/s Ratio Perm		0.08			0.04							
v/c Ratio	0.55	0.28		0.29	0.13		0.52	0.38			0.55	
Uniform Delay, d1	21.9	19.9		20.0	19.0		26.5	25.6			25.8	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00			1.00	
Incremental Delay, d2	0.4	0.1		0.1	0.0		0.6	0.1			0.5	
Delay (s)	22.2	20.0		20.0	19.0		27.1	25.8			26.3	
Level of Service	C	B		C	B		C	C			C	
Approach Delay (s)	21.7			19.6			26.3				26.3	
Approach LOS	C			B			C				C	

Intersection Summary		
HCM 2000 Control Delay	23.2	HCM 2000 Level of Service C
HCM 2000 Volume to Capacity ratio	0.51	
Actuated Cycle Length (s)	74.9	Sum of lost time (s) 17.0
Intersection Capacity Utilization	61.6%	ICU Level of Service B
Analysis Period (min)	15	

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis  
 1: Sonoma Blvd & Curtola Pkwy

Vallejo Marine Terminal  
 Existing PM with VMT and Orcem Projects
























Movement	SBR2	NEL2	NEL	NER	NER2
Lane Configurations					
Volume (vph)	19	6	4	5	4
Ideal Flow (vphpl)	1900	1900	1900	1900	1900
Total Lost time (s)			3.5		
Lane Util. Factor			1.00		
Frbp, ped/bikes			1.00		
Flpb, ped/bikes			1.00		
Frt			0.94		
Flt Protected			0.97		
Satd. Flow (prot)			1737		
Flt Permitted			0.97		
Satd. Flow (perm)			1737		
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	21	7	4	5	4
RTOR Reduction (vph)	0	0	19	0	0
Lane Group Flow (vph)	0	0	1	0	0
Confl. Peds. (#/hr)					
Confl. Bikes (#/hr)					
Heavy Vehicles (%)	5%	0%	0%	0%	0%
Turn Type		Prot	Prot		
Protected Phases		1	1		
Permitted Phases					
Actuated Green, G (s)			3.2		
Effective Green, g (s)			3.2		
Actuated g/C Ratio			0.04		
Clearance Time (s)			3.5		
Vehicle Extension (s)			2.0		
Lane Grp Cap (vph)			74		
v/s Ratio Prot			c0.00		
v/s Ratio Perm					
v/c Ratio			0.01		
Uniform Delay, d1			34.3		
Progression Factor			1.00		
Incremental Delay, d2			0.0		
Delay (s)			34.4		
Level of Service			C		
Approach Delay (s)			34.4		
Approach LOS			C		
<b>Intersection Summary</b>					

# HCM 2010 Signalized Intersection Summary

## 2: Solano Blvd & Sonoma Blvd



















Vallejo Marine Terminal  
Existing PM with VMT and Orcem Projects

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	16	54	9	31	13	49	8	369	44	10	326	5
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		0.99	1.00		0.99	1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1868	1900	1845	1840	1900	1900	1857	1900	1900	1881	1900
Adj Flow Rate, veh/h	18	62	3	36	15	1	9	424	45	11	375	6
Adj No. of Lanes	1	1	0	1	2	0	1	2	0	1	2	0
Peak Hour Factor	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87
Percent Heavy Veh, %	0	2	2	3	8	8	0	2	2	0	1	1
Cap, veh/h	55	200	10	95	454	30	38	1751	185	46	1976	32
Arrive On Green	0.03	0.11	0.11	0.05	0.14	0.14	0.02	0.54	0.54	0.03	0.55	0.55
Sat Flow, veh/h	1810	1767	86	1757	3326	219	1810	3216	340	1810	3600	58
Grp Volume(v), veh/h	18	0	65	36	8	8	9	232	237	11	186	195
Grp Sat Flow(s),veh/h/ln	1810	0	1853	1757	1748	1798	1810	1764	1791	1810	1787	1870
Q Serve(g_s), s	0.5	0.0	1.8	1.1	0.2	0.2	0.3	3.8	3.8	0.3	2.9	2.9
Cycle Q Clear(g_c), s	0.5	0.0	1.8	1.1	0.2	0.2	0.3	3.8	3.8	0.3	2.9	2.9
Prop In Lane	1.00		0.05	1.00		0.12	1.00		0.19	1.00		0.03
Lane Grp Cap(c), veh/h	55	0	210	95	239	245	38	960	975	46	981	1026
V/C Ratio(X)	0.33	0.00	0.31	0.38	0.03	0.03	0.24	0.24	0.24	0.24	0.19	0.19
Avail Cap(c_a), veh/h	493	0	807	558	761	783	624	960	975	591	981	1026
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	26.2	0.0	22.5	25.2	20.6	20.6	26.5	6.6	6.6	26.3	6.3	6.3
Incr Delay (d2), s/veh	1.3	0.0	0.3	0.9	0.0	0.0	1.2	0.6	0.6	1.0	0.4	0.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.3	0.0	0.9	0.6	0.1	0.1	0.1	2.0	2.0	0.2	1.5	1.6
LnGrp Delay(d),s/veh	27.4	0.0	22.8	26.1	20.7	20.7	27.7	7.2	7.2	27.3	6.7	6.7
LnGrp LOS	C		C	C	C	C	C	A	A	C	A	A
Approach Vol, veh/h		83			52			478			392	
Approach Delay, s/veh		23.8			24.4			7.6			7.3	
Approach LOS		C			C			A			A	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	4.4	34.5	6.0	10.2	4.2	34.7	4.7	11.5				
Change Period (Y+Rc), s	3.0	4.5	3.0	4.0	3.0	4.5	3.0	4.0				
Max Green Setting (Gmax), s	18.0	30.0	17.5	24.0	19.0	30.0	15.0	24.0				
Max Q Clear Time (g_c+I1), s	2.3	5.8	3.1	3.8	2.3	4.9	2.5	2.2				
Green Ext Time (p_c), s	0.0	3.4	0.0	0.2	0.0	3.4	0.0	0.2				
<b>Intersection Summary</b>												
HCM 2010 Ctrl Delay			9.7									
HCM 2010 LOS			A									
<b>Notes</b>												
User approved pedestrian interval to be less than phase max green.												





















HCM 2010 Signalized Intersection Summary  
3: Sonoma Blvd & Lemon St

Vallejo Marine Terminal  
Existing PM with VMT and Orcem Projects

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	11	51	29	44	32	30	15	340	113	48	324	11
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	0.98		0.98	0.98		0.98	1.00		0.98	1.00		0.97
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1818	1900	1900	1846	1900	1667	1877	1900	1900	1882	1900
Adj Flow Rate, veh/h	11	53	26	46	33	3	16	354	93	50	338	10
Adj No. of Lanes	0	1	0	0	1	0	1	2	0	1	2	0
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	4	4	4	7	7	7	14	1	1	0	1	1
Cap, veh/h	93	224	98	250	155	11	44	1384	358	124	1903	56
Arrive On Green	0.20	0.20	0.20	0.20	0.20	0.20	0.06	0.99	0.99	0.07	0.54	0.54
Sat Flow, veh/h	86	1114	488	722	772	57	1587	2789	722	1810	3542	105
Grp Volume(v), veh/h	90	0	0	82	0	0	16	224	223	50	170	178
Grp Sat Flow(s),veh/h/ln	1688	0	0	1551	0	0	1587	1783	1729	1810	1788	1859
Q Serve(g_s), s	0.0	0.0	0.0	0.0	0.0	0.0	0.5	0.1	0.1	1.4	2.6	2.6
Cycle Q Clear(g_c), s	2.4	0.0	0.0	2.0	0.0	0.0	0.5	0.1	0.1	1.4	2.6	2.6
Prop In Lane	0.12		0.29	0.56		0.04	1.00		0.42	1.00		0.06
Lane Grp Cap(c), veh/h	415	0	0	417	0	0	44	884	858	124	960	999
V/C Ratio(X)	0.22	0.00	0.00	0.20	0.00	0.00	0.36	0.25	0.26	0.40	0.18	0.18
Avail Cap(c_a), veh/h	793	0	0	755	0	0	327	884	858	440	960	999
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	1.00	1.00	1.00	0.97	0.97	0.97
Uniform Delay (d), s/veh	18.0	0.0	0.0	17.8	0.0	0.0	24.8	0.1	0.1	23.8	6.3	6.3
Incr Delay (d2), s/veh	0.1	0.0	0.0	0.1	0.0	0.0	1.9	0.7	0.7	0.8	0.4	0.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.1	0.0	0.0	1.0	0.0	0.0	0.2	0.2	0.2	0.7	1.4	1.4
LnGrp Delay(d),s/veh	18.1	0.0	0.0	17.9	0.0	0.0	26.6	0.8	0.8	24.6	6.7	6.7
LnGrp LOS	B			B			C	A	A	C	A	A
Approach Vol, veh/h		90			82			463			398	
Approach Delay, s/veh		18.1			17.9			1.7			9.0	
Approach LOS		B			B			A			A	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	7.7	52.6		14.7	5.5	54.8		14.7				
Change Period (Y+Rc), s	4.0	4.5		4.0	4.0	4.5		4.0				
Max Green Setting (Gmax), s	13.0	26.5		23.0	11.0	28.5		23.0				
Max Q Clear Time (g_c+I1), s	3.4	2.1		4.4	2.5	4.6		4.0				
Green Ext Time (p_c), s	0.0	7.2		0.6	0.0	7.1		0.6				
<b>Intersection Summary</b>												
HCM 2010 Ctrl Delay			7.2									
HCM 2010 LOS			A									




















HCM 2010 Signalized Intersection Summary  
6: Sonoma Blvd & Magazine St

Vallejo Marine Terminal  
Existing PM with VMT and Orcem Projects

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	25	52	7	21	56	82	14	323	116	82	248	24
Number	3	8	18	7	4	14	1	6	16	5	2	12
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	0.98		0.96	0.98		0.97	1.00		0.97	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1900	1900	1900	1890	1900	1900	1872	1900	1900	1866	1900
Adj Flow Rate, veh/h	27	56	2	23	60	16	15	347	92	88	267	20
Adj No. of Lanes	0	1	0	0	1	0	1	2	0	1	2	0
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Percent Heavy Veh, %	0	0	0	0	0	0	0	2	2	0	2	2
Cap, veh/h	185	339	10	143	316	72	54	1136	297	197	1633	122
Arrive On Green	0.26	0.26	0.26	0.26	0.26	0.26	0.03	0.41	0.41	0.22	0.98	0.98
Sat Flow, veh/h	375	1308	41	233	1220	280	1810	2776	725	1810	3345	249
Grp Volume(v), veh/h	85	0	0	99	0	0	15	220	219	88	141	146
Grp Sat Flow(s),veh/h/ln	1724	0	0	1733	0	0	1810	1779	1722	1810	1773	1821
Q Serve(g_s), s	0.0	0.0	0.0	0.0	0.0	0.0	0.4	4.5	4.6	2.3	0.1	0.1
Cycle Q Clear(g_c), s	1.9	0.0	0.0	2.3	0.0	0.0	0.4	4.5	4.6	2.3	0.1	0.1
Prop In Lane	0.32		0.02	0.23		0.16	1.00		0.42	1.00		0.14
Lane Grp Cap(c), veh/h	534	0	0	531	0	0	54	728	705	197	865	889
V/C Ratio(X)	0.16	0.00	0.00	0.19	0.00	0.00	0.28	0.30	0.31	0.45	0.16	0.16
Avail Cap(c_a), veh/h	968	0	0	969	0	0	370	728	705	438	865	889
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	15.5	0.0	0.0	15.6	0.0	0.0	25.5	10.7	10.7	19.6	0.3	0.3
Incr Delay (d2), s/veh	0.1	0.0	0.0	0.1	0.0	0.0	1.0	1.1	1.1	0.6	0.4	0.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.0	0.0	0.0	1.2	0.0	0.0	0.2	2.4	2.4	1.2	0.1	0.1
LnGrp Delay(d),s/veh	15.5	0.0	0.0	15.7	0.0	0.0	26.5	11.8	11.9	20.2	0.7	0.7
LnGrp LOS	B			B			C	B	B	C	A	A
Approach Vol, veh/h		85			99			454			375	
Approach Delay, s/veh		15.5			15.7			12.3			5.3	
Approach LOS		B			B			B			A	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	5.1	52.5		17.4	9.4	48.2		17.4				
Change Period (Y+Rc), s	3.5	5.0		3.5	3.5	5.0		3.5				
Max Green Setting (Gmax), s	11.0	24.0		28.0	13.0	22.0		28.0				
Max Q Clear Time (g_c+I1), s	2.4	2.1		4.3	4.3	6.6		3.9				
Green Ext Time (p_c), s	0.0	6.2		0.6	0.1	5.3		0.6				
<b>Intersection Summary</b>												
HCM 2010 Ctrl Delay			10.3									
HCM 2010 LOS			B									



















HCM 2010 Signalized Intersection Summary  
8: Sonoma Blvd & Maritime Academy Dr

Vallejo Marine Terminal  
Existing PM with VMT and Orcem Projects

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	110	16	14	10	39	116	15	286	42	21	200	41
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	0.99		0.98	1.00		0.98	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1900	1900	1900	1793	1900	1900	1863	1900	1810	1854	1900
Adj Flow Rate, veh/h	115	17	10	10	41	21	16	298	35	22	208	26
Adj No. of Lanes	0	1	0	0	1	1	1	2	0	1	2	0
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	0	0	0	5	5	0	0	2	2	5	3	3
Cap, veh/h	538	75	31	183	489	486	68	1027	120	86	1055	130
Arrive On Green	0.31	0.31	0.31	0.31	0.31	0.31	0.04	0.32	0.32	0.05	0.33	0.33
Sat Flow, veh/h	1072	244	100	146	1595	1586	1810	3195	372	1723	3156	390
Grp Volume(v), veh/h	142	0	0	51	0	21	16	164	169	22	115	119
Grp Sat Flow(s),veh/h/ln	1416	0	0	1740	0	1586	1810	1770	1797	1723	1761	1785
Q Serve(g_s), s	1.8	0.0	0.0	0.0	0.0	0.3	0.3	2.2	2.2	0.4	1.4	1.5
Cycle Q Clear(g_c), s	2.4	0.0	0.0	0.6	0.0	0.3	0.3	2.2	2.2	0.4	1.4	1.5
Prop In Lane	0.81		0.07	0.20		1.00	1.00		0.21	1.00		0.22
Lane Grp Cap(c), veh/h	644	0	0	672	0	486	68	569	578	86	589	597
V/C Ratio(X)	0.22	0.00	0.00	0.08	0.00	0.04	0.24	0.29	0.29	0.25	0.20	0.20
Avail Cap(c_a), veh/h	1577	0	0	1775	0	1530	1397	2277	2312	1330	2266	2296
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	8.3	0.0	0.0	7.7	0.0	7.6	14.5	7.9	7.9	14.2	7.4	7.4
Incr Delay (d2), s/veh	0.1	0.0	0.0	0.0	0.0	0.0	0.7	0.3	0.3	0.6	0.2	0.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.9	0.0	0.0	0.3	0.0	0.1	0.1	1.1	1.1	0.2	0.7	0.8
LnGrp Delay(d),s/veh	8.4	0.0	0.0	7.7	0.0	7.6	15.2	8.2	8.2	14.8	7.5	7.5
LnGrp LOS	A			A		A	B	A	A	B	A	A
Approach Vol, veh/h		142			72			349			256	
Approach Delay, s/veh		8.4			7.7			8.5			8.2	
Approach LOS		A			A			A			A	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	4.6	14.0		12.5	4.2	14.4		12.5				
Change Period (Y+Rc), s	3.0	4.0		3.0	3.0	4.0		3.0				
Max Green Setting (Gmax), s	24.0	40.0		30.0	24.0	40.0		30.0				
Max Q Clear Time (g_c+I1), s	2.4	4.2		4.4	2.3	3.5		2.6				
Green Ext Time (p_c), s	0.0	3.7		0.7	0.0	3.7		0.8				
<b>Intersection Summary</b>												
HCM 2010 Ctrl Delay			8.3									
HCM 2010 LOS			A									

























HCM 2010 Signalized Intersection Summary  
 16: Lemon St & Carlson St

Vallejo Marine Terminal  
 Existing PM with VMT and Orcem Projects

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	8	329	4	36	189	65	0	0	29	195	0	11
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	0.97		0.95	0.98		0.95	1.00		0.95	0.93		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1864	1900	1900	1759	1900	1900	1900	1900	1863	1867	1900
Adj Flow Rate, veh/h	9	354	3	39	203	50	0	0	9	213	0	0
Adj No. of Lanes	0	1	0	1	1	0	0	1	0	2	1	0
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Percent Heavy Veh, %	2	2	2	0	8	8	0	0	0	2	0	0
Cap, veh/h	135	797	7	557	591	145	0	0	431	1230	527	0
Arrive On Green	0.44	0.44	0.44	0.44	0.44	0.44	0.00	0.00	0.28	0.28	0.00	0.00
Sat Flow, veh/h	14	1821	15	1016	1349	332	0	0	1529	2611	1867	0
Grp Volume(v), veh/h	366	0	0	39	0	253	0	0	9	213	0	0
Grp Sat Flow(s),veh/h/ln	1851	0	0	1016	0	1682	0	0	1529	1305	1867	0
Q Serve(g_s), s	0.0	0.0	0.0	0.8	0.0	2.8	0.0	0.0	0.1	1.8	0.0	0.0
Cycle Q Clear(g_c), s	3.9	0.0	0.0	4.7	0.0	2.8	0.0	0.0	0.1	2.0	0.0	0.0
Prop In Lane	0.02		0.01	1.00		0.20	0.00		1.00	1.00		0.00
Lane Grp Cap(c), veh/h	939	0	0	557	0	736	0	0	431	1230	527	0
V/C Ratio(X)	0.39	0.00	0.00	0.07	0.00	0.34	0.00	0.00	0.02	0.17	0.00	0.00
Avail Cap(c_a), veh/h	2508	0	0	1429	0	2179	0	0	1606	3236	1961	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	1.00	0.00	0.00	1.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	5.6	0.0	0.0	7.3	0.0	5.3	0.0	0.0	7.4	8.1	0.0	0.0
Incr Delay (d2), s/veh	0.3	0.0	0.0	0.1	0.0	0.3	0.0	0.0	0.0	0.1	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.0	0.0	0.0	0.2	0.0	1.3	0.0	0.0	0.1	0.7	0.0	0.0
LnGrp Delay(d),s/veh	5.9	0.0	0.0	7.3	0.0	5.6	0.0	0.0	7.4	8.2	0.0	0.0
LnGrp LOS	A			A		A			A	A		
Approach Vol, veh/h		366			292			9			213	
Approach Delay, s/veh		5.9			5.8			7.4			8.2	
Approach LOS		A			A			A			A	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		16.5		12.1		16.5		12.1				
Change Period (Y+Rc), s		4.0		4.0		4.0		4.0				
Max Green Setting (Gmax), s		37.0		30.0		37.0		30.0				
Max Q Clear Time (g_c+I1), s		5.9		4.0		6.7		2.1				
Green Ext Time (p_c), s		4.5		0.8		4.4		0.8				
<b>Intersection Summary</b>												
HCM 2010 Ctrl Delay			6.4									
HCM 2010 LOS			A									
<b>Notes</b>												
User approved volume balancing among the lanes for turning movement.												

HCM 2010 Signalized Intersection Summary  
 17: Lemon St & Curtola Pkwy

Vallejo Marine Terminal  
 Existing PM with VMT and Orcem Projects

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	53	145	438	102	85	22	200	569	155	38	784	24
Number	3	8	18	7	4	14	1	6	16	5	2	12
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		0.92	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1759	1881	1881	1881	1863	1900	1743	1881	1900	1900	1846	1900
Adj Flow Rate, veh/h	55	198	182	105	88	8	206	587	0	39	808	0
Adj No. of Lanes	1	1	1	1	1	1	1	2	0	1	2	0
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %	8	1	1	1	2	0	9	1	1	0	3	3
Cap, veh/h	76	317	266	136	371	297	246	1678	0	67	1256	0
Arrive On Green	0.05	0.17	0.17	0.08	0.20	0.20	0.15	0.47	0.00	0.04	0.36	0.00
Sat Flow, veh/h	1675	1881	1578	1792	1863	1489	1660	3668	0	1810	3600	0
Grp Volume(v), veh/h	55	198	182	105	88	8	206	587	0	39	808	0
Grp Sat Flow(s),veh/h/ln	1675	1881	1578	1792	1863	1489	1660	1787	0	1810	1754	0
Q Serve(g_s), s	2.5	7.4	8.2	4.4	3.0	0.3	9.2	7.9	0.0	1.6	14.6	0.0
Cycle Q Clear(g_c), s	2.5	7.4	8.2	4.4	3.0	0.3	9.2	7.9	0.0	1.6	14.6	0.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.00	1.00		0.00
Lane Grp Cap(c), veh/h	76	317	266	136	371	297	246	1678	0	67	1256	0
V/C Ratio(X)	0.73	0.62	0.68	0.77	0.24	0.03	0.84	0.35	0.00	0.58	0.64	0.00
Avail Cap(c_a), veh/h	552	867	728	590	859	686	547	1678	0	596	1618	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	35.8	29.3	29.7	34.4	25.5	24.5	31.4	12.8	0.0	36.0	20.3	0.0
Incr Delay (d2), s/veh	4.9	2.1	3.2	3.5	0.4	0.0	2.9	0.2	0.0	3.0	0.6	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.2	4.0	3.8	2.3	1.6	0.1	4.4	4.0	0.0	0.9	7.2	0.0
LnGrp Delay(d),s/veh	40.6	31.4	32.9	37.9	26.0	24.5	34.3	13.0	0.0	39.0	21.0	0.0
LnGrp LOS	D	C	C	D	C	C	C	B		D	C	
Approach Vol, veh/h		435			201			793			847	
Approach Delay, s/veh		33.2			32.1			18.5			21.8	
Approach LOS		C			C			B			C	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	15.3	33.2	7.4	20.0	6.8	41.6	9.8	17.7				
Change Period (Y+Rc), s	4.0	6.0	4.0	4.9	4.0	6.0	4.0	4.9				
Max Green Setting (Gmax), s	25.0	35.0	25.0	35.0	25.0	35.0	25.0	35.0				
Max Q Clear Time (g_c+I1), s	11.2	16.6	4.5	5.0	3.6	9.9	6.4	10.2				
Green Ext Time (p_c), s	0.2	10.6	0.1	2.6	0.0	13.4	0.1	2.6				
<b>Intersection Summary</b>												
HCM 2010 Ctrl Delay			23.7									
HCM 2010 LOS			C									
<b>Notes</b>												
User approved volume balancing among the lanes for turning movement.												

Intersection									
Int Delay, s/veh	0.6								

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR
Vol, veh/h	13	3	5	4	2	5	3	454	3
Conflicting Peds, #/hr	0	0	0	0	0	0	2	0	5
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-
Peak Hour Factor	97	97	97	97	97	97	97	97	97
Heavy Vehicles, %	15	0	0	0	0	0	0	2	0
Mvmt Flow	13	3	5	4	2	5	3	468	3

Major/Minor	Minor2			Minor1			Major1		
Conflicting Flow All	645	881	205	682	886	241	400	0	0
Stage 1	404	404	-	476	476	-	-	-	-
Stage 2	241	477	-	206	410	-	-	-	-
Critical Hdwy	7.8	6.5	6.9	7.5	6.5	6.9	4.1	-	-
Critical Hdwy Stg 1	6.8	5.5	-	6.5	5.5	-	-	-	-
Critical Hdwy Stg 2	6.8	5.5	-	6.5	5.5	-	-	-	-
Follow-up Hdwy	3.65	4	3.3	3.5	4	3.3	2.2	-	-
Pot Cap-1 Maneuver	332	288	808	340	286	766	1170	-	-
Stage 1	560	603	-	544	560	-	-	-	-
Stage 2	705	559	-	782	599	-	-	-	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	324	285	805	331	283	763	1165	-	-
Mov Cap-2 Maneuver	324	285	-	331	283	-	-	-	-
Stage 1	558	599	-	542	558	-	-	-	-
Stage 2	693	557	-	765	595	-	-	-	-

Approach	EB	WB	NB
HCM Control Delay, s	15.4	13.6	0.1
HCM LOS	C	B	

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1165	-	-	369	428	1096	-	-
HCM Lane V/C Ratio	0.003	-	-	0.059	0.026	0.005	-	-
HCM Control Delay (s)	8.1	0	-	15.4	13.6	8.3	0	-
HCM Lane LOS	A	A	-	C	B	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0.2	0.1	0	-	-

**Intersection**

Int Delay, s/veh

Movement	SBL	SBT	SBR
Vol, veh/h	5	376	12
Conflicting Peds, #/hr	5	0	2
Sign Control	Free	Free	Free
RT Channelized	-	-	None
Storage Length	-	-	-
Veh in Median Storage, #	-	0	-
Grade, %	-	0	-
Peak Hour Factor	97	97	97
Heavy Vehicles, %	0	2	0
Mvmt Flow	5	388	12

**Major/Minor Major2**

Conflicting Flow All	471	0	0
Stage 1	-	-	-
Stage 2	-	-	-
Critical Hdwy	4.1	-	-
Critical Hdwy Stg 1	-	-	-
Critical Hdwy Stg 2	-	-	-
Follow-up Hdwy	2.2	-	-
Pot Cap-1 Maneuver	1101	-	-
Stage 1	-	-	-
Stage 2	-	-	-
Platoon blocked, %		-	-
Mov Cap-1 Maneuver	1096	-	-
Mov Cap-2 Maneuver	-	-	-
Stage 1	-	-	-
Stage 2	-	-	-

**Approach SB**

HCM Control Delay, s 0.1

HCM LOS

**Minor Lane/Major Mvmt**

**Intersection**

Int Delay, s/veh 1.1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR
Vol, veh/h	37	1	5	2	0	10	11	411	4
Conflicting Peds, #/hr	0	0	1	1	0	0	1	0	2
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-
Peak Hour Factor	97	97	97	97	97	97	97	97	97
Heavy Vehicles, %	3	0	0	0	0	0	0	2	0
Mvmt Flow	38	1	5	2	0	10	11	424	4

Major/Minor	Minor2			Minor1			Major1		
Conflicting Flow All	626	842	194	648	853	217	383	0	0
Stage 1	390	390	-	449	449	-	-	-	-
Stage 2	236	452	-	199	404	-	-	-	-
Critical Hdwy	7.56	6.5	6.9	7.5	6.5	6.9	4.1	-	-
Critical Hdwy Stg 1	6.56	5.5	-	6.5	5.5	-	-	-	-
Critical Hdwy Stg 2	6.56	5.5	-	6.5	5.5	-	-	-	-
Follow-up Hdwy	3.53	4	3.3	3.5	4	3.3	2.2	-	-
Pot Cap-1 Maneuver	367	303	821	359	299	794	1187	-	-
Stage 1	603	611	-	564	576	-	-	-	-
Stage 2	743	574	-	790	603	-	-	-	-
Platoon blocked, %									
Mov Cap-1 Maneuver	355	296	819	349	292	792	1185	-	-
Mov Cap-2 Maneuver	355	296	-	349	292	-	-	-	-
Stage 1	595	604	-	557	569	-	-	-	-
Stage 2	723	567	-	774	596	-	-	-	-

Approach	EB	WB	NB
HCM Control Delay, s	15.8	10.6	0.2
HCM LOS	C	B	

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1185	-	-	378	654	1139	-	-
HCM Lane V/C Ratio	0.01	-	-	0.117	0.019	0.009	-	-
HCM Control Delay (s)	8.1	0	-	15.8	10.6	8.2	0	-
HCM Lane LOS	A	A	-	C	B	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0.4	0.1	0	-	-



**Intersection**

Int Delay, s/veh

Movement	SBL	SBT	SBR
Vol, veh/h	10	343	28
Conflicting Peds, #/hr	2	0	1
Sign Control	Free	Free	Free
RT Channelized	-	-	None
Storage Length	-	-	-
Veh in Median Storage, #	-	0	-
Grade, %	-	0	-
Peak Hour Factor	97	97	97
Heavy Vehicles, %	0	2	0
Mvmt Flow	10	354	29

**Major/Minor Major2**

Conflicting Flow All	429	0	0
Stage 1	-	-	-
Stage 2	-	-	-
Critical Hdwy	4.1	-	-
Critical Hdwy Stg 1	-	-	-
Critical Hdwy Stg 2	-	-	-
Follow-up Hdwy	2.2	-	-
Pot Cap-1 Maneuver	1141	-	-
Stage 1	-	-	-
Stage 2	-	-	-
Platoon blocked, %		-	-
Mov Cap-1 Maneuver	1139	-	-
Mov Cap-2 Maneuver	-	-	-
Stage 1	-	-	-
Stage 2	-	-	-

**Approach SB**

HCM Control Delay, s 0.2

HCM LOS

**Minor Lane/Major Mvmt**

**Intersection**

Int Delay, s/veh 2

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Vol, veh/h	39	19	100	414	241	33
Conflicting Peds, #/hr	0	0	2	0	0	2
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	60	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	0	0	0	2	2	0
Mvmt Flow	41	20	105	436	254	35

Major/Minor	Minor2	Major1	Major2
Conflicting Flow All	699	146	288
Stage 1	271	-	-
Stage 2	428	-	-
Critical Hdwy	6.8	6.9	4.1
Critical Hdwy Stg 1	5.8	-	-
Critical Hdwy Stg 2	5.8	-	-
Follow-up Hdwy	3.5	3.3	2.2
Pot Cap-1 Maneuver	378	881	1286
Stage 1	756	-	-
Stage 2	631	-	-
Platoon blocked, %			-
Mov Cap-1 Maneuver	347	880	1284
Mov Cap-2 Maneuver	347	-	-
Stage 1	756	-	-
Stage 2	579	-	-

Approach	EB	NB	SB
HCM Control Delay, s	14.7	1.6	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1284	-	433	-	-
HCM Lane V/C Ratio	0.082	-	0.141	-	-
HCM Control Delay (s)	8.1	-	14.7	-	-
HCM Lane LOS	A	-	B	-	-
HCM 95th %tile Q(veh)	0.3	-	0.5	-	-

**Intersection**

Int Delay, s/veh 0.5

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR
Vol, veh/h	0	69	0	1	26	11	0	0	1
Conflicting Peds, #/hr	1	0	0	0	0	1	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-
Peak Hour Factor	80	80	80	80	80	80	80	80	80
Heavy Vehicles, %	0	6	0	0	16	0	0	0	0
Mvmt Flow	0	86	0	1	32	14	0	0	1

Major/Minor	Major1	Major2	Minor1						
Conflicting Flow All	46	0	0	86	0	0	128	135	87
Stage 1	-	-	-	-	-	-	86	86	-
Stage 2	-	-	-	-	-	-	42	49	-
Critical Hdwy	4.1	-	-	4.1	-	-	7.1	6.5	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-
Follow-up Hdwy	2.2	-	-	2.2	-	-	3.5	4	3.3
Pot Cap-1 Maneuver	1575	-	-	1523	-	-	850	760	977
Stage 1	-	-	-	-	-	-	927	827	-
Stage 2	-	-	-	-	-	-	978	858	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1574	-	-	1522	-	-	849	759	976
Mov Cap-2 Maneuver	-	-	-	-	-	-	849	759	-
Stage 1	-	-	-	-	-	-	927	827	-
Stage 2	-	-	-	-	-	-	976	857	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.2	8.7
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	976	1574	-	-	1522	-	-	847
HCM Lane V/C Ratio	0.001	-	-	-	0.001	-	-	0.006
HCM Control Delay (s)	8.7	0	-	-	7.4	0	-	9.3
HCM Lane LOS	A	A	-	-	A	A	-	A
HCM 95th %tile Q(veh)	0	0	-	-	0	-	-	0

**Intersection**

Int Delay, s/veh

Movement	SBL	SBT	SBR
Vol, veh/h	4	0	0
Conflicting Peds, #/hr	0	0	0
Sign Control	Stop	Stop	Stop
RT Channelized	-	-	None
Storage Length	-	-	-
Veh in Median Storage, #	-	0	-
Grade, %	-	0	-
Peak Hour Factor	80	80	80
Heavy Vehicles, %	0	0	0
Mvmt Flow	5	0	0

**Major/Minor**

**Minor2**

Conflicting Flow All	129	128	40
Stage 1	42	42	-
Stage 2	87	86	-
Critical Hdwy	7.1	6.5	6.2
Critical Hdwy Stg 1	6.1	5.5	-
Critical Hdwy Stg 2	6.1	5.5	-
Follow-up Hdwy	3.5	4	3.3
Pot Cap-1 Maneuver	849	766	1037
Stage 1	978	864	-
Stage 2	926	827	-
Platoon blocked, %			
Mov Cap-1 Maneuver	847	765	1036
Mov Cap-2 Maneuver	847	765	-
Stage 1	978	863	-
Stage 2	924	827	-

**Approach**

SB

HCM Control Delay, s	9.3
HCM LOS	A

**Minor Lane/Major Mvmt**

Intersection	
Int Delay, s/veh	1.2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR
Vol, veh/h	0	76	0	6	40	7	1	0	12
Conflicting Peds, #/hr	0	0	1	1	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-
Peak Hour Factor	80	80	80	80	80	80	80	80	80
Heavy Vehicles, %	0	6	0	0	11	0	0	0	0
Mvmt Flow	0	95	0	8	50	9	1	0	15

Major/Minor	Major1	Major2	Minor1						
Conflicting Flow All	59	0	0	95	0	0	165	169	96
Stage 1	-	-	-	-	-	-	95	95	-
Stage 2	-	-	-	-	-	-	70	74	-
Critical Hdwy	4.1	-	-	4.1	-	-	7.1	6.5	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-
Follow-up Hdwy	2.2	-	-	2.2	-	-	3.5	4	3.3
Pot Cap-1 Maneuver	1558	-	-	1512	-	-	804	728	966
Stage 1	-	-	-	-	-	-	917	820	-
Stage 2	-	-	-	-	-	-	945	837	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1557	-	-	1511	-	-	799	724	965
Mov Cap-2 Maneuver	-	-	-	-	-	-	799	724	-
Stage 1	-	-	-	-	-	-	917	820	-
Stage 2	-	-	-	-	-	-	938	833	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.8	8.9
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	950	1557	-	-	1511	-	-	728
HCM Lane V/C Ratio	0.017	-	-	-	0.005	-	-	0.002
HCM Control Delay (s)	8.9	0	-	-	7.4	0	-	10
HCM Lane LOS	A	A	-	-	A	A	-	B
HCM 95th %tile Q(veh)	0.1	0	-	-	0	-	-	0

**Intersection**

Int Delay, s/veh

Movement	SBL	SBT	SBR
Vol, veh/h	0	1	0
Conflicting Peds, #/hr	0	0	0
Sign Control	Stop	Stop	Stop
RT Channelized	-	-	None
Storage Length	-	-	-
Veh in Median Storage, #	-	0	-
Grade, %	-	0	-
Peak Hour Factor	80	80	80
Heavy Vehicles, %	0	0	0
Mvmt Flow	0	1	0

**Major/Minor**

**Minor2**

Conflicting Flow All	172	164	55
Stage 1	69	69	-
Stage 2	103	95	-
Critical Hdwy	7.1	6.5	6.2
Critical Hdwy Stg 1	6.1	5.5	-
Critical Hdwy Stg 2	6.1	5.5	-
Follow-up Hdwy	3.5	4	3.3
Pot Cap-1 Maneuver	796	732	1018
Stage 1	946	841	-
Stage 2	908	820	-
Platoon blocked, %			
Mov Cap-1 Maneuver	780	728	1017
Mov Cap-2 Maneuver	780	728	-
Stage 1	946	837	-
Stage 2	893	820	-

**Approach**

SB

HCM Control Delay, s	10
HCM LOS	B

**Minor Lane/Major Mvmt**

Intersection	
Int Delay, s/veh	0.8

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR
Vol, veh/h	3	207	3	10	104	7	2	1	4
Conflicting Peds, #/hr	5	0	4	4	0	5	3	0	4
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-
Peak Hour Factor	88	88	88	88	88	88	88	88	88
Heavy Vehicles, %	0	2	0	0	3	14	0	0	0
Mvmt Flow	3	235	3	11	118	8	2	1	5

Major/Minor	Major1	Major2	Minor1						
Conflicting Flow All	130	0	0	243	0	0	400	401	246
Stage 1	-	-	-	-	-	-	248	248	-
Stage 2	-	-	-	-	-	-	152	153	-
Critical Hdwy	4.1	-	-	4.1	-	-	7.1	6.5	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-
Follow-up Hdwy	2.2	-	-	2.2	-	-	3.5	4	3.3
Pot Cap-1 Maneuver	1468	-	-	1335	-	-	564	541	798
Stage 1	-	-	-	-	-	-	760	705	-
Stage 2	-	-	-	-	-	-	855	775	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1462	-	-	1329	-	-	551	531	792
Mov Cap-2 Maneuver	-	-	-	-	-	-	551	531	-
Stage 1	-	-	-	-	-	-	756	701	-
Stage 2	-	-	-	-	-	-	837	765	-

Approach	EB	WB	NB
HCM Control Delay, s	0.1	0.6	10.5
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	663	1462	-	-	1329	-	-	650
HCM Lane V/C Ratio	0.012	0.002	-	-	0.009	-	-	0.017
HCM Control Delay (s)	10.5	7.5	0	-	7.7	0	-	10.6
HCM Lane LOS	B	A	A	-	A	A	-	B
HCM 95th %tile Q(veh)	0	0	-	-	0	-	-	0.1

**Intersection**

Int Delay, s/veh

Movement	SBL	SBT	SBR
Vol, veh/h	4	2	4
Conflicting Peds, #/hr	4	0	3
Sign Control	Stop	Stop	Stop
RT Channelized	-	-	None
Storage Length	-	-	-
Veh in Median Storage, #	-	0	-
Grade, %	-	0	-
Peak Hour Factor	88	88	88
Heavy Vehicles, %	0	0	0
Mvmt Flow	5	2	5

**Major/Minor**

Minor2

Conflicting Flow All	400	398	131
Stage 1	149	149	-
Stage 2	251	249	-
Critical Hdwy	7.1	6.5	6.2
Critical Hdwy Stg 1	6.1	5.5	-
Critical Hdwy Stg 2	6.1	5.5	-
Follow-up Hdwy	3.5	4	3.3
Pot Cap-1 Maneuver	564	543	924
Stage 1	858	778	-
Stage 2	758	704	-
Platoon blocked, %			
Mov Cap-1 Maneuver	551	533	917
Mov Cap-2 Maneuver	551	533	-
Stage 1	853	768	-
Stage 2	748	700	-

**Approach**

SB

HCM Control Delay, s	10.6
HCM LOS	B

**Minor Lane/Major Mvmt**



**Intersection**

Int Delay, s/veh 4.3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR
Vol, veh/h	9	195	8	19	108	35	3	44	18
Conflicting Peds, #/hr	3	0	0	0	0	3	1	0	4
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-
Peak Hour Factor	94	94	94	94	94	94	94	94	94
Heavy Vehicles, %	0	3	0	5	4	6	0	0	0
Mvmt Flow	10	207	9	20	115	37	3	47	19

Major/Minor	Major1	Major2	Minor1						
Conflicting Flow All	156	0	0	220	0	0	436	432	219
Stage 1	-	-	-	-	-	-	235	235	-
Stage 2	-	-	-	-	-	-	201	197	-
Critical Hdwy	4.1	-	-	4.15	-	-	7.1	6.5	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-
Follow-up Hdwy	2.2	-	-	2.245	-	-	3.5	4	3.3
Pot Cap-1 Maneuver	1436	-	-	1332	-	-	534	519	826
Stage 1	-	-	-	-	-	-	773	714	-
Stage 2	-	-	-	-	-	-	805	742	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1432	-	-	1329	-	-	487	503	821
Mov Cap-2 Maneuver	-	-	-	-	-	-	487	503	-
Stage 1	-	-	-	-	-	-	764	706	-
Stage 2	-	-	-	-	-	-	742	727	-

Approach	EB	WB	NB
HCM Control Delay, s	0.3	0.9	12.3
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	562	1432	-	-	1329	-	-	508
HCM Lane V/C Ratio	0.123	0.007	-	-	0.015	-	-	0.195
HCM Control Delay (s)	12.3	7.5	0	-	7.8	0	-	13.8
HCM Lane LOS	B	A	A	-	A	A	-	B
HCM 95th %tile Q(veh)	0.4	0	-	-	0	-	-	0.7

**Intersection**

Int Delay, s/veh

Movement	SBL	SBT	SBR
Vol, veh/h	49	34	10
Conflicting Peds, #/hr	4	0	1
Sign Control	Stop	Stop	Stop
RT Channelized	-	-	None
Storage Length	-	-	-
Veh in Median Storage, #	-	0	-
Grade, %	-	0	-
Peak Hour Factor	94	94	94
Heavy Vehicles, %	2	0	0
Mvmt Flow	52	36	11

**Major/Minor**

	Minor2		
Conflicting Flow All	446	417	141
Stage 1	178	178	-
Stage 2	268	239	-
Critical Hdwy	7.12	6.5	6.2
Critical Hdwy Stg 1	6.12	5.5	-
Critical Hdwy Stg 2	6.12	5.5	-
Follow-up Hdwy	3.518	4	3.3
Pot Cap-1 Maneuver	523	530	912
Stage 1	824	756	-
Stage 2	738	711	-
Platoon blocked, %			
Mov Cap-1 Maneuver	463	513	907
Mov Cap-2 Maneuver	463	513	-
Stage 1	815	741	-
Stage 2	666	703	-

**Approach**

	SB
HCM Control Delay, s	13.8
HCM LOS	B

**Minor Lane/Major Mvmt**

**Intersection**

Int Delay, s/veh 0.9

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR
Vol, veh/h	3	255	5	18	150	0	6	0	18
Conflicting Peds, #/hr	1	0	1	1	0	1	4	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	0	2	0	0	5	0	0	0	0
Mvmt Flow	3	283	6	20	167	0	7	0	20

Major/Minor	Major1	Major2	Minor1						
Conflicting Flow All	171	0	0	293	0	0	508	508	291
Stage 1	-	-	-	-	-	-	297	297	-
Stage 2	-	-	-	-	-	-	211	211	-
Critical Hdwy	4.1	-	-	4.1	-	-	7.1	6.5	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-
Follow-up Hdwy	2.2	-	-	2.2	-	-	3.5	4	3.3
Pot Cap-1 Maneuver	1418	-	-	1280	-	-	479	471	753
Stage 1	-	-	-	-	-	-	716	671	-
Stage 2	-	-	-	-	-	-	796	731	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1417	-	-	1279	-	-	469	459	750
Mov Cap-2 Maneuver	-	-	-	-	-	-	469	459	-
Stage 1	-	-	-	-	-	-	711	667	-
Stage 2	-	-	-	-	-	-	781	716	-

Approach	EB	WB	NB
HCM Control Delay, s	0.1	0.8	10.8
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	652	1417	-	-	1279	-	-	873
HCM Lane V/C Ratio	0.041	0.002	-	-	0.016	-	-	0.001
HCM Control Delay (s)	10.8	7.5	0	-	7.9	0	-	9.1
HCM Lane LOS	B	A	A	-	A	A	-	A
HCM 95th %tile Q(veh)	0.1	0	-	-	0	-	-	0

**Intersection**

Int Delay, s/veh

Movement	SBL	SBT	SBR
Vol, veh/h	0	0	1
Conflicting Peds, #/hr	0	0	4
Sign Control	Stop	Stop	Stop
RT Channelized	-	-	None
Storage Length	-	-	-
Veh in Median Storage, #	-	0	-
Grade, %	-	0	-
Peak Hour Factor	90	90	90
Heavy Vehicles, %	0	0	0
Mvmt Flow	0	0	1

**Major/Minor**

	Minor2		
Conflicting Flow All	518	511	172
Stage 1	211	211	-
Stage 2	307	300	-
Critical Hdwy	7.1	6.5	6.2
Critical Hdwy Stg 1	6.1	5.5	-
Critical Hdwy Stg 2	6.1	5.5	-
Follow-up Hdwy	3.5	4	3.3
Pot Cap-1 Maneuver	471	469	877
Stage 1	796	731	-
Stage 2	707	669	-
Platoon blocked, %			
Mov Cap-1 Maneuver	450	457	873
Mov Cap-2 Maneuver	450	457	-
Stage 1	791	716	-
Stage 2	686	665	-

**Approach**

Approach	SB
HCM Control Delay, s	9.1
HCM LOS	A

**Minor Lane/Major Mvmt**

**Intersection**

Int Delay, s/veh 0.1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR
Vol, veh/h	0	274	1	0	171	4	0	0	0
Conflicting Peds, #/hr	1	0	2	2	0	1	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-
Peak Hour Factor	87	87	87	87	87	87	87	87	87
Heavy Vehicles, %	0	2	0	0	5	0	0	0	0
Mvmt Flow	0	315	1	0	197	5	0	0	0

Major/Minor	Major1	Major2	Minor1						
Conflicting Flow All	201	0	0	316	0	0	516	517	318
Stage 1	-	-	-	-	-	-	316	316	-
Stage 2	-	-	-	-	-	-	200	201	-
Critical Hdwy	4.1	-	-	4.1	-	-	7.1	6.5	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-
Follow-up Hdwy	2.2	-	-	2.2	-	-	3.5	4	3.3
Pot Cap-1 Maneuver	1383	-	-	1256	-	-	473	465	727
Stage 1	-	-	-	-	-	-	699	659	-
Stage 2	-	-	-	-	-	-	806	739	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1381	-	-	1254	-	-	471	465	726
Mov Cap-2 Maneuver	-	-	-	-	-	-	471	465	-
Stage 1	-	-	-	-	-	-	699	659	-
Stage 2	-	-	-	-	-	-	802	739	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0	0
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	-	1381	-	-	1254	-	-	669
HCM Lane V/C Ratio	-	-	-	-	-	-	-	0.005
HCM Control Delay (s)	0	0	-	-	0	-	-	10.4
HCM Lane LOS	A	A	-	-	A	-	-	B
HCM 95th %tile Q(veh)	-	0	-	-	0	-	-	0

**Intersection**

Int Delay, s/veh

Movement	SBL	SBT	SBR
Vol, veh/h	1	0	2
Conflicting Peds, #/hr	0	0	0
Sign Control	Stop	Stop	Stop
RT Channelized	-	-	None
Storage Length	-	-	-
Veh in Median Storage, #	-	0	-
Grade, %	-	0	-
Peak Hour Factor	87	87	87
Heavy Vehicles, %	0	0	0
Mvmt Flow	1	0	2

**Major/Minor**

	Minor2		
Conflicting Flow All	515	515	201
Stage 1	199	199	-
Stage 2	316	316	-
Critical Hdwy	7.1	6.5	6.2
Critical Hdwy Stg 1	6.1	5.5	-
Critical Hdwy Stg 2	6.1	5.5	-
Follow-up Hdwy	3.5	4	3.3
Pot Cap-1 Maneuver	474	466	845
Stage 1	807	740	-
Stage 2	699	659	-
Platoon blocked, %			
Mov Cap-1 Maneuver	473	466	844
Mov Cap-2 Maneuver	473	466	-
Stage 1	807	740	-
Stage 2	698	659	-

**Approach**

	SB
HCM Control Delay, s	10.4
HCM LOS	B

**Minor Lane/Major Mvmt**

**Intersection**

Int Delay, s/veh 1

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Vol, veh/h	285	6	15	175	5	32
Conflicting Peds, #/hr	0	5	5	0	0	2
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	84	84	84	84	84	84
Heavy Vehicles, %	1	17	33	5	0	0
Mvmt Flow	339	7	18	208	6	38

Major/Minor	Major1	Major2	Minor1
Conflicting Flow All	0	348	589
Stage 1	-	-	345
Stage 2	-	-	244
Critical Hdwy	-	4.43	6.4
Critical Hdwy Stg 1	-	-	5.4
Critical Hdwy Stg 2	-	-	5.4
Follow-up Hdwy	-	2.497	3.5
Pot Cap-1 Maneuver	-	1057	474
Stage 1	-	-	722
Stage 2	-	-	801
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	-	1053	462
Mov Cap-2 Maneuver	-	-	462
Stage 1	-	-	721
Stage 2	-	-	783

Approach	EB	WB	NB
HCM Control Delay, s	0	0.7	10.9
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	650	-	-	1053	-
HCM Lane V/C Ratio	0.068	-	-	0.017	-
HCM Control Delay (s)	10.9	-	-	8.5	0
HCM Lane LOS	B	-	-	A	A
HCM 95th %tile Q(veh)	0.2	-	-	0.1	-

**APPENDIX L.4.5 — CUMULATIVE (2040) NO PROJECT**





# HCM Signalized Intersection Capacity Analysis

## 1: Sonoma Blvd & Curtola Pkwy

Vallejo Marine Terminal  
Year 2040 AM without Project

Movement	EBT	EBR	EBR2	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	SBR2
Lane Configurations	↑↑	↘		↑↑	↗	↖	↑↑			↑↑		
Volume (vph)	310	130	10	510	210	240	220	10	180	180	10	20
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	4.5		4.5	4.5	4.5	4.5			4.5		
Lane Util. Factor	0.91	0.91		0.95	1.00	1.00	0.95			0.95		
Frpb, ped/bikes	1.00	1.00		1.00	0.98	1.00	1.00			1.00		
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00			1.00		
Fr <sub>t</sub>	0.99	0.85		1.00	0.85	1.00	0.99			0.99		
Fl <sub>t</sub> Protected	1.00	1.00		1.00	1.00	0.95	1.00			0.98		
Satd. Flow (prot)	3336	1418		3539	1587	1752	3486			3371		
Fl <sub>t</sub> Permitted	1.00	1.00		1.00	1.00	0.95	1.00			0.98		
Satd. Flow (perm)	3336	1418		3539	1587	1752	3486			3371		
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.92
Adj. Flow (vph)	333	140	11	548	226	258	237	11	194	194	11	22
RTOR Reduction (vph)	0	51	0	0	163	0	2	0	0	3	0	0
Lane Group Flow (vph)	347	86	0	548	63	258	246	0	0	418	0	0
Confl. Peds. (#/hr)						7		7	7		7	
Confl. Bikes (#/hr)					7							
Heavy Vehicles (%)	3%	4%	0%	2%	0%	3%	2%	20%	2%	4%	0%	8%
Turn Type	NA	Perm		NA	Perm	Split	NA		Split	NA		
Protected Phases	2			2		3	3		4	4		
Permitted Phases		2			2							
Actuated Green, G (s)	22.8	22.8		22.8	22.8	18.6	18.6			17.4		
Effective Green, g (s)	22.8	22.8		22.8	22.8	18.6	18.6			17.4		
Actuated g/C Ratio	0.28	0.28		0.28	0.28	0.23	0.23			0.21		
Clearance Time (s)	4.5	4.5		4.5	4.5	4.5	4.5			4.5		
Vehicle Extension (s)	2.0	2.0		2.0	2.0	2.0	2.0			2.0		
Lane Grp Cap (vph)	936	398		993	445	401	798			722		
v/s Ratio Prot	0.10			c0.15		c0.15	0.07			c0.12		
v/s Ratio Perm		0.06			0.04							
v/c Ratio	0.37	0.22		0.55	0.14	0.64	0.31			0.58		
Uniform Delay, d1	23.4	22.4		24.9	21.9	28.3	26.0			28.6		
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00			1.00		
Incremental Delay, d2	0.1	0.1		0.4	0.1	2.6	0.1			0.7		
Delay (s)	23.5	22.5		25.2	21.9	30.9	26.0			29.3		
Level of Service	C	C		C	C	C	C			C		
Approach Delay (s)	23.2			24.3			28.5			29.3		
Approach LOS	C			C			C			C		
<b>Intersection Summary</b>												
HCM 2000 Control Delay			26.1			HCM 2000 Level of Service				C		
HCM 2000 Volume to Capacity ratio			0.54									
Actuated Cycle Length (s)			81.2			Sum of lost time (s)				17.0		
Intersection Capacity Utilization			65.6%			ICU Level of Service				C		
Analysis Period (min)			15									
c Critical Lane Group												

# HCM Signalized Intersection Capacity Analysis

## 1: Sonoma Blvd & Curtola Pkwy





















Vallejo Marine Terminal  
Year 2040 AM without Project



Movement	NEL2	NEL	NER2
Lane Configurations			
Volume (vph)	10	10	10
Ideal Flow (vphpl)	1900	1900	1900
Total Lost time (s)		3.5	
Lane Util. Factor		1.00	
Frbp, ped/bikes		1.00	
Flpb, ped/bikes		1.00	
Frt		0.95	
Flt Protected		0.97	
Satd. Flow (prot)		1756	
Flt Permitted		0.97	
Satd. Flow (perm)		1756	
Peak-hour factor, PHF	0.92	0.92	0.92
Adj. Flow (vph)	11	11	11
RTOR Reduction (vph)	0	31	0
Lane Group Flow (vph)	0	2	0
Confl. Peds. (#/hr)			
Confl. Bikes (#/hr)			
Heavy Vehicles (%)	0%	0%	0%
Turn Type	Prot	Prot	
Protected Phases	1	1	
Permitted Phases			
Actuated Green, G (s)		5.4	
Effective Green, g (s)		5.4	
Actuated g/C Ratio		0.07	
Clearance Time (s)		3.5	
Vehicle Extension (s)		2.0	
Lane Grp Cap (vph)		116	
v/s Ratio Prot		c0.00	
v/s Ratio Perm			
v/c Ratio		0.02	
Uniform Delay, d1		35.4	
Progression Factor		1.00	
Incremental Delay, d2		0.0	
Delay (s)		35.4	
Level of Service		D	
Approach Delay (s)		35.4	
Approach LOS		D	
<b>Intersection Summary</b>			



















HCM 2010 Signalized Intersection Summary  
 2: Solano Blvd & Sonoma Blvd

Vallejo Marine Terminal  
 Year 2040 AM without Project

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	10	10	20	30	20	20	20	440	60	20	280	20
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		1.00	1.00		0.98	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1583	1536	1900	1696	1836	1900	1900	1863	1900	1610	1841	1900
Adj Flow Rate, veh/h	11	11	15	33	22	-30	22	478	60	22	304	22
Adj No. of Lanes	1	1	0	1	2	0	1	2	0	1	2	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	20	13	13	12	0	0	0	2	2	18	3	3
Cap, veh/h	30	41	56	82	176	360	85	1773	221	72	1855	133
Arrive On Green	0.02	0.07	0.07	0.05	0.10	0.00	0.05	0.56	0.56	0.05	0.56	0.56
Sat Flow, veh/h	1508	586	798	1616	3580	0	1810	3159	395	1533	3305	238
Grp Volume(v), veh/h	11	0	26	33	-8	-30	22	267	271	22	160	166
Grp Sat Flow(s),veh/h/ln	1508	0	1384	1616	1744	1560	1810	1770	1784	1533	1749	1794
Q Serve(g_s), s	0.4	0.0	1.0	1.1	0.0	0.0	0.6	4.2	4.2	0.7	2.4	2.4
Cycle Q Clear(g_c), s	0.4	0.0	1.0	1.1	0.0	0.0	0.6	4.2	4.2	0.7	2.4	2.4
Prop In Lane	1.00		0.58	1.00		0.00	1.00		0.22	1.00		0.13
Lane Grp Cap(c), veh/h	30	0	97	82	176	0	85	993	1001	72	981	1007
V/C Ratio(X)	0.37	0.00	0.27	0.40	-0.05	0.00	0.26	0.27	0.27	0.31	0.16	0.16
Avail Cap(c_a), veh/h	423	0	621	529	783	0	643	993	1001	516	981	1007
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	25.9	0.0	23.6	24.6	0.0	0.0	24.6	6.1	6.1	24.6	5.7	5.7
Incr Delay (d2), s/veh	2.8	0.0	0.5	1.2	0.0	0.0	0.6	0.7	0.7	0.9	0.4	0.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.2	0.0	0.4	0.5	0.0	0.0	0.3	2.2	2.2	0.3	1.2	1.3
LnGrp Delay(d),s/veh	28.7	0.0	24.1	25.8	0.0	0.0	25.2	6.7	6.7	25.5	6.0	6.0
LnGrp LOS	C		C	C			C	A	A	C	A	A
Approach Vol, veh/h		37			-5			560			348	
Approach Delay, s/veh		25.5			-170.1			7.5			7.3	
Approach LOS		C			A			A			A	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	5.5	34.5	5.7	7.7	5.5	34.5	4.1	9.4				
Change Period (Y+Rc), s	3.0	4.5	3.0	4.0	3.0	4.5	3.0	4.0				
Max Green Setting (Gmax), s	18.0	30.0	17.5	24.0	19.0	30.0	15.0	24.0				
Max Q Clear Time (g_c+I1), s	2.7	6.2	3.1	3.0	2.6	4.4	2.4	0.0				
Green Ext Time (p_c), s	0.0	3.5	0.0	0.0	0.0	3.6	0.0	0.0				
<b>Intersection Summary</b>												
HCM 2010 Ctrl Delay			9.0									
HCM 2010 LOS			A									
<b>Notes</b>												
User approved pedestrian interval to be less than phase max green.												




















HCM 2010 Signalized Intersection Summary  
3: Sonoma Blvd & Lemon St

Vallejo Marine Terminal  
Year 2040 AM without Project

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	20	20	10	60	20	40	10	430	70	30	300	20
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	0.99		0.99	0.99		0.99	1.00		0.97	1.00		0.96
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1900	1900	1900	1801	1900	1667	1845	1900	1727	1799	1900
Adj Flow Rate, veh/h	22	22	7	66	22	14	11	473	51	33	330	21
Adj No. of Lanes	0	1	0	0	1	0	1	2	0	1	2	0
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Percent Heavy Veh, %	0	0	0	0	0	0	14	3	3	10	6	6
Cap, veh/h	197	174	43	269	83	38	31	1653	177	84	1793	113
Arrive On Green	0.19	0.19	0.19	0.19	0.19	0.19	0.04	1.00	1.00	0.05	0.55	0.55
Sat Flow, veh/h	520	925	230	820	442	201	1587	3182	342	1645	3256	206
Grp Volume(v), veh/h	51	0	0	102	0	0	11	259	265	33	172	179
Grp Sat Flow(s),veh/h/ln	1675	0	0	1462	0	0	1587	1752	1771	1645	1709	1753
Q Serve(g_s), s	0.0	0.0	0.0	1.8	0.0	0.0	0.3	0.0	0.0	1.0	2.6	2.6
Cycle Q Clear(g_c), s	1.2	0.0	0.0	2.9	0.0	0.0	0.3	0.0	0.0	1.0	2.6	2.6
Prop In Lane	0.43		0.14	0.65		0.14	1.00		0.19	1.00		0.12
Lane Grp Cap(c), veh/h	415	0	0	390	0	0	31	910	920	84	941	966
V/C Ratio(X)	0.12	0.00	0.00	0.26	0.00	0.00	0.35	0.29	0.29	0.39	0.18	0.19
Avail Cap(c_a), veh/h	824	0	0	754	0	0	337	910	920	413	941	966
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	1.00	1.00	1.00	0.98	0.98	0.98
Uniform Delay (d), s/veh	17.5	0.0	0.0	18.2	0.0	0.0	24.5	0.0	0.0	23.8	5.8	5.8
Incr Delay (d2), s/veh	0.0	0.0	0.0	0.1	0.0	0.0	2.5	0.8	0.8	1.1	0.4	0.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.6	0.0	0.0	1.3	0.0	0.0	0.2	0.2	0.2	0.5	1.3	1.4
LnGrp Delay(d),s/veh	17.6	0.0	0.0	18.3	0.0	0.0	27.0	0.8	0.8	24.9	6.2	6.2
LnGrp LOS	B			B			C	A	A	C	A	A
Approach Vol, veh/h		51			102			535			384	
Approach Delay, s/veh		17.6			18.3			1.3			7.8	
Approach LOS		B			B			A			A	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	6.6	54.6		13.7	5.0	56.2		13.7				
Change Period (Y+Rc), s	4.0	4.5		4.0	4.0	4.5		4.0				
Max Green Setting (Gmax), s	13.0	26.5		23.0	11.0	28.5		23.0				
Max Q Clear Time (g_c+I1), s	3.0	2.0		3.2	2.3	4.6		4.9				
Green Ext Time (p_c), s	0.0	8.0		0.5	0.0	7.9		0.5				
<b>Intersection Summary</b>												
HCM 2010 Ctrl Delay			6.0									
HCM 2010 LOS			A									




















HCM 2010 Signalized Intersection Summary  
6: Sonoma Blvd & Magazine St

Vallejo Marine Terminal  
Year 2040 AM without Project

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	80	140	20	40	50	100	20	260	90	70	260	30
Number	3	8	18	7	4	14	1	6	16	5	2	12
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	0.98		0.96	0.98		0.97	1.00		0.97	1.00		0.95
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1889	1900	1900	1871	1900	1900	1854	1900	1727	1814	1900
Adj Flow Rate, veh/h	93	163	16	47	58	38	23	302	69	81	302	28
Adj No. of Lanes	0	1	0	0	1	0	1	2	0	1	2	0
Peak Hour Factor	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86
Percent Heavy Veh, %	1	1	1	0	0	0	0	3	3	10	4	4
Cap, veh/h	212	332	29	197	229	123	78	1112	250	168	1432	132
Arrive On Green	0.29	0.29	0.29	0.29	0.29	0.29	0.04	0.39	0.39	0.20	0.90	0.90
Sat Flow, veh/h	432	1134	98	382	782	421	1810	2839	637	1645	3175	292
Grp Volume(v), veh/h	272	0	0	143	0	0	23	185	186	81	163	167
Grp Sat Flow(s),veh/h/ln	1664	0	0	1585	0	0	1810	1761	1715	1645	1724	1743
Q Serve(g_s), s	3.9	0.0	0.0	0.0	0.0	0.0	0.7	4.0	4.1	2.4	0.6	0.7
Cycle Q Clear(g_c), s	7.4	0.0	0.0	3.5	0.0	0.0	0.7	4.0	4.1	2.4	0.6	0.7
Prop In Lane	0.34		0.06	0.33		0.27	1.00		0.37	1.00		0.17
Lane Grp Cap(c), veh/h	573	0	0	549	0	0	78	690	672	168	777	786
V/C Ratio(X)	0.48	0.00	0.00	0.26	0.00	0.00	0.30	0.27	0.28	0.48	0.21	0.21
Avail Cap(c_a), veh/h	904	0	0	858	0	0	354	690	672	381	777	786
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	16.6	0.0	0.0	15.3	0.0	0.0	26.1	11.6	11.7	21.0	1.5	1.5
Incr Delay (d2), s/veh	0.2	0.0	0.0	0.1	0.0	0.0	0.8	1.0	1.0	0.8	0.6	0.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.6	0.0	0.0	1.7	0.0	0.0	0.4	2.1	2.2	1.1	0.4	0.4
LnGrp Delay(d),s/veh	16.8	0.0	0.0	15.4	0.0	0.0	26.8	12.6	12.7	21.8	2.2	2.2
LnGrp LOS	B			B			C	B	B	C	A	A
Approach Vol, veh/h		272			143			394			411	
Approach Delay, s/veh		16.8			15.4			13.4			6.0	
Approach LOS		B			B			B			A	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	5.9	49.2		19.9	9.2	45.8		19.9				
Change Period (Y+Rc), s	3.5	5.0		3.5	3.5	5.0		3.5				
Max Green Setting (Gmax), s	11.0	24.0		28.0	13.0	22.0		28.0				
Max Q Clear Time (g_c+I1), s	2.7	2.7		5.5	4.4	6.1		9.4				
Green Ext Time (p_c), s	0.0	5.9		1.7	0.1	5.2		1.6				
<b>Intersection Summary</b>												
HCM 2010 Ctrl Delay				11.9								
HCM 2010 LOS				B								



















HCM 2010 Signalized Intersection Summary  
8: Sonoma Blvd & Maritime Academy Dr

Vallejo Marine Terminal  
Year 2040 AM without Project

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	30	20	10	20	90	100	10	200	20	40	180	40
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		1.00	1.00		0.99	1.00		0.97
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1746	1900	1900	1778	1863	1900	1833	1900	1900	1821	1900
Adj Flow Rate, veh/h	33	22	6	22	98	5	11	217	12	43	196	26
Adj No. of Lanes	0	1	0	0	1	1	1	2	0	1	2	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	0	0	0	5	5	2	0	4	4	0	4	4
Cap, veh/h	323	178	36	171	399	401	47	1156	64	162	1249	163
Arrive On Green	0.25	0.25	0.25	0.25	0.25	0.25	0.03	0.34	0.34	0.09	0.41	0.41
Sat Flow, veh/h	589	703	141	149	1577	1583	1810	3356	185	1810	3064	400
Grp Volume(v), veh/h	61	0	0	120	0	5	11	112	117	43	109	113
Grp Sat Flow(s),veh/h/ln	1432	0	0	1726	0	1583	1810	1742	1799	1810	1730	1734
Q Serve(g_s), s	0.0	0.0	0.0	0.0	0.0	0.1	0.2	1.4	1.5	0.7	1.3	1.3
Cycle Q Clear(g_c), s	1.7	0.0	0.0	1.7	0.0	0.1	0.2	1.4	1.5	0.7	1.3	1.3
Prop In Lane	0.54		0.10	0.18		1.00	1.00		0.10	1.00		0.23
Lane Grp Cap(c), veh/h	536	0	0	570	0	401	47	600	620	162	705	707
V/C Ratio(X)	0.11	0.00	0.00	0.21	0.00	0.01	0.23	0.19	0.19	0.27	0.15	0.16
Avail Cap(c_a), veh/h	1486	0	0	1716	0	1487	1360	2181	2253	1360	2166	2172
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	9.2	0.0	0.0	9.6	0.0	8.9	15.2	7.3	7.3	13.6	6.0	6.0
Incr Delay (d2), s/veh	0.0	0.0	0.0	0.1	0.0	0.0	0.9	0.1	0.1	0.3	0.1	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.4	0.0	0.0	0.8	0.0	0.0	0.1	0.7	0.7	0.4	0.6	0.6
LnGrp Delay(d),s/veh	9.3	0.0	0.0	9.6	0.0	8.9	16.2	7.5	7.5	13.9	6.1	6.1
LnGrp LOS	A			A		A	B	A	A	B	A	A
Approach Vol, veh/h		61			125			240			265	
Approach Delay, s/veh		9.3			9.6			7.9			7.4	
Approach LOS		A			A			A			A	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	5.9	15.0		11.1	3.8	17.0		11.1				
Change Period (Y+Rc), s	3.0	4.0		3.0	3.0	4.0		3.0				
Max Green Setting (Gmax), s	24.0	40.0		30.0	24.0	40.0		30.0				
Max Q Clear Time (g_c+I1), s	2.7	3.5		3.7	2.2	3.3		3.7				
Green Ext Time (p_c), s	0.0	2.8		0.7	0.0	2.8		0.7				
<b>Intersection Summary</b>												
HCM 2010 Ctrl Delay			8.1									
HCM 2010 LOS			A									

























HCM 2010 Signalized Intersection Summary  
 16: Lemon St & Carlson St

Vallejo Marine Terminal  
 Year 2040 AM without Project

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	10	160	10	20	160	150	10	10	20	150	10	10
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	0.99		0.98	0.98		0.95	0.98		1.00	0.98		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1800	1900	1743	1852	1900	1900	1597	1900	1881	1886	1900
Adj Flow Rate, veh/h	12	188	11	24	188	154	12	12	0	187	0	0
Adj No. of Lanes	0	1	0	1	1	0	0	1	0	2	1	0
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85
Percent Heavy Veh, %	5	5	5	9	5	5	50	50	50	1	0	0
Cap, veh/h	182	719	40	714	407	333	330	206	0	1173	392	0
Arrive On Green	0.44	0.44	0.44	0.44	0.44	0.44	0.21	0.21	0.00	0.21	0.00	0.00
Sat Flow, veh/h	34	1627	91	1086	920	754	450	993	0	2775	1886	0
Grp Volume(v), veh/h	211	0	0	24	0	342	24	0	0	187	0	0
Grp Sat Flow(s),veh/h/ln	1753	0	0	1086	0	1674	1443	0	0	1388	1886	0
Q Serve(g_s), s	0.0	0.0	0.0	0.3	0.0	3.3	0.0	0.0	0.0	1.3	0.0	0.0
Cycle Q Clear(g_c), s	1.7	0.0	0.0	2.0	0.0	3.3	0.3	0.0	0.0	1.6	0.0	0.0
Prop In Lane	0.06		0.05	1.00		0.45	0.50		0.00	1.00		0.00
Lane Grp Cap(c), veh/h	942	0	0	714	0	740	536	0	0	1173	392	0
V/C Ratio(X)	0.22	0.00	0.00	0.03	0.00	0.46	0.04	0.00	0.00	0.16	0.00	0.00
Avail Cap(c_a), veh/h	2946	0	0	1993	0	2711	2044	0	0	4242	2477	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	1.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	4.0	0.0	0.0	4.7	0.0	4.5	7.3	0.0	0.0	7.9	0.0	0.0
Incr Delay (d2), s/veh	0.1	0.0	0.0	0.0	0.0	0.5	0.0	0.0	0.0	0.1	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.9	0.0	0.0	0.1	0.0	1.5	0.1	0.0	0.0	0.5	0.0	0.0
LnGrp Delay(d),s/veh	4.2	0.0	0.0	4.7	0.0	4.9	7.3	0.0	0.0	8.0	0.0	0.0
LnGrp LOS	A			A		A	A			A		
Approach Vol, veh/h		211			366			24			187	
Approach Delay, s/veh		4.2			4.9			7.3			8.0	
Approach LOS		A			A			A			A	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		14.1		8.7		14.1		8.7				
Change Period (Y+Rc), s		4.0		4.0		4.0		4.0				
Max Green Setting (Gmax), s		37.0		30.0		37.0		30.0				
Max Q Clear Time (g_c+I1), s		3.7		3.6		5.3		2.3				
Green Ext Time (p_c), s		4.0		0.8		4.0		0.8				
<b>Intersection Summary</b>												
HCM 2010 Ctrl Delay				5.5								
HCM 2010 LOS				A								
<b>Notes</b>												
User approved volume balancing among the lanes for turning movement.												

HCM 2010 Signalized Intersection Summary  
 17: Lemon St & Curtola Pkwy

Vallejo Marine Terminal  
 Year 2040 AM without Project

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	30	80	220	130	100	30	200	920	120	30	520	40
Number	3	8	18	7	4	14	1	6	16	5	2	12
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		0.92	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1696	1873	1845	1827	1827	1900	1863	1849	1900	1827	1845	1900
Adj Flow Rate, veh/h	33	89	-12	144	111	16	222	1022	0	33	578	0
Adj No. of Lanes	1	1	1	1	1	1	1	2	0	1	2	0
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	12	0	3	4	4	0	2	3	3	4	3	3
Cap, veh/h	54	210	176	182	335	271	268	1710	0	58	1294	0
Arrive On Green	0.03	0.11	0.00	0.10	0.18	0.18	0.15	0.49	0.00	0.03	0.37	0.00
Sat Flow, veh/h	1616	1873	1568	1740	1827	1478	1774	3605	0	1740	3597	0
Grp Volume(v), veh/h	33	89	-12	144	111	16	222	1022	0	33	578	0
Grp Sat Flow(s),veh/h/ln	1616	1873	1568	1740	1827	1478	1774	1756	0	1740	1752	0
Q Serve(g_s), s	1.4	3.2	0.0	5.8	3.8	0.6	8.7	15.1	0.0	1.3	9.0	0.0
Cycle Q Clear(g_c), s	1.4	3.2	0.0	5.8	3.8	0.6	8.7	15.1	0.0	1.3	9.0	0.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.00	1.00		0.00
Lane Grp Cap(c), veh/h	54	210	176	182	335	271	268	1710	0	58	1294	0
V/C Ratio(X)	0.61	0.42	-0.07	0.79	0.33	0.06	0.83	0.60	0.00	0.56	0.45	0.00
Avail Cap(c_a), veh/h	562	912	764	605	890	720	617	1711	0	605	1707	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	34.3	29.7	0.0	31.4	25.5	24.2	29.6	13.3	0.0	34.2	17.1	0.0
Incr Delay (d2), s/veh	4.0	1.4	0.0	2.9	0.7	0.1	2.5	0.7	0.0	3.2	0.3	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.7	1.7	0.0	2.9	2.0	0.3	4.4	7.4	0.0	0.7	4.4	0.0
LnGrp Delay(d),s/veh	38.3	31.2	0.0	34.3	26.3	24.4	32.1	14.0	0.0	37.4	17.4	0.0
LnGrp LOS	D	C		C	C	C	C	B		D	B	
Approach Vol, veh/h		110			271			1244			611	
Approach Delay, s/veh		36.7			30.4			17.3			18.5	
Approach LOS		D			C			B			B	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	14.9	32.5	6.4	18.1	6.4	41.0	11.5	13.0				
Change Period (Y+Rc), s	4.0	6.0	4.0	4.9	4.0	6.0	4.0	4.9				
Max Green Setting (Gmax), s	25.0	35.0	25.0	35.0	25.0	35.0	25.0	35.0				
Max Q Clear Time (g_c+I1), s	10.7	11.0	3.4	5.8	3.3	17.1	7.8	5.2				
Green Ext Time (p_c), s	0.3	15.6	0.0	1.4	0.0	12.6	0.2	1.4				
<b>Intersection Summary</b>												
HCM 2010 Ctrl Delay			20.1									
HCM 2010 LOS			C									
<b>Notes</b>												
User approved volume balancing among the lanes for turning movement.												



**Intersection**

Int Delay, s/veh 1.7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR
Vol, veh/h	20	10	10	10	10	10	10	490	10
Conflicting Peds, #/hr	0	0	7	7	0	0	11	0	8
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-
Peak Hour Factor	89	89	89	89	89	89	89	89	89
Heavy Vehicles, %	13	0	0	0	0	0	0	2	33
Mvmt Flow	22	11	11	11	11	11	11	551	11

Major/Minor	Minor2			Minor1			Major1		
Conflicting Flow All	761	1042	231	829	1042	299	434	0	0
Stage 1	451	451	-	586	586	-	-	-	-
Stage 2	310	591	-	243	456	-	-	-	-
Critical Hdwy	7.76	6.5	6.9	7.5	6.5	6.9	4.1	-	-
Critical Hdwy Stg 1	6.76	5.5	-	6.5	5.5	-	-	-	-
Critical Hdwy Stg 2	6.76	5.5	-	6.5	5.5	-	-	-	-
Follow-up Hdwy	3.63	4	3.3	3.5	4	3.3	2.2	-	-
Pot Cap-1 Maneuver	275	232	777	266	232	703	1136	-	-
Stage 1	529	574	-	468	500	-	-	-	-
Stage 2	645	498	-	745	572	-	-	-	-
Platoon blocked, %									
Mov Cap-1 Maneuver	251	223	765	243	223	692	1126	-	-
Mov Cap-2 Maneuver	251	223	-	243	223	-	-	-	-
Stage 1	519	563	-	459	490	-	-	-	-
Stage 2	606	488	-	703	561	-	-	-	-

Approach	EB	WB	NB
HCM Control Delay, s	19.6	18.6	0.3
HCM LOS	C	C	

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1126	-	-	291	299	1004	-	-
HCM Lane V/C Ratio	0.01	-	-	0.154	0.113	0.011	-	-
HCM Control Delay (s)	8.2	0.1	-	19.6	18.6	8.6	0.1	-
HCM Lane LOS	A	A	-	C	C	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0.5	0.4	0	-	-

**Intersection**

Int Delay, s/veh

Movement	SBL	SBT	SBR
Vol, veh/h	10	370	10
Conflicting Peds, #/hr	8	0	11
Sign Control	Free	Free	Free
RT Channelized	-	-	None
Storage Length	-	-	-
Veh in Median Storage, #	-	0	-
Grade, %	-	0	-
Peak Hour Factor	89	89	89
Heavy Vehicles, %	0	6	20
Mvmt Flow	11	416	11

**Major/Minor**

	Major2		
Conflicting Flow All	569	0	0
Stage 1	-	-	-
Stage 2	-	-	-
Critical Hdwy	4.1	-	-
Critical Hdwy Stg 1	-	-	-
Critical Hdwy Stg 2	-	-	-
Follow-up Hdwy	2.2	-	-
Pot Cap-1 Maneuver	1013	-	-
Stage 1	-	-	-
Stage 2	-	-	-
Platoon blocked, %		-	-
Mov Cap-1 Maneuver	1004	-	-
Mov Cap-2 Maneuver	-	-	-
Stage 1	-	-	-
Stage 2	-	-	-

**Approach**

	SB
HCM Control Delay, s	0.3
HCM LOS	

**Minor Lane/Major Mvmt**

**Intersection**

Int Delay, s/veh 2.1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR
Vol, veh/h	30	10	10	10	10	20	10	440	10
Conflicting Peds, #/hr	6	0	9	9	0	6	18	0	10
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-
Peak Hour Factor	91	91	91	91	91	91	91	91	91
Heavy Vehicles, %	0	0	0	0	0	15	0	3	0
Mvmt Flow	33	11	11	11	11	22	11	484	11

Major/Minor	Minor2			Minor1			Major1		
Conflicting Flow All	727	974	230	771	980	274	416	0	0
Stage 1	449	449	-	520	520	-	-	-	-
Stage 2	278	525	-	251	460	-	-	-	-
Critical Hdwy	7.5	6.5	6.9	7.5	6.5	7.2	4.1	-	-
Critical Hdwy Stg 1	6.5	5.5	-	6.5	5.5	-	-	-	-
Critical Hdwy Stg 2	6.5	5.5	-	6.5	5.5	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	3.5	4	3.45	2.2	-	-
Pot Cap-1 Maneuver	315	254	779	293	252	686	1154	-	-
Stage 1	564	576	-	512	535	-	-	-	-
Stage 2	711	533	-	737	569	-	-	-	-
Platoon blocked, %									
Mov Cap-1 Maneuver	278	240	762	264	238	671	1137	-	-
Mov Cap-2 Maneuver	278	240	-	264	238	-	-	-	-
Stage 1	552	555	-	502	524	-	-	-	-
Stage 2	655	522	-	681	548	-	-	-	-

Approach	EB	WB	NB
HCM Control Delay, s	19.3	16.2	0.3
HCM LOS	C	C	

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1137	-	-	307	365	988	-	-
HCM Lane V/C Ratio	0.01	-	-	0.179	0.12	0.022	-	-
HCM Control Delay (s)	8.2	0.1	-	19.3	16.2	8.7	0.1	-
HCM Lane LOS	A	A	-	C	C	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0.6	0.4	0.1	-	-

**Intersection**

Int Delay, s/veh

Movement	SBL	SBT	SBR
Vol, veh/h	20	350	20
Conflicting Peds, #/hr	10	0	18
Sign Control	Free	Free	Free
RT Channelized	-	-	None
Storage Length	-	-	-
Veh in Median Storage, #	-	0	-
Grade, %	-	0	-
Peak Hour Factor	91	91	91
Heavy Vehicles, %	10	6	0
Mvmt Flow	22	385	22

**Major/Minor Major2**

Conflicting Flow All	504	0	0
Stage 1	-	-	-
Stage 2	-	-	-
Critical Hdwy	4.3	-	-
Critical Hdwy Stg 1	-	-	-
Critical Hdwy Stg 2	-	-	-
Follow-up Hdwy	2.3	-	-
Pot Cap-1 Maneuver	1003	-	-
Stage 1	-	-	-
Stage 2	-	-	-
Platoon blocked, %		-	-
Mov Cap-1 Maneuver	988	-	-
Mov Cap-2 Maneuver	-	-	-
Stage 1	-	-	-
Stage 2	-	-	-

**Approach SB**

HCM Control Delay, s	0.5
HCM LOS	

**Minor Lane/Major Mvmt**

**Intersection**

Int Delay, s/veh 4.7

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Vol, veh/h	100	50	100	240	210	100
Conflicting Peds, #/hr	0	0	13	0	0	13
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	60	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	85	85	85	85	85	85
Heavy Vehicles, %	3	3	3	3	3	3
Mvmt Flow	118	59	118	282	247	118

Major/Minor	Minor2	Major1	Major2
Conflicting Flow All	682	195	365
Stage 1	306	-	-
Stage 2	376	-	-
Critical Hdwy	6.86	6.96	4.16
Critical Hdwy Stg 1	5.86	-	-
Critical Hdwy Stg 2	5.86	-	-
Follow-up Hdwy	3.53	3.33	2.23
Pot Cap-1 Maneuver	381	810	1183
Stage 1	717	-	-
Stage 2	661	-	-
Platoon blocked, %			-
Mov Cap-1 Maneuver	343	801	1170
Mov Cap-2 Maneuver	343	-	-
Stage 1	717	-	-
Stage 2	594	-	-

Approach	EB	NB	SB
HCM Control Delay, s	19.4	2.5	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1170	-	424	-	-
HCM Lane V/C Ratio	0.101	-	0.416	-	-
HCM Control Delay (s)	8.4	-	19.4	-	-
HCM Lane LOS	A	-	C	-	-
HCM 95th %tile Q(veh)	0.3	-	2	-	-

**Intersection**

Int Delay, s/veh 2.9

Movement	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBL	NBT	NBR
Vol, veh/h	0	10	0	10	0	10	10	0	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	-	0	-	-	0	-
Grade, %	-	0	-	-	-	0	-	-	0	-
Peak Hour Factor	82	82	82	82	82	82	82	82	82	82
Heavy Vehicles, %	0	0	0	0	0	0	0	0	0	0
Mvmt Flow	0	12	0	12	0	12	12	0	0	0

Major/Minor	Major1	Major2	Minor1							
Conflicting Flow All	24	0	0	12	12	0	0	36	61	24
Stage 1	-	-	-	-	-	-	-	12	12	-
Stage 2	-	-	-	-	-	-	-	24	49	-
Critical Hdwy	4.1	-	-	-	4.1	-	-	7.1	6.5	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	-	6.1	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	-	6.1	5.5	-
Follow-up Hdwy	2.2	-	-	-	2.2	-	-	3.5	4	3.3
Pot Cap-1 Maneuver	1604	-	-	-	1620	-	-	975	834	1058
Stage 1	-	-	-	-	-	-	-	1014	890	-
Stage 2	-	-	-	-	-	-	-	999	858	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1604	-	-	-	-	-	-	964	834	1058
Mov Cap-2 Maneuver	-	-	-	-	-	-	-	964	834	-
Stage 1	-	-	-	-	-	-	-	1014	890	-
Stage 2	-	-	-	-	-	-	-	988	858	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0	0
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	-	1604	-	-	-	-	-	1023
HCM Lane V/C Ratio	-	-	-	-	-	-	-	0.024
HCM Control Delay (s)	0	0	-	-	-	-	-	8.6
HCM Lane LOS	A	A	-	-	-	-	-	A
HCM 95th %tile Q(veh)	-	0	-	-	-	-	-	0.1

**Intersection**

Int Delay, s/veh

Movement	SBL	SBT	SBR
Vol, veh/h	10	0	10
Conflicting Peds, #/hr	0	0	0
Sign Control	Stop	Stop	Stop
RT Channelized	-	-	None
Storage Length	-	-	-
Veh in Median Storage, #	-	0	-
Grade, %	-	0	-
Peak Hour Factor	82	82	82
Heavy Vehicles, %	0	0	0
Mvmt Flow	12	0	12

**Major/Minor**                      **Minor2**

Conflicting Flow All	30	55	18
Stage 1	18	43	-
Stage 2	12	12	-
Critical Hdwy	7.1	6.5	6.2
Critical Hdwy Stg 1	6.1	5.5	-
Critical Hdwy Stg 2	6.1	5.5	-
Follow-up Hdwy	3.5	4	3.3
Pot Cap-1 Maneuver	984	840	1066
Stage 1	1006	863	-
Stage 2	1014	890	-
Platoon blocked, %			
Mov Cap-1 Maneuver	984	840	1066
Mov Cap-2 Maneuver	984	840	-
Stage 1	1006	863	-
Stage 2	1014	890	-

**Approach**                      **SB**

HCM Control Delay, s	8.6
HCM LOS	A

**Minor Lane/Major Mvmt**

**Intersection**

Int Delay, s/veh 4.7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR
Vol, veh/h	10	20	0	10	20	10	10	10	10
Conflicting Peds, #/hr	0	0	0	0	0	0	7	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-
Peak Hour Factor	88	88	88	88	88	88	88	88	88
Heavy Vehicles, %	0	0	0	0	0	0	0	0	0
Mvmt Flow	11	23	0	11	23	11	11	11	11

Major/Minor	Major1	Major2	Minor1						
Conflicting Flow All	41	0	0	30	0	0	110	116	30
Stage 1	-	-	-	-	-	-	52	52	-
Stage 2	-	-	-	-	-	-	58	64	-
Critical Hdwy	4.1	-	-	4.1	-	-	7.1	6.5	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-
Follow-up Hdwy	2.2	-	-	2.2	-	-	3.5	4	3.3
Pot Cap-1 Maneuver	1581	-	-	1596	-	-	873	778	1050
Stage 1	-	-	-	-	-	-	966	856	-
Stage 2	-	-	-	-	-	-	959	846	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1581	-	-	1596	-	-	859	758	1044
Mov Cap-2 Maneuver	-	-	-	-	-	-	859	758	-
Stage 1	-	-	-	-	-	-	954	845	-
Stage 2	-	-	-	-	-	-	952	835	-

Approach	EB	WB	NB
HCM Control Delay, s	2.4	1.8	9.3
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	872	1581	-	-	1596	-	-	825
HCM Lane V/C Ratio	0.039	0.007	-	-	0.007	-	-	0.014
HCM Control Delay (s)	9.3	7.3	0	-	7.3	0	-	9.4
HCM Lane LOS	A	A	A	-	A	A	-	A
HCM 95th %tile Q(veh)	0.1	0	-	-	0	-	-	0



**Intersection**

Int Delay, s/veh

Movement	SBL	SBT	SBR
Vol, veh/h	10	0	0
Conflicting Peds, #/hr	0	0	7
Sign Control	Stop	Stop	Stop
RT Channelized	-	-	None
Storage Length	-	-	-
Veh in Median Storage, #	-	0	-
Grade, %	-	0	-
Peak Hour Factor	88	88	88
Heavy Vehicles, %	0	0	0
Mvmt Flow	11	0	0

**Major/Minor**

**Minor2**

Conflicting Flow All	122	110	35
Stage 1	58	58	-
Stage 2	64	52	-
Critical Hdwy	7.1	6.5	6.2
Critical Hdwy Stg 1	6.1	5.5	-
Critical Hdwy Stg 2	6.1	5.5	-
Follow-up Hdwy	3.5	4	3.3
Pot Cap-1 Maneuver	858	784	1044
Stage 1	959	851	-
Stage 2	952	856	-
Platoon blocked, %			
Mov Cap-1 Maneuver	825	764	1038
Mov Cap-2 Maneuver	825	764	-
Stage 1	947	840	-
Stage 2	922	845	-

**Approach**

SB

HCM Control Delay, s	9.4
HCM LOS	A

**Minor Lane/Major Mvmt**

Intersection									
Int Delay, s/veh	2.6								

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR
Vol, veh/h	10	100	10	10	100	10	10	10	10
Conflicting Peds, #/hr	7	0	7	7	0	7	0	0	6
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-
Peak Hour Factor	85	85	85	85	85	85	85	85	85
Heavy Vehicles, %	0	5	0	17	7	0	0	0	25
Mvmt Flow	12	118	12	12	118	12	12	12	12

Major/Minor	Major1			Major2			Minor1		
Conflicting Flow All	135	0	0	135	0	0	318	312	137
Stage 1	-	-	-	-	-	-	153	153	-
Stage 2	-	-	-	-	-	-	165	159	-
Critical Hdwy	4.1	-	-	4.27	-	-	7.1	6.5	6.45
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-
Follow-up Hdwy	2.2	-	-	2.353	-	-	3.5	4	3.525
Pot Cap-1 Maneuver	1462	-	-	1362	-	-	639	606	854
Stage 1	-	-	-	-	-	-	854	775	-
Stage 2	-	-	-	-	-	-	842	770	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1453	-	-	1354	-	-	606	589	845
Mov Cap-2 Maneuver	-	-	-	-	-	-	606	589	-
Stage 1	-	-	-	-	-	-	842	764	-
Stage 2	-	-	-	-	-	-	805	758	-

Approach	EB	WB	NB
HCM Control Delay, s	0.6	0.6	10.7
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	662	1453	-	-	1354	-	-	674
HCM Lane V/C Ratio	0.053	0.008	-	-	0.009	-	-	0.052
HCM Control Delay (s)	10.7	7.5	0	-	7.7	0	-	10.6
HCM Lane LOS	B	A	A	-	A	A	-	B
HCM 95th %tile Q(veh)	0.2	0	-	-	0	-	-	0.2

**Intersection**

Int Delay, s/veh

Movement	SBL	SBT	SBR
Vol, veh/h	10	10	10
Conflicting Peds, #/hr	6	0	0
Sign Control	Stop	Stop	Stop
RT Channelized	-	-	None
Storage Length	-	-	-
Veh in Median Storage, #	-	0	-
Grade, %	-	0	-
Peak Hour Factor	85	85	85
Heavy Vehicles, %	0	0	0
Mvmt Flow	12	12	12

**Major/Minor**

**Minor2**

Conflicting Flow All	318	312	137
Stage 1	153	153	-
Stage 2	165	159	-
Critical Hdwy	7.1	6.5	6.2
Critical Hdwy Stg 1	6.1	5.5	-
Critical Hdwy Stg 2	6.1	5.5	-
Follow-up Hdwy	3.5	4	3.3
Pot Cap-1 Maneuver	639	606	917
Stage 1	854	775	-
Stage 2	842	770	-
Platoon blocked, %			
Mov Cap-1 Maneuver	605	589	907
Mov Cap-2 Maneuver	605	589	-
Stage 1	842	763	-
Stage 2	805	759	-

**Approach**

SB

HCM Control Delay, s	10.6
HCM LOS	B

**Minor Lane/Major Mvmt**

Intersection										
Int Delay, s/veh	5.3									

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR
Vol, veh/h	20	90	10	20	90	20	10	40	30
Conflicting Peds, #/hr	6	0	8	8	0	6	6	0	6
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	8	4	0	0	8	6	0	4	0
Mvmt Flow	22	100	11	22	100	22	11	44	33

Major/Minor	Major1			Major2			Minor1		
Conflicting Flow All	128	0	0	117	0	0	351	329	120
Stage 1	-	-	-	-	-	-	156	156	-
Stage 2	-	-	-	-	-	-	195	173	-
Critical Hdwy	4.18	-	-	4.1	-	-	7.1	6.54	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.54	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.54	-
Follow-up Hdwy	2.272	-	-	2.2	-	-	3.5	4.036	3.3
Pot Cap-1 Maneuver	1422	-	-	1484	-	-	608	587	937
Stage 1	-	-	-	-	-	-	851	765	-
Stage 2	-	-	-	-	-	-	811	752	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1413	-	-	1474	-	-	537	562	926
Mov Cap-2 Maneuver	-	-	-	-	-	-	537	562	-
Stage 1	-	-	-	-	-	-	832	748	-
Stage 2	-	-	-	-	-	-	727	736	-

Approach	EB	WB	NB
HCM Control Delay, s	1.3	1.2	11.4
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	655	1413	-	-	1474	-	-	611
HCM Lane V/C Ratio	0.136	0.016	-	-	0.015	-	-	0.145
HCM Control Delay (s)	11.4	7.6	0	-	7.5	0	-	11.9
HCM Lane LOS	B	A	A	-	A	A	-	B
HCM 95th %tile Q(veh)	0.5	0	-	-	0	-	-	0.5

**Intersection**

Int Delay, s/veh

Movement	SBL	SBT	SBR
Vol, veh/h	20	40	20
Conflicting Peds, #/hr	6	0	6
Sign Control	Stop	Stop	Stop
RT Channelized	-	-	None
Storage Length	-	-	-
Veh in Median Storage, #	-	0	-
Grade, %	-	0	-
Peak Hour Factor	90	90	90
Heavy Vehicles, %	0	4	7
Mvmt Flow	22	44	22

**Major/Minor**

	Minor2		
Conflicting Flow All	357	324	125
Stage 1	162	162	-
Stage 2	195	162	-
Critical Hdwy	7.1	6.54	6.27
Critical Hdwy Stg 1	6.1	5.54	-
Critical Hdwy Stg 2	6.1	5.54	-
Follow-up Hdwy	3.5	4.036	3.363
Pot Cap-1 Maneuver	602	590	912
Stage 1	845	760	-
Stage 2	811	760	-
Platoon blocked, %			
Mov Cap-1 Maneuver	526	565	901
Mov Cap-2 Maneuver	526	565	-
Stage 1	826	744	-
Stage 2	718	743	-

**Approach**

	SB
HCM Control Delay, s	11.9
HCM LOS	B

**Minor Lane/Major Mvmt**

**Intersection**

Int Delay, s/veh 2.8

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR
Vol, veh/h	10	130	10	20	110	10	10	0	30
Conflicting Peds, #/hr	9	0	12	12	0	9	9	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-
Peak Hour Factor	81	81	81	81	81	81	81	81	81
Heavy Vehicles, %	0	3	0	0	6	33	0	5	0
Mvmt Flow	12	160	12	25	136	12	12	0	37

Major/Minor	Major1	Major2	Minor1						
Conflicting Flow All	157	0	0	182	0	0	413	407	188
Stage 1	-	-	-	-	-	-	200	200	-
Stage 2	-	-	-	-	-	-	213	207	-
Critical Hdwy	4.1	-	-	4.1	-	-	7.1	6.55	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.55	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.55	-
Follow-up Hdwy	2.2	-	-	2.2	-	-	3.5	4.045	3.3
Pot Cap-1 Maneuver	1435	-	-	1405	-	-	553	529	859
Stage 1	-	-	-	-	-	-	806	730	-
Stage 2	-	-	-	-	-	-	794	725	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1421	-	-	1391	-	-	514	506	844
Mov Cap-2 Maneuver	-	-	-	-	-	-	514	506	-
Stage 1	-	-	-	-	-	-	793	718	-
Stage 2	-	-	-	-	-	-	745	705	-

Approach	EB	WB	NB
HCM Control Delay, s	0.5	1.1	10.3
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	727	1421	-	-	1391	-	-	578
HCM Lane V/C Ratio	0.068	0.009	-	-	0.018	-	-	0.064
HCM Control Delay (s)	10.3	7.6	0	-	7.6	0	-	11.7
HCM Lane LOS	B	A	A	-	A	A	-	B
HCM 95th %tile Q(veh)	0.2	0	-	-	0.1	-	-	0.2

**Intersection**

Int Delay, s/veh

Movement	SBL	SBT	SBR
Vol, veh/h	10	10	10
Conflicting Peds, #/hr	0	0	9
Sign Control	Stop	Stop	Stop
RT Channelized	-	-	None
Storage Length	-	-	-
Veh in Median Storage, #	-	0	-
Grade, %	-	0	-
Peak Hour Factor	81	81	81
Heavy Vehicles, %	0	0	33
Mvmt Flow	12	12	12

**Major/Minor**

	Minor2		
Conflicting Flow All	419	407	163
Stage 1	200	200	-
Stage 2	219	207	-
Critical Hdwy	7.1	6.5	6.53
Critical Hdwy Stg 1	6.1	5.5	-
Critical Hdwy Stg 2	6.1	5.5	-
Follow-up Hdwy	3.5	4	3.597
Pot Cap-1 Maneuver	548	537	807
Stage 1	806	739	-
Stage 2	788	734	-
Platoon blocked, %			
Mov Cap-1 Maneuver	503	514	793
Mov Cap-2 Maneuver	503	514	-
Stage 1	793	719	-
Stage 2	739	722	-

**Approach**

Approach	SB
HCM Control Delay, s	11.7
HCM LOS	B

**Minor Lane/Major Mvmt**

**Intersection**

Int Delay, s/veh 0.7

Movement	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBL	NBT	NBR
Vol, veh/h	0	160	0	10	0	130	10	10	0	0
Conflicting Peds, #/hr	12	0	8	0	8	0	12	8	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	-	0	-	-	0	-
Grade, %	-	0	-	-	-	0	-	-	0	-
Peak Hour Factor	83	83	83	83	83	83	83	83	83	83
Heavy Vehicles, %	0	3	0	0	0	5	0	0	0	0
Mvmt Flow	0	193	0	12	0	157	12	12	0	0

Major/Minor	Major1	Major2	Minor1
Conflicting Flow All	177	0	0
Stage 1	-	-	-
Stage 2	-	-	-
Critical Hdwy	4.1	-	-
Critical Hdwy Stg 1	-	-	-
Critical Hdwy Stg 2	-	-	-
Follow-up Hdwy	2.2	-	-
Pot Cap-1 Maneuver	1411	-	-
Stage 1	-	-	-
Stage 2	-	-	-
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	1397	-	-
Mov Cap-2 Maneuver	-	-	-
Stage 1	-	-	-
Stage 2	-	-	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0	11.4
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	579	1397	-	-	-	-	-	579
HCM Lane V/C Ratio	0.021	-	-	-	-	-	-	0.021
HCM Control Delay (s)	11.4	0	-	-	-	-	-	11.4
HCM Lane LOS	B	A	-	-	-	-	-	B
HCM 95th %tile Q(veh)	0.1	0	-	-	-	-	-	0.1



**Intersection**

Int Delay, s/veh

Movement	SBL	SBT	SBR
Vol, veh/h	10	0	0
Conflicting Peds, #/hr	0	0	8
Sign Control	Stop	Stop	Stop
RT Channelized	-	-	None
Storage Length	-	-	-
Veh in Median Storage, #	-	0	-
Grade, %	-	0	-
Peak Hour Factor	83	83	83
Heavy Vehicles, %	0	0	0
Mvmt Flow	12	0	0

**Major/Minor**

	Minor2		
Conflicting Flow All	372	396	183
Stage 1	171	195	-
Stage 2	201	201	-
Critical Hdwy	7.1	6.5	6.2
Critical Hdwy Stg 1	6.1	5.5	-
Critical Hdwy Stg 2	6.1	5.5	-
Follow-up Hdwy	3.5	4	3.3
Pot Cap-1 Maneuver	589	544	865
Stage 1	836	743	-
Stage 2	805	739	-
Platoon blocked, %			
Mov Cap-1 Maneuver	579	537	851
Mov Cap-2 Maneuver	579	537	-
Stage 1	830	738	-
Stage 2	797	734	-

**Approach**

	SB
HCM Control Delay, s	11.4
HCM LOS	B

**Minor Lane/Major Mvmt**

Intersection	
Int Delay, s/veh	0.9

Movement	EBT	EBR	WBU	WBL	WBT	NBL	NBR
Vol, veh/h	150	10	10	20	140	10	20
Conflicting Peds, #/hr	0	9	0	9	0	0	6
Sign Control	Free	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	-	None	-	None
Storage Length	-	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	-	0	0	-
Grade, %	0	-	-	-	0	0	-
Peak Hour Factor	88	88	88	88	88	88	88
Heavy Vehicles, %	3	0	0	13	4	40	0
Mvmt Flow	170	11	11	23	159	11	23

Major/Minor	Major1	Major2	Minor1
Conflicting Flow All	0	0 205	188 0 387 203
Stage 1	-	-	- 182 -
Stage 2	-	-	- 205 -
Critical Hdwy	-	-	4.23 - 6.8 6.2
Critical Hdwy Stg 1	-	-	- - 5.8 -
Critical Hdwy Stg 2	-	-	- - 5.8 -
Follow-up Hdwy	-	-	2.317 - 3.86 3.3
Pot Cap-1 Maneuver	-	-	1323 - 549 843
Stage 1	-	-	- - 766 -
Stage 2	-	-	- - 747 -
Platoon blocked, %	-	-	- - -
Mov Cap-1 Maneuver	-	- ~ -3	~ -3 - 542 832
Mov Cap-2 Maneuver	-	-	- - 542 -
Stage 1	-	-	- - 762 -
Stage 2	-	-	- - 741 -

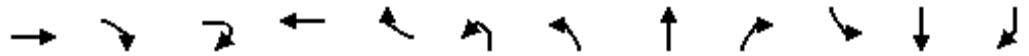
Approach	EB	WB	NB
HCM Control Delay, s	0	0	10.4
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	706	-	-	+	-
HCM Lane V/C Ratio	0.048	-	-	-	-
HCM Control Delay (s)	10.4	-	-	-	-
HCM Lane LOS	B	-	-	-	-
HCM 95th %tile Q(veh)	0.2	-	-	-	-

Notes  
 -: Volume exceeds capacity    \$: Delay exceeds 300s    +: Computation Not Defined    \*: All major volume in platoon

HCM Signalized Intersection Capacity Analysis  
1: Sonoma Blvd & Curtola Pkwy

Vallejo Marine Terminal  
Year 2040 without Project



Movement	EBT	EBR	EBR2	WBT	WBR	NBL2	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↑↑	↘		↑↑	↗		↖	↑↑			↑↑	
Volume (vph)	630	220	10	370	250	20	210	310	10	240	220	10
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	4.5		4.5	4.5		4.5	4.5			4.5	
Lane Util. Factor	0.91	0.91		0.95	1.00		1.00	0.95			0.95	
Frbp, ped/bikes	1.00	1.00		1.00	0.98		1.00	1.00			1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00			1.00	
Frt	0.99	0.85		1.00	0.85		1.00	1.00			0.99	
Flt Protected	1.00	1.00		1.00	1.00		0.95	1.00			0.98	
Satd. Flow (prot)	3374	1456		3539	1576		1757	3555			3429	
Flt Permitted	1.00	1.00		1.00	1.00		0.95	1.00			0.98	
Satd. Flow (perm)	3374	1456		3539	1576		1757	3555			3429	
Peak-hour factor, PHF	0.91	0.91	0.91	0.91	0.91	0.92	0.91	0.91	0.91	0.91	0.91	0.91
Adj. Flow (vph)	692	242	11	407	275	22	231	341	11	264	242	11
RTOR Reduction (vph)	0	48	0	0	187	0	0	2	0	0	3	0
Lane Group Flow (vph)	716	181	0	407	88	0	253	350	0	0	547	0
Confl. Peds. (#/hr)					9		6		9	9		6
Confl. Bikes (#/hr)									6			6
Heavy Vehicles (%)	2%	1%	0%	2%	0%	0%	3%	1%	0%	1%	1%	0%
Turn Type	NA	Perm		NA	Perm	Split	Split	NA		Split	NA	
Protected Phases	2			2		3	3	3		4	4	
Permitted Phases		2			2							
Actuated Green, G (s)	32.2	32.2		32.2	32.2		21.0	21.0			22.4	
Effective Green, g (s)	32.2	32.2		32.2	32.2		21.0	21.0			22.4	
Actuated g/C Ratio	0.32	0.32		0.32	0.32		0.21	0.21			0.22	
Clearance Time (s)	4.5	4.5		4.5	4.5		4.5	4.5			4.5	
Vehicle Extension (s)	2.0	2.0		2.0	2.0		2.0	2.0			2.0	
Lane Grp Cap (vph)	1079	466		1132	504		366	742			763	
v/s Ratio Prot	c0.21			0.11			c0.14	0.10			c0.16	
v/s Ratio Perm		0.12			0.06							
v/c Ratio	0.66	0.39		0.36	0.17		0.69	0.47			0.72	
Uniform Delay, d1	29.5	26.5		26.3	24.6		36.8	34.9			36.2	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00			1.00	
Incremental Delay, d2	1.2	0.2		0.1	0.1		4.5	0.2			2.7	
Delay (s)	30.7	26.7		26.3	24.7		41.3	35.1			38.9	
Level of Service	C	C		C	C		D	D			D	
Approach Delay (s)	29.8			25.7				37.7			38.9	
Approach LOS	C			C				D			D	

Intersection Summary

HCM 2000 Control Delay	32.4	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.62		
Actuated Cycle Length (s)	100.6	Sum of lost time (s)	17.0
Intersection Capacity Utilization	73.8%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis  
 1: Sonoma Blvd & Curtola Pkwy





















Vallejo Marine Terminal  
 Year 2040 without Project



Movement	SBR2	NEL2	NEL	NER	NER2
Lane Configurations					
Volume (vph)	30	10	10	10	10
Ideal Flow (vphpl)	1900	1900	1900	1900	1900
Total Lost time (s)			3.5		
Lane Util. Factor			1.00		
Frbp, ped/bikes			1.00		
Flpb, ped/bikes			1.00		
Frt			0.93		
Flt Protected			0.98		
Satd. Flow (prot)			1729		
Flt Permitted			0.98		
Satd. Flow (perm)			1729		
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	33	11	11	11	11
RTOR Reduction (vph)	0	0	41	0	0
Lane Group Flow (vph)	0	0	3	0	0
Confl. Peds. (#/hr)					
Confl. Bikes (#/hr)					
Heavy Vehicles (%)	5%	0%	0%	0%	0%
Turn Type		Prot	Prot		
Protected Phases		1	1		
Permitted Phases					
Actuated Green, G (s)			8.0		
Effective Green, g (s)			8.0		
Actuated g/C Ratio			0.08		
Clearance Time (s)			3.5		
Vehicle Extension (s)			2.0		
Lane Grp Cap (vph)			137		
v/s Ratio Prot			c0.00		
v/s Ratio Perm					
v/c Ratio			0.03		
Uniform Delay, d1			42.7		
Progression Factor			1.00		
Incremental Delay, d2			0.0		
Delay (s)			42.7		
Level of Service			D		
Approach Delay (s)			42.7		
Approach LOS			D		
<b>Intersection Summary</b>					



















HCM 2010 Signalized Intersection Summary  
2: Solano Blvd & Sonoma Blvd

Vallejo Marine Terminal  
Year 2040 without Project

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	20	60	10	40	20	60	10	470	50	20	410	10
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		0.98	1.00		0.98	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1868	1900	1845	1836	1900	1900	1858	1900	1900	1882	1900
Adj Flow Rate, veh/h	23	69	4	46	23	3	11	540	51	23	471	10
Adj No. of Lanes	1	1	0	1	2	0	1	2	0	1	2	0
Peak Hour Factor	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87
Percent Heavy Veh, %	0	2	2	3	8	8	0	2	2	0	1	1
Cap, veh/h	68	208	12	111	449	57	46	1689	159	87	1939	41
Arrive On Green	0.04	0.12	0.12	0.06	0.14	0.14	0.03	0.52	0.52	0.05	0.54	0.54
Sat Flow, veh/h	1810	1749	101	1757	3104	396	1810	3255	307	1810	3578	76
Grp Volume(v), veh/h	23	0	73	46	13	13	11	292	299	23	235	246
Grp Sat Flow(s),veh/h/ln	1810	0	1850	1757	1744	1756	1810	1765	1796	1810	1788	1866
Q Serve(g_s), s	0.7	0.0	2.1	1.5	0.4	0.4	0.3	5.5	5.5	0.7	4.0	4.0
Cycle Q Clear(g_c), s	0.7	0.0	2.1	1.5	0.4	0.4	0.3	5.5	5.5	0.7	4.0	4.0
Prop In Lane	1.00		0.05	1.00		0.23	1.00		0.17	1.00		0.04
Lane Grp Cap(c), veh/h	68	0	220	111	252	254	46	916	932	87	969	1011
V/C Ratio(X)	0.34	0.00	0.33	0.41	0.05	0.05	0.24	0.32	0.32	0.26	0.24	0.24
Avail Cap(c_a), veh/h	470	0	768	532	724	729	595	916	932	563	969	1011
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	27.1	0.0	23.4	26.0	21.3	21.3	27.6	8.0	8.0	26.5	7.0	7.0
Incr Delay (d2), s/veh	1.1	0.0	0.3	0.9	0.0	0.0	1.0	0.9	0.9	0.6	0.6	0.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.4	0.0	1.1	0.7	0.2	0.2	0.2	2.9	3.0	0.4	2.1	2.2
LnGrp Delay(d),s/veh	28.2	0.0	23.7	27.0	21.3	21.3	28.6	8.9	8.9	27.1	7.6	7.6
LnGrp LOS	C		C	C	C	C	C	A	A	C	A	A
Approach Vol, veh/h		96			72			602			504	
Approach Delay, s/veh		24.8			24.9			9.3			8.5	
Approach LOS		C			C			A			A	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	5.8	34.5	6.7	10.9	4.5	35.8	5.2	12.4				
Change Period (Y+Rc), s	3.0	4.5	3.0	4.0	3.0	4.5	3.0	4.0				
Max Green Setting (Gmax), s	18.0	30.0	17.5	24.0	19.0	30.0	15.0	24.0				
Max Q Clear Time (g_c+I1), s	2.7	7.5	3.5	4.1	2.3	6.0	2.7	2.4				
Green Ext Time (p_c), s	0.0	4.4	0.0	0.3	0.0	4.5	0.0	0.3				
<b>Intersection Summary</b>												
HCM 2010 Ctrl Delay			11.0									
HCM 2010 LOS			B									
<b>Notes</b>												
User approved pedestrian interval to be less than phase max green.												



















HCM 2010 Signalized Intersection Summary  
3: Sonoma Blvd & Lemon St

Vallejo Marine Terminal  
Year 2040 without Project

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	10	20	10	50	30	40	10	430	130	60	410	20
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	0.98		0.97	0.98		0.97	1.00		0.97	1.00		0.96
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1818	1900	1900	1854	1900	1696	1877	1900	1900	1882	1900
Adj Flow Rate, veh/h	10	21	1	52	31	11	10	448	113	62	427	18
Adj No. of Lanes	0	1	0	0	1	0	1	2	0	1	2	0
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	5	5	5	6	6	6	12	1	1	0	1	1
Cap, veh/h	154	265	11	248	134	37	29	1368	342	142	1911	80
Arrive On Green	0.20	0.20	0.20	0.20	0.20	0.20	0.04	0.97	0.97	0.08	0.55	0.55
Sat Flow, veh/h	328	1295	52	711	653	181	1616	2807	702	1810	3490	147
Grp Volume(v), veh/h	32	0	0	94	0	0	10	283	278	62	218	227
Grp Sat Flow(s),veh/h/ln	1675	0	0	1546	0	0	1616	1783	1726	1810	1788	1849
Q Serve(g_s), s	0.0	0.0	0.0	0.9	0.0	0.0	0.3	0.3	0.3	1.8	3.4	3.4
Cycle Q Clear(g_c), s	0.8	0.0	0.0	2.5	0.0	0.0	0.3	0.3	0.3	1.8	3.4	3.4
Prop In Lane	0.31		0.03	0.55		0.12	1.00		0.41	1.00		0.08
Lane Grp Cap(c), veh/h	430	0	0	419	0	0	29	869	841	142	979	1012
V/C Ratio(X)	0.07	0.00	0.00	0.22	0.00	0.00	0.34	0.33	0.33	0.44	0.22	0.22
Avail Cap(c_a), veh/h	780	0	0	747	0	0	327	869	841	433	979	1012
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	1.00	1.00	1.00	0.94	0.94	0.94
Uniform Delay (d), s/veh	17.5	0.0	0.0	18.2	0.0	0.0	25.9	0.4	0.4	23.9	6.3	6.3
Incr Delay (d2), s/veh	0.0	0.0	0.0	0.1	0.0	0.0	2.6	1.0	1.1	0.7	0.5	0.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.4	0.0	0.0	1.2	0.0	0.0	0.2	0.4	0.4	0.9	1.8	1.9
LnGrp Delay(d),s/veh	17.5	0.0	0.0	18.3	0.0	0.0	28.5	1.4	1.4	24.7	6.8	6.8
LnGrp LOS	B			B			C	A	A	C	A	A
Approach Vol, veh/h		32			94			571			507	
Approach Delay, s/veh		17.5			18.3			1.9			9.0	
Approach LOS		B			B			A			A	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	8.3	51.6		15.1	5.0	54.9		15.1				
Change Period (Y+Rc), s	4.0	4.5		4.0	4.0	4.5		4.0				
Max Green Setting (Gmax), s	13.0	26.5		23.0	11.0	28.5		23.0				
Max Q Clear Time (g_c+I1), s	3.8	2.3		2.8	2.3	5.4		4.5				
Green Ext Time (p_c), s	0.0	9.3		0.4	0.0	9.1		0.4				
<b>Intersection Summary</b>												
HCM 2010 Ctrl Delay			6.6									
HCM 2010 LOS			A									




















HCM 2010 Signalized Intersection Summary  
6: Sonoma Blvd & Magazine St

Vallejo Marine Terminal  
Year 2040 without Project

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	30	60	10	30	60	90	20	400	130	90	290	30
Number	3	8	18	7	4	14	1	6	16	5	2	12
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	0.98		0.95	0.97		0.97	1.00		0.96	1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1900	1900	1900	1891	1900	1900	1872	1900	1900	1866	1900
Adj Flow Rate, veh/h	32	65	3	32	65	29	22	430	112	97	312	26
Adj No. of Lanes	0	1	0	0	1	0	1	2	0	1	2	0
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Percent Heavy Veh, %	0	0	0	0	0	0	0	2	2	0	2	2
Cap, veh/h	192	348	14	156	283	107	75	1102	284	203	1549	128
Arrive On Green	0.27	0.27	0.27	0.27	0.27	0.27	0.04	0.40	0.40	0.22	0.93	0.93
Sat Flow, veh/h	386	1268	51	271	1029	389	1810	2776	715	1810	3314	274
Grp Volume(v), veh/h	100	0	0	126	0	0	22	274	268	97	166	172
Grp Sat Flow(s),veh/h/ln	1706	0	0	1688	0	0	1810	1778	1713	1810	1773	1815
Q Serve(g_s), s	0.0	0.0	0.0	0.0	0.0	0.0	0.7	6.1	6.2	2.6	0.4	0.4
Cycle Q Clear(g_c), s	2.3	0.0	0.0	3.0	0.0	0.0	0.7	6.1	6.2	2.6	0.4	0.4
Prop In Lane	0.32		0.03	0.25		0.23	1.00		0.42	1.00		0.15
Lane Grp Cap(c), veh/h	554	0	0	545	0	0	75	706	680	203	829	848
V/C Ratio(X)	0.18	0.00	0.00	0.23	0.00	0.00	0.29	0.39	0.39	0.48	0.20	0.20
Avail Cap(c_a), veh/h	932	0	0	920	0	0	359	706	680	424	829	848
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	15.4	0.0	0.0	15.7	0.0	0.0	25.8	11.9	12.0	20.1	1.0	1.0
Incr Delay (d2), s/veh	0.1	0.0	0.0	0.1	0.0	0.0	0.8	1.6	1.7	0.7	0.5	0.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.2	0.0	0.0	1.5	0.0	0.0	0.3	3.3	3.2	1.3	0.3	0.3
LnGrp Delay(d),s/veh	15.5	0.0	0.0	15.8	0.0	0.0	26.6	13.5	13.7	20.8	1.5	1.5
LnGrp LOS	B			B			C	B	B	C	A	A
Approach Vol, veh/h		100			126			564			435	
Approach Delay, s/veh		15.5			15.8			14.1			5.8	
Approach LOS		B			B			B			A	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	5.8	50.5		18.7	9.7	46.6		18.7				
Change Period (Y+Rc), s	3.5	5.0		3.5	3.5	5.0		3.5				
Max Green Setting (Gmax), s	11.0	24.0		28.0	13.0	22.0		28.0				
Max Q Clear Time (g_c+I1), s	2.7	2.4		5.0	4.6	8.2		4.3				
Green Ext Time (p_c), s	0.0	7.7		0.8	0.1	6.1		0.8				
<b>Intersection Summary</b>												
HCM 2010 Ctrl Delay				11.4								
HCM 2010 LOS				B								

HCM 2010 Signalized Intersection Summary  
8: Sonoma Blvd & Maritime Academy Dr



















Vallejo Marine Terminal  
Year 2040 without Project

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	120	20	20	20	50	130	20	360	50	30	230	50
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	0.99		0.97	0.99		0.97	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1900	1900	1900	1785	1900	1900	1863	1900	1810	1869	1900
Adj Flow Rate, veh/h	125	21	16	21	52	34	21	375	43	31	240	35
Adj No. of Lanes	0	1	0	0	1	1	1	2	0	1	2	0
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	0	0	0	5	5	0	0	2	2	5	2	2
Cap, veh/h	522	85	46	236	465	528	86	956	109	116	992	143
Arrive On Green	0.34	0.34	0.34	0.34	0.34	0.34	0.05	0.30	0.30	0.07	0.32	0.32
Sat Flow, veh/h	988	254	136	290	1387	1574	1810	3203	365	1723	3117	449
Grp Volume(v), veh/h	162	0	0	73	0	34	21	206	212	31	135	140
Grp Sat Flow(s),veh/h/ln	1378	0	0	1676	0	1574	1810	1770	1798	1723	1776	1790
Q Serve(g_s), s	2.1	0.0	0.0	0.0	0.0	0.5	0.4	3.1	3.1	0.6	1.9	1.9
Cycle Q Clear(g_c), s	3.1	0.0	0.0	0.9	0.0	0.5	0.4	3.1	3.1	0.6	1.9	1.9
Prop In Lane	0.77		0.10	0.29		1.00	1.00		0.20	1.00		0.25
Lane Grp Cap(c), veh/h	653	0	0	701	0	528	86	528	537	116	565	569
V/C Ratio(X)	0.25	0.00	0.00	0.10	0.00	0.06	0.24	0.39	0.39	0.27	0.24	0.25
Avail Cap(c_a), veh/h	1436	0	0	1603	0	1409	1296	2113	2147	1235	2120	2137
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	8.4	0.0	0.0	7.7	0.0	7.6	15.4	9.3	9.3	14.8	8.4	8.4
Incr Delay (d2), s/veh	0.1	0.0	0.0	0.0	0.0	0.0	0.5	0.5	0.5	0.5	0.2	0.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.1	0.0	0.0	0.5	0.0	0.2	0.2	1.6	1.6	0.3	0.9	1.0
LnGrp Delay(d),s/veh	8.5	0.0	0.0	7.7	0.0	7.6	15.9	9.8	9.8	15.3	8.6	8.7
LnGrp LOS	A			A		A	B	A	A	B	A	A
Approach Vol, veh/h		162			107			439			306	
Approach Delay, s/veh		8.5			7.7			10.1			9.3	
Approach LOS		A			A			B			A	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	5.3	14.0		14.2	4.6	14.7		14.2				
Change Period (Y+Rc), s	3.0	4.0		3.0	3.0	4.0		3.0				
Max Green Setting (Gmax), s	24.0	40.0		30.0	24.0	40.0		30.0				
Max Q Clear Time (g_c+I1), s	2.6	5.1		5.1	2.4	3.9		2.9				
Green Ext Time (p_c), s	0.0	4.6		1.0	0.0	4.6		1.0				
<b>Intersection Summary</b>												
HCM 2010 Ctrl Delay			9.4									
HCM 2010 LOS			A									



























HCM 2010 Signalized Intersection Summary  
 16: Lemon St & Carlson St

Vallejo Marine Terminal  
 Year 2040 without Project

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	10	320	10	40	190	70	0	0	40	210	0	20
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	0.97		0.95	0.97		0.95	1.00		0.94	0.93		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1865	1900	1900	1759	1900	1900	1900	1900	1863	1869	1900
Adj Flow Rate, veh/h	11	344	9	43	204	52	0	0	13	232	0	0
Adj No. of Lanes	0	1	0	1	1	0	0	1	0	2	1	0
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Percent Heavy Veh, %	2	2	2	0	8	8	0	0	0	2	0	0
Cap, veh/h	134	776	20	548	584	149	0	0	443	1228	546	0
Arrive On Green	0.44	0.44	0.44	0.44	0.44	0.44	0.00	0.00	0.29	0.29	0.00	0.00
Sat Flow, veh/h	18	1778	46	1017	1337	341	0	0	1517	2586	1869	0
Grp Volume(v), veh/h	364	0	0	43	0	256	0	0	13	232	0	0
Grp Sat Flow(s),veh/h/ln	1841	0	0	1017	0	1677	0	0	1517	1293	1869	0
Q Serve(g_s), s	0.0	0.0	0.0	0.9	0.0	3.0	0.0	0.0	0.2	2.1	0.0	0.0
Cycle Q Clear(g_c), s	4.1	0.0	0.0	5.0	0.0	3.0	0.0	0.0	0.2	2.3	0.0	0.0
Prop In Lane	0.03		0.02	1.00		0.20	0.00		1.00	1.00		0.00
Lane Grp Cap(c), veh/h	930	0	0	548	0	732	0	0	443	1228	546	0
V/C Ratio(X)	0.39	0.00	0.00	0.08	0.00	0.35	0.00	0.00	0.03	0.19	0.00	0.00
Avail Cap(c_a), veh/h	2414	0	0	1380	0	2105	0	0	1544	3104	1902	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	1.00	0.00	0.00	1.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	5.8	0.0	0.0	7.6	0.0	5.5	0.0	0.0	7.5	8.3	0.0	0.0
Incr Delay (d2), s/veh	0.3	0.0	0.0	0.1	0.0	0.3	0.0	0.0	0.0	0.1	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.1	0.0	0.0	0.3	0.0	1.4	0.0	0.0	0.1	0.8	0.0	0.0
LnGrp Delay(d),s/veh	6.1	0.0	0.0	7.6	0.0	5.8	0.0	0.0	7.5	8.3	0.0	0.0
LnGrp LOS	A			A		A			A	A		
Approach Vol, veh/h		364			299			13			232	
Approach Delay, s/veh		6.1			6.1			7.5			8.3	
Approach LOS		A			A			A			A	
<b>Timer</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>	<b>6</b>	<b>7</b>	<b>8</b>				
Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		16.9		12.6		16.9		12.6				
Change Period (Y+Rc), s		4.0		4.0		4.0		4.0				
Max Green Setting (Gmax), s		37.0		30.0		37.0		30.0				
Max Q Clear Time (g_c+I1), s		6.1		4.3		7.0		2.2				
Green Ext Time (p_c), s		4.5		0.9		4.5		1.0				
<b>Intersection Summary</b>												
HCM 2010 Ctrl Delay			6.7									
HCM 2010 LOS			A									
<b>Notes</b>												
User approved volume balancing among the lanes for turning movement.												

HCM 2010 Signalized Intersection Summary  
 17: Lemon St & Curtola Pkwy

Vallejo Marine Terminal  
 Year 2040 without Project

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	60	160	430	110	100	30	200	720	170	50	990	30
Number	3	8	18	7	4	14	1	6	16	5	2	12
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		0.92	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1759	1862	1881	1881	1827	1900	1759	1881	1900	1900	1846	1900
Adj Flow Rate, veh/h	62	188	180	113	103	8	206	742	0	52	1021	0
Adj No. of Lanes	1	1	1	1	1	1	1	2	0	1	2	0
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %	8	3	1	1	4	0	8	1	1	0	3	3
Cap, veh/h	78	314	264	145	371	300	245	1696	0	77	1301	0
Arrive On Green	0.05	0.17	0.17	0.08	0.20	0.20	0.15	0.47	0.00	0.04	0.37	0.00
Sat Flow, veh/h	1675	1862	1567	1792	1827	1479	1675	3668	0	1810	3600	0
Grp Volume(v), veh/h	62	188	180	113	103	8	206	742	0	52	1021	0
Grp Sat Flow(s),veh/h/ln	1675	1862	1567	1792	1827	1479	1675	1787	0	1810	1754	0
Q Serve(g_s), s	3.0	7.6	8.7	5.0	3.9	0.4	9.7	11.2	0.0	2.3	20.9	0.0
Cycle Q Clear(g_c), s	3.0	7.6	8.7	5.0	3.9	0.4	9.7	11.2	0.0	2.3	20.9	0.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.00	1.00		0.00
Lane Grp Cap(c), veh/h	78	314	264	145	371	300	245	1696	0	77	1301	0
V/C Ratio(X)	0.79	0.60	0.68	0.78	0.28	0.03	0.84	0.44	0.00	0.68	0.78	0.00
Avail Cap(c_a), veh/h	517	805	677	553	789	639	517	1696	0	558	1516	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	38.2	31.1	31.6	36.5	27.3	25.9	33.7	14.1	0.0	38.2	22.6	0.0
Incr Delay (d2), s/veh	6.6	1.9	3.2	3.4	0.5	0.0	3.0	0.3	0.0	3.8	2.5	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.5	4.0	4.0	2.6	2.0	0.1	4.7	5.5	0.0	1.2	10.5	0.0
LnGrp Delay(d),s/veh	44.8	33.1	34.8	39.9	27.8	25.9	36.7	14.4	0.0	42.0	25.1	0.0
LnGrp LOS	D	C	C	D	C	C	D	B		D	C	
Approach Vol, veh/h		430			224			948			1073	
Approach Delay, s/veh		35.5			33.8			19.2			25.9	
Approach LOS		D			C			B			C	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	15.8	36.1	7.8	21.3	7.4	44.4	10.6	18.6				
Change Period (Y+Rc), s	4.0	6.0	4.0	4.9	4.0	6.0	4.0	4.9				
Max Green Setting (Gmax), s	25.0	35.0	25.0	35.0	25.0	35.0	25.0	35.0				
Max Q Clear Time (g_c+I1), s	11.7	22.9	5.0	5.9	4.3	13.2	7.0	10.7				
Green Ext Time (p_c), s	0.2	7.1	0.1	2.7	0.0	15.4	0.1	2.6				
<b>Intersection Summary</b>												
HCM 2010 Ctrl Delay			25.8									
HCM 2010 LOS			C									
<b>Notes</b>												
User approved volume balancing among the lanes for turning movement.												

**Intersection**

Int Delay, s/veh 1.5

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR
Vol, veh/h	20	10	10	10	10	10	10	570	10
Conflicting Peds, #/hr	0	0	0	0	0	0	7	0	10
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-
Peak Hour Factor	97	97	97	97	97	97	97	97	97
Heavy Vehicles, %	15	0	0	0	0	0	0	2	0
Mvmt Flow	21	10	10	10	10	10	10	588	10

Major/Minor	Minor2			Minor1			Major1		
Conflicting Flow All	815	1114	252	871	1118	309	485	0	0
Stage 1	495	495	-	613	613	-	-	-	-
Stage 2	320	619	-	258	505	-	-	-	-
Critical Hdwy	7.8	6.5	6.9	7.5	6.5	6.9	4.1	-	-
Critical Hdwy Stg 1	6.8	5.5	-	6.5	5.5	-	-	-	-
Critical Hdwy Stg 2	6.8	5.5	-	6.5	5.5	-	-	-	-
Follow-up Hdwy	3.65	4	3.3	3.5	4	3.3	2.2	-	-
Pot Cap-1 Maneuver	248	210	754	248	209	693	1088	-	-
Stage 1	492	549	-	451	486	-	-	-	-
Stage 2	631	483	-	730	544	-	-	-	-
Platoon blocked, %									
Mov Cap-1 Maneuver	228	204	748	228	203	687	1079	-	-
Mov Cap-2 Maneuver	228	204	-	228	203	-	-	-	-
Stage 1	485	541	-	445	479	-	-	-	-
Stage 2	595	476	-	691	536	-	-	-	-

Approach	EB	WB	NB
HCM Control Delay, s	21	19.5	0.2
HCM LOS	C	C	

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1079	-	-	266	279	981	-	-
HCM Lane V/C Ratio	0.01	-	-	0.155	0.111	0.011	-	-
HCM Control Delay (s)	8.4	0.1	-	21	19.5	8.7	0.1	-
HCM Lane LOS	A	A	-	C	C	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0.5	0.4	0	-	-

**Intersection**

Int Delay, s/veh

Movement	SBL	SBT	SBR
Vol, veh/h	10	450	20
Conflicting Peds, #/hr	10	0	7
Sign Control	Free	Free	Free
RT Channelized	-	-	None
Storage Length	-	-	-
Veh in Median Storage, #	-	0	-
Grade, %	-	0	-
Peak Hour Factor	97	97	97
Heavy Vehicles, %	0	2	0
Mvmt Flow	10	464	21

**Major/Minor Major2**

Conflicting Flow All	598	0	0
Stage 1	-	-	-
Stage 2	-	-	-
Critical Hdwy	4.1	-	-
Critical Hdwy Stg 1	-	-	-
Critical Hdwy Stg 2	-	-	-
Follow-up Hdwy	2.2	-	-
Pot Cap-1 Maneuver	989	-	-
Stage 1	-	-	-
Stage 2	-	-	-
Platoon blocked, %		-	-
Mov Cap-1 Maneuver	981	-	-
Mov Cap-2 Maneuver	-	-	-
Stage 1	-	-	-
Stage 2	-	-	-

**Approach SB**

HCM Control Delay, s 0.3

HCM LOS

**Minor Lane/Major Mvmt**

**Intersection**

Int Delay, s/veh 2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR
Vol, veh/h	40	10	10	10	0	20	20	510	10
Conflicting Peds, #/hr	0	0	6	6	0	0	6	0	7
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-
Peak Hour Factor	97	97	97	97	97	97	97	97	97
Heavy Vehicles, %	3	0	0	0	0	0	0	2	0
Mvmt Flow	41	10	10	10	0	21	21	526	10

Major/Minor	Minor2			Minor1			Major1		
Conflicting Flow All	795	1068	240	842	1079	281	460	0	0
Stage 1	485	485	-	578	578	-	-	-	-
Stage 2	310	583	-	264	501	-	-	-	-
Critical Hdwy	7.56	6.5	6.9	7.5	6.5	6.9	4.1	-	-
Critical Hdwy Stg 1	6.56	5.5	-	6.5	5.5	-	-	-	-
Critical Hdwy Stg 2	6.56	5.5	-	6.5	5.5	-	-	-	-
Follow-up Hdwy	3.53	4	3.3	3.5	4	3.3	2.2	-	-
Pot Cap-1 Maneuver	277	223	767	261	220	722	1112	-	-
Stage 1	530	555	-	474	504	-	-	-	-
Stage 2	672	502	-	724	546	-	-	-	-
Platoon blocked, %									
Mov Cap-1 Maneuver	255	209	759	235	206	714	1106	-	-
Mov Cap-2 Maneuver	255	209	-	235	206	-	-	-	-
Stage 1	513	537	-	459	488	-	-	-	-
Stage 2	631	486	-	678	529	-	-	-	-

Approach	EB	WB	NB
HCM Control Delay, s	21.8	14.1	0.4
HCM LOS	C	B	

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1106	-	-	275	425	1031	-	-
HCM Lane V/C Ratio	0.019	-	-	0.225	0.073	0.02	-	-
HCM Control Delay (s)	8.3	0.1	-	21.8	14.1	8.6	0.1	-
HCM Lane LOS	A	A	-	C	B	A	A	-
HCM 95th %tile Q(veh)	0.1	-	-	0.8	0.2	0.1	-	-

**Intersection**

Int Delay, s/veh

Movement	SBL	SBT	SBR
Vol, veh/h	20	410	30
Conflicting Peds, #/hr	7	0	6
Sign Control	Free	Free	Free
RT Channelized	-	-	None
Storage Length	-	-	-
Veh in Median Storage, #	-	0	-
Grade, %	-	0	-
Peak Hour Factor	97	97	97
Heavy Vehicles, %	0	2	0
Mvmt Flow	21	423	31

**Major/Minor Major2**

Conflicting Flow All	542	0	0
Stage 1	-	-	-
Stage 2	-	-	-
Critical Hdwy	4.1	-	-
Critical Hdwy Stg 1	-	-	-
Critical Hdwy Stg 2	-	-	-
Follow-up Hdwy	2.2	-	-
Pot Cap-1 Maneuver	1037	-	-
Stage 1	-	-	-
Stage 2	-	-	-
Platoon blocked, %		-	-
Mov Cap-1 Maneuver	1031	-	-
Mov Cap-2 Maneuver	-	-	-
Stage 1	-	-	-
Stage 2	-	-	-

**Approach SB**

HCM Control Delay, s 0.5

HCM LOS

**Minor Lane/Major Mvmt**

**Intersection**

Int Delay, s/veh 2.2

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Vol, veh/h	50	30	110	520	280	40
Conflicting Peds, #/hr	0	0	7	0	0	7
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	60	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	0	0	0	2	2	0
Mvmt Flow	53	32	116	547	295	42

Major/Minor	Minor2	Major1	Major2
Conflicting Flow All	821	175	337
Stage 1	316	-	-
Stage 2	505	-	-
Critical Hdwy	6.8	6.9	4.1
Critical Hdwy Stg 1	5.8	-	-
Critical Hdwy Stg 2	5.8	-	-
Follow-up Hdwy	3.5	3.3	2.2
Pot Cap-1 Maneuver	317	844	1234
Stage 1	718	-	-
Stage 2	577	-	-
Platoon blocked, %			-
Mov Cap-1 Maneuver	287	839	1227
Mov Cap-2 Maneuver	287	-	-
Stage 1	718	-	-
Stage 2	522	-	-

Approach	EB	NB	SB
HCM Control Delay, s	17.1	1.4	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1227	-	381	-	-
HCM Lane V/C Ratio	0.094	-	0.221	-	-
HCM Control Delay (s)	8.2	-	17.1	-	-
HCM Lane LOS	A	-	C	-	-
HCM 95th %tile Q(veh)	0.3	-	0.8	-	-

**Intersection**

Int Delay, s/veh 3.5

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR
Vol, veh/h	0	10	0	10	10	20	0	0	10
Conflicting Peds, #/hr	6	0	0	0	0	6	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-
Peak Hour Factor	80	80	80	80	80	80	80	80	80
Heavy Vehicles, %	0	8	0	0	15	0	0	0	0
Mvmt Flow	0	12	0	12	12	25	0	0	12

Major/Minor	Major1	Major2	Minor1						
Conflicting Flow All	38	0	0	13	0	0	63	76	19
Stage 1	-	-	-	-	-	-	13	13	-
Stage 2	-	-	-	-	-	-	50	63	-
Critical Hdwy	4.1	-	-	4.1	-	-	7.1	6.5	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-
Follow-up Hdwy	2.2	-	-	2.2	-	-	3.5	4	3.3
Pot Cap-1 Maneuver	1585	-	-	1619	-	-	936	818	1065
Stage 1	-	-	-	-	-	-	1013	889	-
Stage 2	-	-	-	-	-	-	968	846	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1577	-	-	1611	-	-	926	811	1060
Mov Cap-2 Maneuver	-	-	-	-	-	-	926	811	-
Stage 1	-	-	-	-	-	-	1013	889	-
Stage 2	-	-	-	-	-	-	955	839	-

Approach	EB	WB	NB
HCM Control Delay, s	0	1.8	8.4
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	1060	1577	-	-	1611	-	-	907
HCM Lane V/C Ratio	0.012	-	-	-	0.008	-	-	0.014
HCM Control Delay (s)	8.4	0	-	-	7.3	0	-	9
HCM Lane LOS	A	A	-	-	A	A	-	A
HCM 95th %tile Q(veh)	0	0	-	-	0	-	-	0



**Intersection**

Int Delay, s/veh

Movement	SBL	SBT	SBR
Vol, veh/h	10	0	0
Conflicting Peds, #/hr	0	0	0
Sign Control	Stop	Stop	Stop
RT Channelized	-	-	None
Storage Length	-	-	-
Veh in Median Storage, #	-	0	-
Grade, %	-	0	-
Peak Hour Factor	80	80	80
Heavy Vehicles, %	0	0	0
Mvmt Flow	12	0	0

**Major/Minor**                      **Minor2**

Conflicting Flow All	69	63	31
Stage 1	50	50	-
Stage 2	19	13	-
Critical Hdwy	7.1	6.5	6.2
Critical Hdwy Stg 1	6.1	5.5	-
Critical Hdwy Stg 2	6.1	5.5	-
Follow-up Hdwy	3.5	4	3.3
Pot Cap-1 Maneuver	928	832	1049
Stage 1	968	857	-
Stage 2	1005	889	-
Platoon blocked, %			
Mov Cap-1 Maneuver	907	825	1044
Mov Cap-2 Maneuver	907	825	-
Stage 1	968	850	-
Stage 2	988	889	-

**Approach**                      **SB**

HCM Control Delay, s	9
HCM LOS	A

**Minor Lane/Major Mvmt**

**Intersection**

Int Delay, s/veh 4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR
Vol, veh/h	0	20	0	10	30	10	10	0	20
Conflicting Peds, #/hr	0	0	6	6	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-
Peak Hour Factor	80	80	80	80	80	80	80	80	80
Heavy Vehicles, %	0	7	0	0	9	0	0	0	0
Mvmt Flow	0	25	0	12	38	12	12	0	25

Major/Minor	Major1	Major2	Minor1						
Conflicting Flow All	50	0	0	25	0	0	100	100	31
Stage 1	-	-	-	-	-	-	25	25	-
Stage 2	-	-	-	-	-	-	75	75	-
Critical Hdwy	4.1	-	-	4.1	-	-	7.1	6.5	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-
Follow-up Hdwy	2.2	-	-	2.2	-	-	3.5	4	3.3
Pot Cap-1 Maneuver	1570	-	-	1603	-	-	886	794	1049
Stage 1	-	-	-	-	-	-	998	878	-
Stage 2	-	-	-	-	-	-	939	836	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1562	-	-	1595	-	-	866	788	1044
Mov Cap-2 Maneuver	-	-	-	-	-	-	866	788	-
Stage 1	-	-	-	-	-	-	998	878	-
Stage 2	-	-	-	-	-	-	913	829	-

Approach	EB	WB	NB
HCM Control Delay, s	0	1.5	8.8
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	977	1562	-	-	1595	-	-	794
HCM Lane V/C Ratio	0.038	-	-	-	0.008	-	-	0.016
HCM Control Delay (s)	8.8	0	-	-	7.3	0	-	9.6
HCM Lane LOS	A	A	-	-	A	A	-	A
HCM 95th %tile Q(veh)	0.1	0	-	-	0	-	-	0

**Intersection**

Int Delay, s/veh

Movement	SBL	SBT	SBR
Vol, veh/h	0	10	0
Conflicting Peds, #/hr	0	0	0
Sign Control	Stop	Stop	Stop
RT Channelized	-	-	None
Storage Length	-	-	-
Veh in Median Storage, #	-	0	-
Grade, %	-	0	-
Peak Hour Factor	80	80	80
Heavy Vehicles, %	0	0	0
Mvmt Flow	0	12	0

**Major/Minor**

	Minor2		
Conflicting Flow All	107	94	50
Stage 1	69	69	-
Stage 2	38	25	-
Critical Hdwy	7.1	6.5	6.2
Critical Hdwy Stg 1	6.1	5.5	-
Critical Hdwy Stg 2	6.1	5.5	-
Follow-up Hdwy	3.5	4	3.3
Pot Cap-1 Maneuver	877	800	1024
Stage 1	946	841	-
Stage 2	982	878	-
Platoon blocked, %			
Mov Cap-1 Maneuver	847	794	1019
Mov Cap-2 Maneuver	847	794	-
Stage 1	946	834	-
Stage 2	954	878	-

**Approach**

Approach	SB
HCM Control Delay, s	9.6
HCM LOS	A

**Minor Lane/Major Mvmt**

**Intersection**

Int Delay, s/veh 2.3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR
Vol, veh/h	10	190	10	20	100	10	10	10	10
Conflicting Peds, #/hr	10	0	9	9	0	10	8	0	9
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-
Peak Hour Factor	88	88	88	88	88	88	88	88	88
Heavy Vehicles, %	0	2	0	0	3	14	0	0	0
Mvmt Flow	11	216	11	23	114	11	11	11	11

Major/Minor	Major1	Major2	Minor1						
Conflicting Flow All	134	0	0	236	0	0	438	432	241
Stage 1	-	-	-	-	-	-	253	253	-
Stage 2	-	-	-	-	-	-	185	179	-
Critical Hdwy	4.1	-	-	4.1	-	-	7.1	6.5	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-
Follow-up Hdwy	2.2	-	-	2.2	-	-	3.5	4	3.3
Pot Cap-1 Maneuver	1463	-	-	1343	-	-	532	519	803
Stage 1	-	-	-	-	-	-	756	701	-
Stage 2	-	-	-	-	-	-	821	755	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1451	-	-	1332	-	-	497	497	790
Mov Cap-2 Maneuver	-	-	-	-	-	-	497	497	-
Stage 1	-	-	-	-	-	-	744	689	-
Stage 2	-	-	-	-	-	-	777	735	-

Approach	EB	WB	NB
HCM Control Delay, s	0.4	1.2	11.8
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	567	1451	-	-	1332	-	-	584
HCM Lane V/C Ratio	0.06	0.008	-	-	0.017	-	-	0.058
HCM Control Delay (s)	11.8	7.5	0	-	7.8	0	-	11.5
HCM Lane LOS	B	A	A	-	A	A	-	B
HCM 95th %tile Q(veh)	0.2	0	-	-	0.1	-	-	0.2

**Intersection**

Int Delay, s/veh

Movement	SBL	SBT	SBR
Vol, veh/h	10	10	10
Conflicting Peds, #/hr	9	0	8
Sign Control	Stop	Stop	Stop
RT Channelized	-	-	None
Storage Length	-	-	-
Veh in Median Storage, #	-	0	-
Grade, %	-	0	-
Peak Hour Factor	88	88	88
Heavy Vehicles, %	0	0	0
Mvmt Flow	11	11	11

**Major/Minor**

**Minor2**

Conflicting Flow All	439	433	138
Stage 1	174	174	-
Stage 2	265	259	-
Critical Hdwy	7.1	6.5	6.2
Critical Hdwy Stg 1	6.1	5.5	-
Critical Hdwy Stg 2	6.1	5.5	-
Follow-up Hdwy	3.5	4	3.3
Pot Cap-1 Maneuver	532	519	916
Stage 1	833	759	-
Stage 2	745	697	-
Platoon blocked, %			
Mov Cap-1 Maneuver	496	497	902
Mov Cap-2 Maneuver	496	497	-
Stage 1	819	739	-
Stage 2	710	686	-

**Approach**

SB

HCM Control Delay, s	11.5
HCM LOS	B

**Minor Lane/Major Mvmt**

**Intersection**

Int Delay, s/veh 5.9

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR
Vol, veh/h	10	180	10	30	110	40	10	60	20
Conflicting Peds, #/hr	8	0	0	0	0	8	6	0	9
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-
Peak Hour Factor	94	94	94	94	94	94	94	94	94
Heavy Vehicles, %	0	2	0	5	4	6	0	0	0
Mvmt Flow	11	191	11	32	117	43	11	64	21

Major/Minor	Major1	Major2	Minor1						
Conflicting Flow All	169	0	0	211	0	0	475	459	214
Stage 1	-	-	-	-	-	-	227	227	-
Stage 2	-	-	-	-	-	-	248	232	-
Critical Hdwy	4.1	-	-	4.15	-	-	7.1	6.5	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-
Follow-up Hdwy	2.2	-	-	2.245	-	-	3.5	4	3.3
Pot Cap-1 Maneuver	1421	-	-	1342	-	-	503	502	831
Stage 1	-	-	-	-	-	-	780	720	-
Stage 2	-	-	-	-	-	-	760	716	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1412	-	-	1333	-	-	432	477	819
Mov Cap-2 Maneuver	-	-	-	-	-	-	432	477	-
Stage 1	-	-	-	-	-	-	767	708	-
Stage 2	-	-	-	-	-	-	664	692	-

Approach	EB	WB	NB
HCM Control Delay, s	0.4	1.3	13.5
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	519	1412	-	-	1333	-	-	482
HCM Lane V/C Ratio	0.184	0.008	-	-	0.024	-	-	0.287
HCM Control Delay (s)	13.5	7.6	0	-	7.8	0	-	15.4
HCM Lane LOS	B	A	A	-	A	A	-	C
HCM 95th %tile Q(veh)	0.7	0	-	-	0.1	-	-	1.2

**Intersection**

Int Delay, s/veh

Movement	SBL	SBT	SBR
Vol, veh/h	60	50	20
Conflicting Peds, #/hr	9	0	6
Sign Control	Stop	Stop	Stop
RT Channelized	-	-	None
Storage Length	-	-	-
Veh in Median Storage, #	-	0	-
Grade, %	-	0	-
Peak Hour Factor	94	94	94
Heavy Vehicles, %	2	0	0
Mvmt Flow	64	53	21

**Major/Minor**

	Minor2		
Conflicting Flow All	481	443	155
Stage 1	211	211	-
Stage 2	270	232	-
Critical Hdwy	7.12	6.5	6.2
Critical Hdwy Stg 1	6.12	5.5	-
Critical Hdwy Stg 2	6.12	5.5	-
Follow-up Hdwy	3.518	4	3.3
Pot Cap-1 Maneuver	495	512	896
Stage 1	791	731	-
Stage 2	736	716	-
Platoon blocked, %			
Mov Cap-1 Maneuver	415	487	883
Mov Cap-2 Maneuver	415	487	-
Stage 1	778	707	-
Stage 2	642	704	-

**Approach**

	SB
HCM Control Delay, s	15.4
HCM LOS	C

**Minor Lane/Major Mvmt**

**Intersection**

Int Delay, s/veh 1.4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR
Vol, veh/h	10	240	10	20	150	0	10	0	20
Conflicting Peds, #/hr	6	0	6	6	0	6	9	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	0	2	0	0	5	0	0	0	0
Mvmt Flow	11	267	11	22	167	0	11	0	22

Major/Minor	Major1	Major2	Minor1						
Conflicting Flow All	176	0	0	287	0	0	529	523	287
Stage 1	-	-	-	-	-	-	303	303	-
Stage 2	-	-	-	-	-	-	226	220	-
Critical Hdwy	4.1	-	-	4.1	-	-	7.1	6.5	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-
Follow-up Hdwy	2.2	-	-	2.2	-	-	3.5	4	3.3
Pot Cap-1 Maneuver	1412	-	-	1287	-	-	463	462	757
Stage 1	-	-	-	-	-	-	711	667	-
Stage 2	-	-	-	-	-	-	781	725	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1405	-	-	1281	-	-	442	442	748
Mov Cap-2 Maneuver	-	-	-	-	-	-	442	442	-
Stage 1	-	-	-	-	-	-	699	656	-
Stage 2	-	-	-	-	-	-	752	706	-

Approach	EB	WB	NB
HCM Control Delay, s	0.3	0.9	11.3
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	608	1405	-	-	1281	-	-	855
HCM Lane V/C Ratio	0.055	0.008	-	-	0.017	-	-	0.013
HCM Control Delay (s)	11.3	7.6	0	-	7.9	0	-	9.3
HCM Lane LOS	B	A	A	-	A	A	-	A
HCM 95th %tile Q(veh)	0.2	0	-	-	0.1	-	-	0



**Intersection**

Int Delay, s/veh

Movement	SBL	SBT	SBR
Vol, veh/h	0	0	10
Conflicting Peds, #/hr	0	0	9
Sign Control	Stop	Stop	Stop
RT Channelized	-	-	None
Storage Length	-	-	-
Veh in Median Storage, #	-	0	-
Grade, %	-	0	-
Peak Hour Factor	90	90	90
Heavy Vehicles, %	0	0	0
Mvmt Flow	0	0	11

**Major/Minor**

	Minor2		
Conflicting Flow All	535	529	182
Stage 1	220	220	-
Stage 2	315	309	-
Critical Hdwy	7.1	6.5	6.2
Critical Hdwy Stg 1	6.1	5.5	-
Critical Hdwy Stg 2	6.1	5.5	-
Follow-up Hdwy	3.5	4	3.3
Pot Cap-1 Maneuver	459	458	866
Stage 1	787	725	-
Stage 2	700	663	-
Platoon blocked, %			
Mov Cap-1 Maneuver	430	439	855
Mov Cap-2 Maneuver	430	439	-
Stage 1	774	706	-
Stage 2	670	652	-

**Approach**

Approach	SB
HCM Control Delay, s	9.3
HCM LOS	A

**Minor Lane/Major Mvmt**

**Intersection**

Int Delay, s/veh 0.5

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR
Vol, veh/h	0	260	10	0	170	10	0	0	0
Conflicting Peds, #/hr	6	0	7	7	0	6	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-
Peak Hour Factor	87	87	87	87	87	87	87	87	87
Heavy Vehicles, %	0	2	0	0	5	0	0	0	0
Mvmt Flow	0	299	11	0	195	11	0	0	0

Major/Minor	Major1	Major2	Minor1						
Conflicting Flow All	207	0	0	310	0	0	512	512	312
Stage 1	-	-	-	-	-	-	305	305	-
Stage 2	-	-	-	-	-	-	207	207	-
Critical Hdwy	4.1	-	-	4.1	-	-	7.1	6.5	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-
Follow-up Hdwy	2.2	-	-	2.2	-	-	3.5	4	3.3
Pot Cap-1 Maneuver	1376	-	-	1262	-	-	476	468	733
Stage 1	-	-	-	-	-	-	709	666	-
Stage 2	-	-	-	-	-	-	800	734	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1368	-	-	1255	-	-	467	468	729
Mov Cap-2 Maneuver	-	-	-	-	-	-	467	468	-
Stage 1	-	-	-	-	-	-	709	666	-
Stage 2	-	-	-	-	-	-	784	734	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0	0
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	-	1368	-	-	1255	-	-	606
HCM Lane V/C Ratio	-	-	-	-	-	-	-	0.038
HCM Control Delay (s)	0	0	-	-	0	-	-	11.2
HCM Lane LOS	A	A	-	-	A	-	-	B
HCM 95th %tile Q(veh)	-	0	-	-	0	-	-	0.1

**Intersection**

Int Delay, s/veh

Movement	SBL	SBT	SBR
Vol, veh/h	10	0	10
Conflicting Peds, #/hr	0	0	0
Sign Control	Stop	Stop	Stop
RT Channelized	-	-	None
Storage Length	-	-	-
Veh in Median Storage, #	-	0	-
Grade, %	-	0	-
Peak Hour Factor	87	87	87
Heavy Vehicles, %	0	0	0
Mvmt Flow	11	0	11

**Major/Minor**

	Minor2		
Conflicting Flow All	506	511	208
Stage 1	201	201	-
Stage 2	305	310	-
Critical Hdwy	7.1	6.5	6.2
Critical Hdwy Stg 1	6.1	5.5	-
Critical Hdwy Stg 2	6.1	5.5	-
Follow-up Hdwy	3.5	4	3.3
Pot Cap-1 Maneuver	480	469	837
Stage 1	805	739	-
Stage 2	709	663	-
Platoon blocked, %			
Mov Cap-1 Maneuver	477	469	832
Mov Cap-2 Maneuver	477	469	-
Stage 1	805	739	-
Stage 2	705	663	-

**Approach**

Approach	SB
HCM Control Delay, s	11.2
HCM LOS	B

**Minor Lane/Major Mvmt**

**Intersection**

Int Delay, s/veh 1.4

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Vol, veh/h	270	10	20	180	10	40
Conflicting Peds, #/hr	0	10	10	0	0	7
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	84	84	84	84	84	84
Heavy Vehicles, %	1	17	36	5	0	0
Mvmt Flow	321	12	24	214	12	48

Major/Minor	Major1	Major2	Minor1
Conflicting Flow All	0	340	596
Stage 1	-	-	334
Stage 2	-	-	262
Critical Hdwy	-	4.46	6.4
Critical Hdwy Stg 1	-	-	5.4
Critical Hdwy Stg 2	-	-	5.4
Follow-up Hdwy	-	2.524	3.5
Pot Cap-1 Maneuver	-	1052	470
Stage 1	-	-	730
Stage 2	-	-	786
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	-	1043	451
Mov Cap-2 Maneuver	-	-	451
Stage 1	-	-	726
Stage 2	-	-	759

Approach	EB	WB	NB
HCM Control Delay, s	0	0.9	11.4
HCM LOS			B

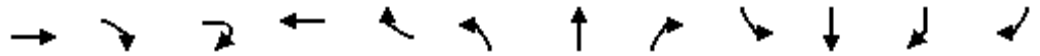
Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	626	-	-	1043	-
HCM Lane V/C Ratio	0.095	-	-	0.023	-
HCM Control Delay (s)	11.4	-	-	8.5	0
HCM Lane LOS	B	-	-	A	A
HCM 95th %tile Q(veh)	0.3	-	-	0.1	-

**APPENDIX L.4.6 — CUMULATIVE PLUS VMT PROJECT**



HCM Signalized Intersection Capacity Analysis  
 1: Sonoma Blvd & Curtola Pkwy

Vallejo Marine Terminal  
 Year 2040 AM with VMT Project



Movement	EBT	EBR	EBR2	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	SBR2
Lane Configurations	↑↑	←		↑↑	↑	↑	↑↑			↑↑		
Volume (vph)	310	130	10	510	210	240	221	10	180	181	10	20
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	4.5		4.5	4.5	4.5	4.5			4.5		
Lane Util. Factor	0.91	0.91		0.95	1.00	1.00	0.95			0.95		
Frbp, ped/bikes	1.00	1.00		1.00	0.98	1.00	1.00			1.00		
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00			1.00		
Frt	0.99	0.85		1.00	0.85	1.00	0.99			0.99		
Flt Protected	1.00	1.00		1.00	1.00	0.95	1.00			0.98		
Satd. Flow (prot)	3336	1418		3539	1587	1752	3486			3371		
Flt Permitted	1.00	1.00		1.00	1.00	0.95	1.00			0.98		
Satd. Flow (perm)	3336	1418		3539	1587	1752	3486			3371		
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.92
Adj. Flow (vph)	333	140	11	548	226	258	238	11	194	195	11	22
RTOR Reduction (vph)	0	51	0	0	163	0	2	0	0	3	0	0
Lane Group Flow (vph)	347	86	0	548	63	258	247	0	0	419	0	0
Confl. Peds. (#/hr)						7		7	7			7
Confl. Bikes (#/hr)					7							
Heavy Vehicles (%)	3%	4%	0%	2%	0%	3%	2%	20%	2%	4%	0%	8%
Turn Type	NA	Perm		NA	Perm	Split	NA		Split	NA		
Protected Phases	2			2		3	3		4	4		
Permitted Phases		2			2							
Actuated Green, G (s)	22.8	22.8		22.8	22.8	18.6	18.6			17.4		
Effective Green, g (s)	22.8	22.8		22.8	22.8	18.6	18.6			17.4		
Actuated g/C Ratio	0.28	0.28		0.28	0.28	0.23	0.23			0.21		
Clearance Time (s)	4.5	4.5		4.5	4.5	4.5	4.5			4.5		
Vehicle Extension (s)	2.0	2.0		2.0	2.0	2.0	2.0			2.0		
Lane Grp Cap (vph)	936	398		993	445	401	798			722		
v/s Ratio Prot	0.10			c0.15		c0.15	0.07			c0.12		
v/s Ratio Perm		0.06			0.04							
v/c Ratio	0.37	0.22		0.55	0.14	0.64	0.31			0.58		
Uniform Delay, d1	23.4	22.4		24.9	21.9	28.3	26.0			28.6		
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00			1.00		
Incremental Delay, d2	0.1	0.1		0.4	0.1	2.6	0.1			0.8		
Delay (s)	23.5	22.5		25.2	21.9	30.9	26.0			29.4		
Level of Service	C	C		C	C	C	C			C		
Approach Delay (s)	23.2			24.3			28.5			29.4		
Approach LOS	C			C			C			C		

Intersection Summary		
HCM 2000 Control Delay	26.2	HCM 2000 Level of Service C
HCM 2000 Volume to Capacity ratio	0.54	
Actuated Cycle Length (s)	81.2	Sum of lost time (s) 17.0
Intersection Capacity Utilization	65.6%	ICU Level of Service C
Analysis Period (min)	15	

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis  
 1: Sonoma Blvd & Curtola Pkwy

Vallejo Marine Terminal  
 Year 2040 AM with VMT Project



Movement	NEL2	NEL	NER2
Lane Configurations			
Volume (vph)	10	10	10
Ideal Flow (vphpl)	1900	1900	1900
Total Lost time (s)		3.5	
Lane Util. Factor		1.00	
Frbp, ped/bikes		1.00	
Flpb, ped/bikes		1.00	
Frt		0.95	
Flt Protected		0.97	
Satd. Flow (prot)		1756	
Flt Permitted		0.97	
Satd. Flow (perm)		1756	
Peak-hour factor, PHF	0.92	0.92	0.92
Adj. Flow (vph)	11	11	11
RTOR Reduction (vph)	0	31	0
Lane Group Flow (vph)	0	2	0
Confl. Peds. (#/hr)			
Confl. Bikes (#/hr)			
Heavy Vehicles (%)	0%	0%	0%
Turn Type	Prot	Prot	
Protected Phases	1	1	
Permitted Phases			
Actuated Green, G (s)		5.4	
Effective Green, g (s)		5.4	
Actuated g/C Ratio		0.07	
Clearance Time (s)		3.5	
Vehicle Extension (s)		2.0	
Lane Grp Cap (vph)		116	
v/s Ratio Prot		c0.00	
v/s Ratio Perm			
v/c Ratio		0.02	
Uniform Delay, d1		35.4	
Progression Factor		1.00	
Incremental Delay, d2		0.0	
Delay (s)		35.4	
Level of Service		D	
Approach Delay (s)		35.4	
Approach LOS		D	
<b>Intersection Summary</b>			

HCM 2010 Signalized Intersection Summary  
 2: Solano Blvd & Sonoma Blvd



















Vallejo Marine Terminal  
 Year 2040 AM with VMT Project

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	10	10	20	30	20	20	20	441	60	20	281	20
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		1.00	1.00		0.98	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1583	1536	1900	1696	1836	1900	1900	1863	1900	1610	1841	1900
Adj Flow Rate, veh/h	11	11	15	33	22	-30	22	479	60	22	305	22
Adj No. of Lanes	1	1	0	1	2	0	1	2	0	1	2	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	20	13	13	12	0	0	0	2	2	18	3	3
Cap, veh/h	30	41	56	82	176	360	85	1773	221	72	1855	133
Arrive On Green	0.02	0.07	0.07	0.05	0.10	0.00	0.05	0.56	0.56	0.05	0.56	0.56
Sat Flow, veh/h	1508	586	798	1616	3580	0	1810	3160	394	1533	3306	237
Grp Volume(v), veh/h	11	0	26	33	-8	-30	22	267	272	22	161	166
Grp Sat Flow(s),veh/h/ln	1508	0	1384	1616	1744	1560	1810	1770	1785	1533	1749	1794
Q Serve(g_s), s	0.4	0.0	1.0	1.1	0.0	0.0	0.6	4.2	4.2	0.7	2.4	2.4
Cycle Q Clear(g_c), s	0.4	0.0	1.0	1.1	0.0	0.0	0.6	4.2	4.2	0.7	2.4	2.4
Prop In Lane	1.00		0.58	1.00		0.00	1.00		0.22	1.00		0.13
Lane Grp Cap(c), veh/h	30	0	97	82	176	0	85	993	1001	72	981	1007
V/C Ratio(X)	0.37	0.00	0.27	0.40	-0.05	0.00	0.26	0.27	0.27	0.31	0.16	0.17
Avail Cap(c_a), veh/h	423	0	621	529	783	0	643	993	1001	516	981	1007
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	25.9	0.0	23.6	24.6	0.0	0.0	24.6	6.1	6.1	24.6	5.7	5.7
Incr Delay (d2), s/veh	2.8	0.0	0.5	1.2	0.0	0.0	0.6	0.7	0.7	0.9	0.4	0.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.2	0.0	0.4	0.5	0.0	0.0	0.3	2.2	2.2	0.3	1.2	1.3
LnGrp Delay(d),s/veh	28.7	0.0	24.1	25.8	0.0	0.0	25.2	6.7	6.7	25.5	6.0	6.0
LnGrp LOS	C		C	C			C	A	A	C	A	A
Approach Vol, veh/h		37			-5			561			349	
Approach Delay, s/veh		25.5			-170.1			7.5			7.3	
Approach LOS		C			A			A			A	
<b>Timer</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>	<b>6</b>	<b>7</b>	<b>8</b>				
Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	5.5	34.5	5.7	7.7	5.5	34.5	4.1	9.4				
Change Period (Y+Rc), s	3.0	4.5	3.0	4.0	3.0	4.5	3.0	4.0				
Max Green Setting (Gmax), s	18.0	30.0	17.5	24.0	19.0	30.0	15.0	24.0				
Max Q Clear Time (g_c+I1), s	2.7	6.2	3.1	3.0	2.6	4.4	2.4	0.0				
Green Ext Time (p_c), s	0.0	3.5	0.0	0.0	0.0	3.6	0.0	0.0				
<b>Intersection Summary</b>												
HCM 2010 Ctrl Delay			9.0									
HCM 2010 LOS			A									
<b>Notes</b>												
User approved pedestrian interval to be less than phase max green.												






















HCM 2010 Signalized Intersection Summary  
3: Sonoma Blvd & Lemon St

Vallejo Marine Terminal  
Year 2040 AM with VMT Project

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	21	30	17	60	30	40	17	430	70	30	300	21
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	0.99		0.99	0.99		0.99	1.00		0.97	1.00		0.96
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1761	1900	1900	1766	1900	1508	1845	1900	1727	1799	1900
Adj Flow Rate, veh/h	23	33	15	66	33	14	19	473	51	33	330	22
Adj No. of Lanes	0	1	0	0	1	0	1	2	0	1	2	0
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Percent Heavy Veh, %	11	11	11	11	11	11	26	3	3	10	6	6
Cap, veh/h	150	177	64	245	109	35	46	1658	178	84	1751	116
Arrive On Green	0.19	0.19	0.19	0.19	0.19	0.19	0.06	1.00	1.00	0.05	0.54	0.54
Sat Flow, veh/h	315	926	332	717	569	182	1436	3182	342	1645	3246	215
Grp Volume(v), veh/h	71	0	0	113	0	0	19	259	265	33	173	179
Grp Sat Flow(s),veh/h/ln	1574	0	0	1467	0	0	1436	1752	1771	1645	1709	1752
Q Serve(g_s), s	0.0	0.0	0.0	1.4	0.0	0.0	0.7	0.0	0.0	1.0	2.7	2.8
Cycle Q Clear(g_c), s	1.9	0.0	0.0	3.3	0.0	0.0	0.7	0.0	0.0	1.0	2.7	2.8
Prop In Lane	0.32		0.21	0.58		0.12	1.00		0.19	1.00		0.12
Lane Grp Cap(c), veh/h	391	0	0	389	0	0	46	913	923	84	922	945
V/C Ratio(X)	0.18	0.00	0.00	0.29	0.00	0.00	0.41	0.28	0.29	0.39	0.19	0.19
Avail Cap(c_a), veh/h	760	0	0	732	0	0	299	913	923	405	922	945
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	1.00	1.00	1.00	0.97	0.97	0.97
Uniform Delay (d), s/veh	18.0	0.0	0.0	18.5	0.0	0.0	24.2	0.0	0.0	24.3	6.2	6.2
Incr Delay (d2), s/veh	0.1	0.0	0.0	0.2	0.0	0.0	2.2	0.8	0.8	1.1	0.4	0.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.9	0.0	0.0	1.4	0.0	0.0	0.3	0.2	0.2	0.5	1.4	1.5
LnGrp Delay(d),s/veh	18.1	0.0	0.0	18.7	0.0	0.0	26.4	0.8	0.8	25.4	6.7	6.7
LnGrp LOS	B			B			C	A	A	C	A	A
Approach Vol, veh/h		71			113			543			385	
Approach Delay, s/veh		18.1			18.7			1.7			8.3	
Approach LOS		B			B			A			A	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	6.7	54.2		14.1	5.7	55.2		14.1				
Change Period (Y+Rc), s	4.0	4.5		4.0	4.0	4.5		4.0				
Max Green Setting (Gmax), s	13.0	26.5		23.0	11.0	28.5		23.0				
Max Q Clear Time (g_c+I1), s	3.0	2.0		3.9	2.7	4.8		5.3				
Green Ext Time (p_c), s	0.0	8.0		0.6	0.0	7.9		0.6				
<b>Intersection Summary</b>												
HCM 2010 Ctrl Delay			6.7									
HCM 2010 LOS			A									




















HCM 2010 Signalized Intersection Summary  
6: Sonoma Blvd & Magazine St

Vallejo Marine Terminal  
Year 2040 AM with VMT Project

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	80	140	20	40	50	100	20	267	90	70	267	30
Number	3	8	18	7	4	14	1	6	16	5	2	12
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	0.98		0.96	0.98		0.97	1.00		0.97	1.00		0.95
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1889	1900	1900	1871	1900	1900	1840	1900	1727	1799	1900
Adj Flow Rate, veh/h	93	163	16	47	58	38	23	310	69	81	310	28
Adj No. of Lanes	0	1	0	0	1	0	1	2	0	1	2	0
Peak Hour Factor	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86
Percent Heavy Veh, %	1	1	1	0	0	0	0	4	4	10	5	5
Cap, veh/h	212	332	29	197	229	123	78	1110	243	168	1424	127
Arrive On Green	0.29	0.29	0.29	0.29	0.29	0.29	0.04	0.39	0.39	0.20	0.90	0.90
Sat Flow, veh/h	432	1134	98	382	782	421	1810	2834	620	1645	3157	283
Grp Volume(v), veh/h	272	0	0	143	0	0	23	189	190	81	167	171
Grp Sat Flow(s),veh/h/ln	1664	0	0	1585	0	0	1810	1748	1705	1645	1709	1730
Q Serve(g_s), s	3.9	0.0	0.0	0.0	0.0	0.0	0.7	4.1	4.3	2.4	0.7	0.7
Cycle Q Clear(g_c), s	7.4	0.0	0.0	3.5	0.0	0.0	0.7	4.1	4.3	2.4	0.7	0.7
Prop In Lane	0.34		0.06	0.33		0.27	1.00		0.36	1.00		0.16
Lane Grp Cap(c), veh/h	573	0	0	549	0	0	78	685	668	168	771	780
V/C Ratio(X)	0.48	0.00	0.00	0.26	0.00	0.00	0.30	0.28	0.28	0.48	0.22	0.22
Avail Cap(c_a), veh/h	904	0	0	858	0	0	354	685	668	381	771	780
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	16.6	0.0	0.0	15.3	0.0	0.0	26.1	11.6	11.7	21.0	1.5	1.5
Incr Delay (d2), s/veh	0.2	0.0	0.0	0.1	0.0	0.0	0.8	1.0	1.1	0.8	0.6	0.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.6	0.0	0.0	1.7	0.0	0.0	0.4	2.2	2.2	1.1	0.4	0.4
LnGrp Delay(d),s/veh	16.8	0.0	0.0	15.4	0.0	0.0	26.8	12.7	12.8	21.8	2.2	2.2
LnGrp LOS	B			B			C	B	B	C	A	A
Approach Vol, veh/h		272			143			402			419	
Approach Delay, s/veh		16.8			15.4			13.5			6.0	
Approach LOS		B			B			B			A	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	5.9	49.2		19.9	9.2	45.8		19.9				
Change Period (Y+Rc), s	3.5	5.0		3.5	3.5	5.0		3.5				
Max Green Setting (Gmax), s	11.0	24.0		28.0	13.0	22.0		28.0				
Max Q Clear Time (g_c+I1), s	2.7	2.7		5.5	4.4	6.3		9.4				
Green Ext Time (p_c), s	0.0	6.1		1.7	0.1	5.3		1.6				
<b>Intersection Summary</b>												
HCM 2010 Ctrl Delay				11.9								
HCM 2010 LOS				B								



















HCM 2010 Signalized Intersection Summary  
8: Sonoma Blvd & Maritime Academy Dr

Vallejo Marine Terminal  
Year 2040 AM with VMT Project

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	30	20	10	20	90	100	10	207	20	40	187	40
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		1.00	1.00		0.99	1.00		0.97
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1746	1900	1900	1778	1863	1900	1817	1900	1900	1792	1900
Adj Flow Rate, veh/h	33	22	6	22	98	5	11	225	12	43	203	26
Adj No. of Lanes	0	1	0	0	1	1	1	2	0	1	2	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	0	0	0	5	5	2	0	5	5	0	6	6
Cap, veh/h	323	178	36	171	399	401	47	1149	61	162	1236	156
Arrive On Green	0.25	0.25	0.25	0.25	0.25	0.25	0.03	0.34	0.34	0.09	0.41	0.41
Sat Flow, veh/h	589	703	141	149	1577	1583	1810	3334	177	1810	3030	382
Grp Volume(v), veh/h	61	0	0	120	0	5	11	116	121	43	113	116
Grp Sat Flow(s),veh/h/ln	1432	0	0	1726	0	1583	1810	1726	1784	1810	1703	1710
Q Serve(g_s), s	0.0	0.0	0.0	0.0	0.0	0.1	0.2	1.5	1.5	0.7	1.3	1.4
Cycle Q Clear(g_c), s	1.7	0.0	0.0	1.7	0.0	0.1	0.2	1.5	1.5	0.7	1.3	1.4
Prop In Lane	0.54		0.10	0.18		1.00	1.00		0.10	1.00		0.22
Lane Grp Cap(c), veh/h	536	0	0	570	0	401	47	595	615	162	694	697
V/C Ratio(X)	0.11	0.00	0.00	0.21	0.00	0.01	0.23	0.19	0.20	0.27	0.16	0.17
Avail Cap(c_a), veh/h	1486	0	0	1716	0	1487	1360	2162	2235	1360	2133	2141
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	9.2	0.0	0.0	9.6	0.0	8.9	15.2	7.4	7.4	13.6	6.0	6.0
Incr Delay (d2), s/veh	0.0	0.0	0.0	0.1	0.0	0.0	0.9	0.2	0.2	0.3	0.1	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.4	0.0	0.0	0.8	0.0	0.0	0.1	0.7	0.8	0.4	0.6	0.7
LnGrp Delay(d),s/veh	9.3	0.0	0.0	9.6	0.0	8.9	16.2	7.5	7.5	13.9	6.1	6.1
LnGrp LOS	A			A		A	B	A	A	B	A	A
Approach Vol, veh/h		61			125			248			272	
Approach Delay, s/veh		9.3			9.6			7.9			7.3	
Approach LOS		A			A			A			A	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	5.9	15.0		11.1	3.8	17.0		11.1				
Change Period (Y+Rc), s	3.0	4.0		3.0	3.0	4.0		3.0				
Max Green Setting (Gmax), s	24.0	40.0		30.0	24.0	40.0		30.0				
Max Q Clear Time (g_c+I1), s	2.7	3.5		3.7	2.2	3.4		3.7				
Green Ext Time (p_c), s	0.0	3.0		0.7	0.0	3.0		0.7				
<b>Intersection Summary</b>												
HCM 2010 Ctrl Delay			8.1									
HCM 2010 LOS			A									

























HCM 2010 Signalized Intersection Summary  
 16: Lemon St & Carlson St

Vallejo Marine Terminal  
 Year 2040 AM with VMT Project

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	10	170	10	20	170	150	10	10	20	150	10	10
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	0.99		0.98	0.98		0.95	0.98		1.00	0.98		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1770	1900	1743	1832	1900	1900	1597	1900	1881	1886	1900
Adj Flow Rate, veh/h	12	200	11	24	200	154	12	12	0	187	0	0
Adj No. of Lanes	0	1	0	1	1	0	0	1	0	2	1	0
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85
Percent Heavy Veh, %	7	7	7	9	7	7	50	50	50	1	0	0
Cap, veh/h	177	724	38	707	422	325	325	204	0	1157	388	0
Arrive On Green	0.45	0.45	0.45	0.45	0.45	0.45	0.21	0.21	0.00	0.21	0.00	0.00
Sat Flow, veh/h	32	1610	85	1075	939	723	451	991	0	2775	1886	0
Grp Volume(v), veh/h	223	0	0	24	0	354	24	0	0	187	0	0
Grp Sat Flow(s),veh/h/ln	1727	0	0	1075	0	1661	1442	0	0	1387	1886	0
Q Serve(g_s), s	0.0	0.0	0.0	0.3	0.0	3.5	0.0	0.0	0.0	1.4	0.0	0.0
Cycle Q Clear(g_c), s	1.9	0.0	0.0	2.2	0.0	3.5	0.3	0.0	0.0	1.6	0.0	0.0
Prop In Lane	0.05		0.05	1.00		0.44	0.50		0.00	1.00		0.00
Lane Grp Cap(c), veh/h	940	0	0	707	0	747	529	0	0	1157	388	0
V/C Ratio(X)	0.24	0.00	0.00	0.03	0.00	0.47	0.05	0.00	0.00	0.16	0.00	0.00
Avail Cap(c_a), veh/h	2857	0	0	1935	0	2645	2009	0	0	4169	2435	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	1.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	4.0	0.0	0.0	4.7	0.0	4.5	7.4	0.0	0.0	8.1	0.0	0.0
Incr Delay (d2), s/veh	0.1	0.0	0.0	0.0	0.0	0.5	0.0	0.0	0.0	0.1	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.9	0.0	0.0	0.1	0.0	1.6	0.1	0.0	0.0	0.5	0.0	0.0
LnGrp Delay(d),s/veh	4.2	0.0	0.0	4.7	0.0	4.9	7.5	0.0	0.0	8.2	0.0	0.0
LnGrp LOS	A			A		A	A			A		
Approach Vol, veh/h		223			378			24			187	
Approach Delay, s/veh		4.2			4.9			7.5			8.2	
Approach LOS		A			A			A			A	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		14.5		8.8		14.5		8.8				
Change Period (Y+Rc), s		4.0		4.0		4.0		4.0				
Max Green Setting (Gmax), s		37.0		30.0		37.0		30.0				
Max Q Clear Time (g_c+I1), s		3.9		3.6		5.5		2.3				
Green Ext Time (p_c), s		4.2		0.8		4.2		0.8				
<b>Intersection Summary</b>												
HCM 2010 Ctrl Delay				5.5								
HCM 2010 LOS				A								
<b>Notes</b>												
User approved volume balancing among the lanes for turning movement.												

HCM 2010 Signalized Intersection Summary  
 17: Lemon St & Curtola Pkwy

Vallejo Marine Terminal  
 Year 2040 AM with VMT Project

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	30	80	230	130	100	30	210	920	120	30	520	40
Number	3	8	18	7	4	14	1	6	16	5	2	12
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		0.91	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1696	1853	1810	1827	1827	1900	1827	1849	1900	1827	1845	1900
Adj Flow Rate, veh/h	33	89	0	144	111	16	233	1022	0	33	578	0
Adj No. of Lanes	1	1	1	1	1	1	1	2	0	1	2	0
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	12	0	5	4	4	0	4	3	3	4	3	3
Cap, veh/h	54	207	172	182	334	270	278	1716	0	58	1269	0
Arrive On Green	0.03	0.11	0.00	0.10	0.18	0.18	0.16	0.49	0.00	0.03	0.36	0.00
Sat Flow, veh/h	1616	1853	1538	1740	1827	1478	1740	3605	0	1740	3597	0
Grp Volume(v), veh/h	33	89	0	144	111	16	233	1022	0	33	578	0
Grp Sat Flow(s),veh/h/ln	1616	1853	1538	1740	1827	1478	1740	1756	0	1740	1752	0
Q Serve(g_s), s	1.5	3.2	0.0	5.8	3.8	0.6	9.4	15.2	0.0	1.3	9.1	0.0
Cycle Q Clear(g_c), s	1.5	3.2	0.0	5.8	3.8	0.6	9.4	15.2	0.0	1.3	9.1	0.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.00	1.00		0.00
Lane Grp Cap(c), veh/h	54	207	172	182	334	270	278	1716	0	58	1269	0
V/C Ratio(X)	0.61	0.43	0.00	0.79	0.33	0.06	0.84	0.60	0.00	0.57	0.46	0.00
Avail Cap(c_a), veh/h	559	899	746	603	886	716	603	1716	0	603	1699	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	34.4	29.9	0.0	31.6	25.7	24.4	29.4	13.3	0.0	34.4	17.6	0.0
Incr Delay (d2), s/veh	4.1	1.5	0.0	2.9	0.7	0.1	2.6	0.7	0.0	3.2	0.3	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.7	1.7	0.0	2.9	2.0	0.3	4.7	7.4	0.0	0.7	4.5	0.0
LnGrp Delay(d),s/veh	38.5	31.4	0.0	34.5	26.4	24.5	32.0	14.0	0.0	37.5	17.9	0.0
LnGrp LOS	D	C		C	C	C	C	B		D	B	
Approach Vol, veh/h		122			271			1255			611	
Approach Delay, s/veh		33.3			30.6			17.3			19.0	
Approach LOS		C			C			B			B	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	15.5	32.1	6.4	18.1	6.4	41.3	11.6	13.0				
Change Period (Y+Rc), s	4.0	6.0	4.0	4.9	4.0	6.0	4.0	4.9				
Max Green Setting (Gmax), s	25.0	35.0	25.0	35.0	25.0	35.0	25.0	35.0				
Max Q Clear Time (g_c+I1), s	11.4	11.1	3.5	5.8	3.3	17.2	7.8	5.2				
Green Ext Time (p_c), s	0.3	15.0	0.0	1.4	0.0	12.6	0.2	1.4				
<b>Intersection Summary</b>												
HCM 2010 Ctrl Delay			20.2									
HCM 2010 LOS			C									
<b>Notes</b>												
User approved volume balancing among the lanes for turning movement.												

**Intersection**

Int Delay, s/veh 1.7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR
Vol, veh/h	20	10	10	10	10	10	10	497	10
Conflicting Peds, #/hr	0	0	7	7	0	0	11	0	8
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-
Peak Hour Factor	89	89	89	89	89	89	89	89	89
Heavy Vehicles, %	13	0	0	0	0	0	0	3	33
Mvmt Flow	22	11	11	11	11	11	11	558	11

Major/Minor	Minor2			Minor1			Major1		
Conflicting Flow All	773	1058	235	841	1058	303	442	0	0
Stage 1	459	459	-	594	594	-	-	-	-
Stage 2	314	599	-	247	464	-	-	-	-
Critical Hdwy	7.76	6.5	6.9	7.5	6.5	6.9	4.1	-	-
Critical Hdwy Stg 1	6.76	5.5	-	6.5	5.5	-	-	-	-
Critical Hdwy Stg 2	6.76	5.5	-	6.5	5.5	-	-	-	-
Follow-up Hdwy	3.63	4	3.3	3.5	4	3.3	2.2	-	-
Pot Cap-1 Maneuver	270	227	773	261	227	699	1129	-	-
Stage 1	523	570	-	463	496	-	-	-	-
Stage 2	642	494	-	741	567	-	-	-	-
Platoon blocked, %									
Mov Cap-1 Maneuver	246	218	761	238	218	689	1119	-	-
Mov Cap-2 Maneuver	246	218	-	238	218	-	-	-	-
Stage 1	513	558	-	454	486	-	-	-	-
Stage 2	603	484	-	698	555	-	-	-	-

Approach	EB	WB	NB
HCM Control Delay, s	20	18.9	0.3
HCM LOS	C	C	

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1119	-	-	285	293	997	-	-
HCM Lane V/C Ratio	0.01	-	-	0.158	0.115	0.011	-	-
HCM Control Delay (s)	8.2	0.1	-	20	18.9	8.7	0.1	-
HCM Lane LOS	A	A	-	C	C	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0.6	0.4	0	-	-

**Intersection**

Int Delay, s/veh

Movement	SBL	SBT	SBR
Vol, veh/h	10	377	10
Conflicting Peds, #/hr	8	0	11
Sign Control	Free	Free	Free
RT Channelized	-	-	None
Storage Length	-	-	-
Veh in Median Storage, #	-	0	-
Grade, %	-	0	-
Peak Hour Factor	89	89	89
Heavy Vehicles, %	0	7	20
Mvmt Flow	11	424	11

**Major/Minor Major2**

Conflicting Flow All	577	0	0
Stage 1	-	-	-
Stage 2	-	-	-
Critical Hdwy	4.1	-	-
Critical Hdwy Stg 1	-	-	-
Critical Hdwy Stg 2	-	-	-
Follow-up Hdwy	2.2	-	-
Pot Cap-1 Maneuver	1006	-	-
Stage 1	-	-	-
Stage 2	-	-	-
Platoon blocked, %		-	-
Mov Cap-1 Maneuver	997	-	-
Mov Cap-2 Maneuver	-	-	-
Stage 1	-	-	-
Stage 2	-	-	-

**Approach SB**

HCM Control Delay, s 0.3

HCM LOS

**Minor Lane/Major Mvmt**

**Intersection**

Int Delay, s/veh 2.1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR
Vol, veh/h	30	10	10	10	10	20	10	447	10
Conflicting Peds, #/hr	6	0	9	9	0	6	18	0	10
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-
Peak Hour Factor	91	91	91	91	91	91	91	91	91
Heavy Vehicles, %	0	0	0	0	0	15	0	4	0
Mvmt Flow	33	11	11	11	11	22	11	491	11

Major/Minor	Minor2			Minor1			Major1		
Conflicting Flow All	738	989	234	783	995	278	423	0	0
Stage 1	456	456	-	528	528	-	-	-	-
Stage 2	282	533	-	255	467	-	-	-	-
Critical Hdwy	7.5	6.5	6.9	7.5	6.5	7.2	4.1	-	-
Critical Hdwy Stg 1	6.5	5.5	-	6.5	5.5	-	-	-	-
Critical Hdwy Stg 2	6.5	5.5	-	6.5	5.5	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	3.5	4	3.45	2.2	-	-
Pot Cap-1 Maneuver	310	249	774	288	247	682	1147	-	-
Stage 1	559	572	-	507	531	-	-	-	-
Stage 2	707	528	-	733	565	-	-	-	-
Platoon blocked, %									
Mov Cap-1 Maneuver	273	235	757	259	233	667	1130	-	-
Mov Cap-2 Maneuver	273	235	-	259	233	-	-	-	-
Stage 1	547	551	-	496	520	-	-	-	-
Stage 2	650	517	-	677	545	-	-	-	-

Approach	EB	WB	NB
HCM Control Delay, s	19.6	16.4	0.3
HCM LOS	C	C	

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1130	-	-	302	359	981	-	-
HCM Lane V/C Ratio	0.01	-	-	0.182	0.122	0.022	-	-
HCM Control Delay (s)	8.2	0.1	-	19.6	16.4	8.8	0.1	-
HCM Lane LOS	A	A	-	C	C	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0.7	0.4	0.1	-	-



**Intersection**

Int Delay, s/veh

Movement	SBL	SBT	SBR
Vol, veh/h	20	357	20
Conflicting Peds, #/hr	10	0	18
Sign Control	Free	Free	Free
RT Channelized	-	-	None
Storage Length	-	-	-
Veh in Median Storage, #	-	0	-
Grade, %	-	0	-
Peak Hour Factor	91	91	91
Heavy Vehicles, %	10	7	0
Mvmt Flow	22	392	22

**Major/Minor Major2**

Conflicting Flow All	511	0	0
Stage 1	-	-	-
Stage 2	-	-	-
Critical Hdwy	4.3	-	-
Critical Hdwy Stg 1	-	-	-
Critical Hdwy Stg 2	-	-	-
Follow-up Hdwy	2.3	-	-
Pot Cap-1 Maneuver	996	-	-
Stage 1	-	-	-
Stage 2	-	-	-
Platoon blocked, %		-	-
Mov Cap-1 Maneuver	981	-	-
Mov Cap-2 Maneuver	-	-	-
Stage 1	-	-	-
Stage 2	-	-	-

**Approach SB**

HCM Control Delay, s 0.5

HCM LOS

**Minor Lane/Major Mvmt**

**Intersection**

Int Delay, s/veh 4.7

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Vol, veh/h	100	50	100	247	217	100
Conflicting Peds, #/hr	0	0	13	0	0	13
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	60	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	85	85	85	85	85	85
Heavy Vehicles, %	3	3	3	4	4	3
Mvmt Flow	118	59	118	291	255	118

Major/Minor	Minor2	Major1	Major2
Conflicting Flow All	695	199	373
Stage 1	314	-	-
Stage 2	381	-	-
Critical Hdwy	6.86	6.96	4.16
Critical Hdwy Stg 1	5.86	-	-
Critical Hdwy Stg 2	5.86	-	-
Follow-up Hdwy	3.53	3.33	2.23
Pot Cap-1 Maneuver	374	806	1175
Stage 1	711	-	-
Stage 2	657	-	-
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	336	797	1162
Mov Cap-2 Maneuver	336	-	-
Stage 1	711	-	-
Stage 2	590	-	-

Approach	EB	NB	SB
HCM Control Delay, s	19.9	2.4	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1162	-	416	-	-
HCM Lane V/C Ratio	0.101	-	0.424	-	-
HCM Control Delay (s)	8.4	-	19.9	-	-
HCM Lane LOS	A	-	C	-	-
HCM 95th %tile Q(veh)	0.3	-	2.1	-	-

**Intersection**

Int Delay, s/veh 1.8

Movement	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBL	NBT	NBR
Vol, veh/h	0	29	0	10	0	29	10	0	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	-	0	-	-	0	-
Grade, %	-	0	-	-	-	0	-	-	0	-
Peak Hour Factor	82	82	82	82	82	82	82	82	82	82
Heavy Vehicles, %	0	21	0	0	0	21	0	0	0	0
Mvmt Flow	0	35	0	12	0	35	12	0	0	0

Major/Minor	Major1	Major2	Minor1							
Conflicting Flow All	48	0	0	35	35	0	0	83	107	48
Stage 1	-	-	-	-	-	-	-	35	35	-
Stage 2	-	-	-	-	-	-	-	48	72	-
Critical Hdwy	4.1	-	-	-	4.1	-	-	7.1	6.5	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	-	6.1	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	-	6.1	5.5	-
Follow-up Hdwy	2.2	-	-	-	2.2	-	-	3.5	4	3.3
Pot Cap-1 Maneuver	1572	-	-	-	1589	-	-	909	787	1027
Stage 1	-	-	-	-	-	-	-	986	870	-
Stage 2	-	-	-	-	-	-	-	971	839	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1572	-	-	-	-	-	-	898	787	1027
Mov Cap-2 Maneuver	-	-	-	-	-	-	-	898	787	-
Stage 1	-	-	-	-	-	-	-	986	870	-
Stage 2	-	-	-	-	-	-	-	960	839	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0	0
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	-	1572	-	-	-	-	-	974
HCM Lane V/C Ratio	-	-	-	-	-	-	-	0.025
HCM Control Delay (s)	0	0	-	-	-	-	-	8.8
HCM Lane LOS	A	A	-	-	-	-	-	A
HCM 95th %tile Q(veh)	-	0	-	-	-	-	-	0.1

**Intersection**

Int Delay, s/veh

Movement	SBL	SBT	SBR
Vol, veh/h	10	0	10
Conflicting Peds, #/hr	0	0	0
Sign Control	Stop	Stop	Stop
RT Channelized	-	-	None
Storage Length	-	-	-
Veh in Median Storage, #	-	0	-
Grade, %	-	0	-
Peak Hour Factor	82	82	82
Heavy Vehicles, %	0	0	0
Mvmt Flow	12	0	12

Major/Minor	Minor2		
Conflicting Flow All	76	101	41
Stage 1	41	66	-
Stage 2	35	35	-
Critical Hdwy	7.1	6.5	6.2
Critical Hdwy Stg 1	6.1	5.5	-
Critical Hdwy Stg 2	6.1	5.5	-
Follow-up Hdwy	3.5	4	3.3
Pot Cap-1 Maneuver	919	793	1036
Stage 1	979	844	-
Stage 2	986	870	-
Platoon blocked, %			
Mov Cap-1 Maneuver	919	793	1036
Mov Cap-2 Maneuver	919	793	-
Stage 1	979	844	-
Stage 2	986	870	-

Approach	SB
HCM Control Delay, s	8.8
HCM LOS	A

**Minor Lane/Major Mvmt**

Intersection										
Int Delay, s/veh	3.6									

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR
Vol, veh/h	10	39	0	10	39	10	10	10	10
Conflicting Peds, #/hr	0	0	0	0	0	0	7	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-
Peak Hour Factor	88	88	88	88	88	88	88	88	88
Heavy Vehicles, %	0	16	0	0	16	0	0	0	0
Mvmt Flow	11	44	0	11	44	11	11	11	11

Major/Minor	Major1			Major2			Minor1		
Conflicting Flow All	63	0	0	51	0	0	154	159	51
Stage 1	-	-	-	-	-	-	74	74	-
Stage 2	-	-	-	-	-	-	80	85	-
Critical Hdwy	4.1	-	-	4.1	-	-	7.1	6.5	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-
Follow-up Hdwy	2.2	-	-	2.2	-	-	3.5	4	3.3
Pot Cap-1 Maneuver	1553	-	-	1568	-	-	817	737	1023
Stage 1	-	-	-	-	-	-	940	837	-
Stage 2	-	-	-	-	-	-	934	828	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1553	-	-	1568	-	-	804	718	1017
Mov Cap-2 Maneuver	-	-	-	-	-	-	804	718	-
Stage 1	-	-	-	-	-	-	928	826	-
Stage 2	-	-	-	-	-	-	927	817	-

Approach	EB	WB	NB
HCM Control Delay, s	1.5	1.2	9.5
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	829	1553	-	-	1568	-	-	773
HCM Lane V/C Ratio	0.041	0.007	-	-	0.007	-	-	0.015
HCM Control Delay (s)	9.5	7.3	0	-	7.3	0	-	9.7
HCM Lane LOS	A	A	A	-	A	A	-	A
HCM 95th %tile Q(veh)	0.1	0	-	-	0	-	-	0

**Intersection**

Int Delay, s/veh

Movement	SBL	SBT	SBR
Vol, veh/h	10	0	0
Conflicting Peds, #/hr	0	0	7
Sign Control	Stop	Stop	Stop
RT Channelized	-	-	None
Storage Length	-	-	-
Veh in Median Storage, #	-	0	-
Grade, %	-	0	-
Peak Hour Factor	88	88	88
Heavy Vehicles, %	0	0	0
Mvmt Flow	11	0	0

**Major/Minor**

**Minor2**

Conflicting Flow All	165	154	57
Stage 1	80	80	-
Stage 2	85	74	-
Critical Hdwy	7.1	6.5	6.2
Critical Hdwy Stg 1	6.1	5.5	-
Critical Hdwy Stg 2	6.1	5.5	-
Follow-up Hdwy	3.5	4	3.3
Pot Cap-1 Maneuver	804	741	1015
Stage 1	934	832	-
Stage 2	928	837	-
Platoon blocked, %			
Mov Cap-1 Maneuver	773	722	1009
Mov Cap-2 Maneuver	773	722	-
Stage 1	922	821	-
Stage 2	899	826	-

**Approach**

SB

HCM Control Delay, s	9.7
HCM LOS	A

**Minor Lane/Major Mvmt**

Intersection										
Int Delay, s/veh	2.5									

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR
Vol, veh/h	10	110	10	10	110	10	10	10	10
Conflicting Peds, #/hr	7	0	7	7	0	7	0	0	6
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-
Peak Hour Factor	85	85	85	85	85	85	85	85	85
Heavy Vehicles, %	0	8	0	17	10	0	0	0	25
Mvmt Flow	12	129	12	12	129	12	12	12	12

Major/Minor	Major1			Major2			Minor1		
Conflicting Flow All	147	0	0	147	0	0	342	336	148
Stage 1	-	-	-	-	-	-	165	165	-
Stage 2	-	-	-	-	-	-	177	171	-
Critical Hdwy	4.1	-	-	4.27	-	-	7.1	6.5	6.45
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-
Follow-up Hdwy	2.2	-	-	2.353	-	-	3.5	4	3.525
Pot Cap-1 Maneuver	1447	-	-	1348	-	-	616	588	842
Stage 1	-	-	-	-	-	-	842	766	-
Stage 2	-	-	-	-	-	-	829	761	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1439	-	-	1340	-	-	583	571	833
Mov Cap-2 Maneuver	-	-	-	-	-	-	583	571	-
Stage 1	-	-	-	-	-	-	830	755	-
Stage 2	-	-	-	-	-	-	793	750	-

Approach	EB	WB	NB
HCM Control Delay, s	0.6	0.6	10.9
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	643	1439	-	-	1340	-	-	654
HCM Lane V/C Ratio	0.055	0.008	-	-	0.009	-	-	0.054
HCM Control Delay (s)	10.9	7.5	0	-	7.7	0	-	10.8
HCM Lane LOS	B	A	A	-	A	A	-	B
HCM 95th %tile Q(veh)	0.2	0	-	-	0	-	-	0.2

**Intersection**

Int Delay, s/veh

Movement	SBL	SBT	SBR
Vol, veh/h	10	10	10
Conflicting Peds, #/hr	6	0	0
Sign Control	Stop	Stop	Stop
RT Channelized	-	-	None
Storage Length	-	-	-
Veh in Median Storage, #	-	0	-
Grade, %	-	0	-
Peak Hour Factor	85	85	85
Heavy Vehicles, %	0	0	0
Mvmt Flow	12	12	12

**Major/Minor**

**Minor2**

Conflicting Flow All	342	336	148
Stage 1	165	165	-
Stage 2	177	171	-
Critical Hdwy	7.1	6.5	6.2
Critical Hdwy Stg 1	6.1	5.5	-
Critical Hdwy Stg 2	6.1	5.5	-
Follow-up Hdwy	3.5	4	3.3
Pot Cap-1 Maneuver	616	588	904
Stage 1	842	766	-
Stage 2	829	761	-
Platoon blocked, %			
Mov Cap-1 Maneuver	583	571	894
Mov Cap-2 Maneuver	583	571	-
Stage 1	830	755	-
Stage 2	793	750	-

**Approach**

SB

HCM Control Delay, s	10.8
HCM LOS	B

**Minor Lane/Major Mvmt**



**Intersection**

Int Delay, s/veh 5.1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR
Vol, veh/h	20	100	10	20	100	20	10	40	30
Conflicting Peds, #/hr	6	0	8	8	0	6	6	0	6
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	8	8	0	0	12	6	0	4	0
Mvmt Flow	22	111	11	22	111	22	11	44	33

Major/Minor	Major1	Major2	Minor1						
Conflicting Flow All	139	0	0	128	0	0	373	351	131
Stage 1	-	-	-	-	-	-	167	167	-
Stage 2	-	-	-	-	-	-	206	184	-
Critical Hdwy	4.18	-	-	4.1	-	-	7.1	6.54	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.54	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.54	-
Follow-up Hdwy	2.272	-	-	2.2	-	-	3.5	4.036	3.3
Pot Cap-1 Maneuver	1408	-	-	1470	-	-	588	570	924
Stage 1	-	-	-	-	-	-	840	756	-
Stage 2	-	-	-	-	-	-	801	744	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1399	-	-	1460	-	-	519	546	913
Mov Cap-2 Maneuver	-	-	-	-	-	-	519	546	-
Stage 1	-	-	-	-	-	-	822	739	-
Stage 2	-	-	-	-	-	-	717	728	-

Approach	EB	WB	NB
HCM Control Delay, s	1.2	1.1	11.6
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	638	1399	-	-	1460	-	-	594
HCM Lane V/C Ratio	0.139	0.016	-	-	0.015	-	-	0.15
HCM Control Delay (s)	11.6	7.6	0	-	7.5	0	-	12.1
HCM Lane LOS	B	A	A	-	A	A	-	B
HCM 95th %tile Q(veh)	0.5	0	-	-	0	-	-	0.5

**Intersection**

Int Delay, s/veh

Movement	SBL	SBT	SBR
Vol, veh/h	20	40	20
Conflicting Peds, #/hr	6	0	6
Sign Control	Stop	Stop	Stop
RT Channelized	-	-	None
Storage Length	-	-	-
Veh in Median Storage, #	-	0	-
Grade, %	-	0	-
Peak Hour Factor	90	90	90
Heavy Vehicles, %	0	4	7
Mvmt Flow	22	44	22

**Major/Minor**

	Minor2		
Conflicting Flow All	379	346	136
Stage 1	173	173	-
Stage 2	206	173	-
Critical Hdwy	7.1	6.54	6.27
Critical Hdwy Stg 1	6.1	5.54	-
Critical Hdwy Stg 2	6.1	5.54	-
Follow-up Hdwy	3.5	4.036	3.363
Pot Cap-1 Maneuver	582	574	900
Stage 1	834	752	-
Stage 2	801	752	-
Platoon blocked, %			
Mov Cap-1 Maneuver	507	550	890
Mov Cap-2 Maneuver	507	550	-
Stage 1	816	736	-
Stage 2	708	736	-

**Approach**

Approach	SB
HCM Control Delay, s	12.1
HCM LOS	B

**Minor Lane/Major Mvmt**

**Intersection**

Int Delay, s/veh 2.7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR
Vol, veh/h	10	140	10	20	120	10	10	0	30
Conflicting Peds, #/hr	9	0	12	12	0	9	9	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-
Peak Hour Factor	81	81	81	81	81	81	81	81	81
Heavy Vehicles, %	0	6	0	0	9	33	0	5	0
Mvmt Flow	12	173	12	25	148	12	12	0	37

Major/Minor	Major1	Major2	Minor1						
Conflicting Flow All	169	0	0	194	0	0	438	432	200
Stage 1	-	-	-	-	-	-	213	213	-
Stage 2	-	-	-	-	-	-	225	219	-
Critical Hdwy	4.1	-	-	4.1	-	-	7.1	6.55	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.55	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.55	-
Follow-up Hdwy	2.2	-	-	2.2	-	-	3.5	4.045	3.3
Pot Cap-1 Maneuver	1421	-	-	1391	-	-	532	512	846
Stage 1	-	-	-	-	-	-	794	721	-
Stage 2	-	-	-	-	-	-	782	716	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1407	-	-	1377	-	-	493	489	831
Mov Cap-2 Maneuver	-	-	-	-	-	-	493	489	-
Stage 1	-	-	-	-	-	-	780	708	-
Stage 2	-	-	-	-	-	-	734	696	-

Approach	EB	WB	NB
HCM Control Delay, s	0.5	1	10.5
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	709	1407	-	-	1377	-	-	559
HCM Lane V/C Ratio	0.07	0.009	-	-	0.018	-	-	0.066
HCM Control Delay (s)	10.5	7.6	0	-	7.7	0	-	11.9
HCM Lane LOS	B	A	A	-	A	A	-	B
HCM 95th %tile Q(veh)	0.2	0	-	-	0.1	-	-	0.2

**Intersection**

Int Delay, s/veh

Movement	SBL	SBT	SBR
Vol, veh/h	10	10	10
Conflicting Peds, #/hr	0	0	9
Sign Control	Stop	Stop	Stop
RT Channelized	-	-	None
Storage Length	-	-	-
Veh in Median Storage, #	-	0	-
Grade, %	-	0	-
Peak Hour Factor	81	81	81
Heavy Vehicles, %	0	0	33
Mvmt Flow	12	12	12

**Major/Minor**

	Minor2		
Conflicting Flow All	444	432	175
Stage 1	213	213	-
Stage 2	231	219	-
Critical Hdwy	7.1	6.5	6.53
Critical Hdwy Stg 1	6.1	5.5	-
Critical Hdwy Stg 2	6.1	5.5	-
Follow-up Hdwy	3.5	4	3.597
Pot Cap-1 Maneuver	528	519	794
Stage 1	794	730	-
Stage 2	776	726	-
Platoon blocked, %			
Mov Cap-1 Maneuver	484	496	780
Mov Cap-2 Maneuver	484	496	-
Stage 1	780	710	-
Stage 2	727	713	-

**Approach**

	SB
HCM Control Delay, s	11.9
HCM LOS	B

**Minor Lane/Major Mvmt**

**Intersection**

Int Delay, s/veh 0.7

Movement	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBL	NBT	NBR
Vol, veh/h	0	170	0	10	0	140	10	10	0	0
Conflicting Peds, #/hr	12	0	8	0	8	0	12	8	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	-	0	-	-	0	-
Grade, %	-	0	-	-	-	0	-	-	0	-
Peak Hour Factor	83	83	83	83	83	83	83	83	83	83
Heavy Vehicles, %	0	5	0	0	0	8	0	0	0	0
Mvmt Flow	0	205	0	12	0	169	12	12	0	0

Major/Minor	Major1	Major2	Minor1
Conflicting Flow All	189	0	0
Stage 1	-	-	-
Stage 2	-	-	-
Critical Hdwy	4.1	-	-
Critical Hdwy Stg 1	-	-	-
Critical Hdwy Stg 2	-	-	-
Follow-up Hdwy	2.2	-	-
Pot Cap-1 Maneuver	1397	-	-
Stage 1	-	-	-
Stage 2	-	-	-
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	1383	-	-
Mov Cap-2 Maneuver	-	-	-
Stage 1	-	-	-
Stage 2	-	-	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0	11.6
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	559	1383	-	-	-	-	-	559
HCM Lane V/C Ratio	0.022	-	-	-	-	-	-	0.022
HCM Control Delay (s)	11.6	0	-	-	-	-	-	11.6
HCM Lane LOS	B	A	-	-	-	-	-	B
HCM 95th %tile Q(veh)	0.1	0	-	-	-	-	-	0.1

**Intersection**

Int Delay, s/veh

Movement	SBL	SBT	SBR
Vol, veh/h	10	0	0
Conflicting Peds, #/hr	0	0	8
Sign Control	Stop	Stop	Stop
RT Channelized	-	-	None
Storage Length	-	-	-
Veh in Median Storage, #	-	0	-
Grade, %	-	0	-
Peak Hour Factor	83	83	83
Heavy Vehicles, %	0	0	0
Mvmt Flow	12	0	0

**Major/Minor**

	Minor2		
Conflicting Flow All	396	420	195
Stage 1	183	207	-
Stage 2	213	213	-
Critical Hdwy	7.1	6.5	6.2
Critical Hdwy Stg 1	6.1	5.5	-
Critical Hdwy Stg 2	6.1	5.5	-
Follow-up Hdwy	3.5	4	3.3
Pot Cap-1 Maneuver	568	528	851
Stage 1	823	734	-
Stage 2	794	730	-
Platoon blocked, %			
Mov Cap-1 Maneuver	559	521	837
Mov Cap-2 Maneuver	559	521	-
Stage 1	818	729	-
Stage 2	786	725	-

**Approach**

Approach	SB
HCM Control Delay, s	11.6
HCM LOS	B

**Minor Lane/Major Mvmt**

**Intersection**

Int Delay, s/veh 0.8

Movement	EBT	EBR	WBU	WBL	WBT	NBL	NBR
Vol, veh/h	160	10	10	20	150	10	20
Conflicting Peds, #/hr	0	9	0	9	0	0	6
Sign Control	Free	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	-	None	-	None
Storage Length	-	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	-	0	0	-
Grade, %	0	-	-	-	0	0	-
Peak Hour Factor	88	88	88	88	88	88	88
Heavy Vehicles, %	5	0	0	13	7	40	0
Mvmt Flow	182	11	11	23	170	11	23

Major/Minor	Major1	Major2	Minor1
Conflicting Flow All	0	0 216	410 214
Stage 1	-	-	194 -
Stage 2	-	-	216 -
Critical Hdwy	-	- 4.23	6.8 6.2
Critical Hdwy Stg 1	-	-	5.8 -
Critical Hdwy Stg 2	-	-	5.8 -
Follow-up Hdwy	-	- 2.317	3.86 3.3
Pot Cap-1 Maneuver	-	- 1310	531 831
Stage 1	-	-	756 -
Stage 2	-	-	738 -
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	-	- ~ -3 ~ -3	524 821
Mov Cap-2 Maneuver	-	-	524 -
Stage 1	-	-	752 -
Stage 2	-	-	732 -

Approach	EB	WB	NB
HCM Control Delay, s	0	0	10.5
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	691	-	-	+	-
HCM Lane V/C Ratio	0.049	-	-	-	-
HCM Control Delay (s)	10.5	-	-	-	-
HCM Lane LOS	B	-	-	-	-
HCM 95th %tile Q(veh)	0.2	-	-	-	-

**Notes**

~: Volume exceeds capacity    \$: Delay exceeds 300s    +: Computation Not Defined    \*: All major volume in platoon

HCM Signalized Intersection Capacity Analysis  
 1: Sonoma Blvd & Curtola Pkwy

Vallejo Marine Terminal  
 Year 2040 with VMT Project



Movement	EBT	EBR	EBR2	WBT	WBR	NBL2	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↑↑	←		↑↑	↑		↑	↑↑			↑↑	
Volume (vph)	630	220	10	370	250	20	210	311	10	240	220	10
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	4.5		4.5	4.5		4.5	4.5			4.5	
Lane Util. Factor	0.91	0.91		0.95	1.00		1.00	0.95			0.95	
Frbp, ped/bikes	1.00	1.00		1.00	0.98		1.00	1.00			1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00			1.00	
Frt	0.99	0.85		1.00	0.85		1.00	1.00			0.99	
Flt Protected	1.00	1.00		1.00	1.00		0.95	1.00			0.98	
Satd. Flow (prot)	3374	1456		3539	1576		1757	3555			3429	
Flt Permitted	1.00	1.00		1.00	1.00		0.95	1.00			0.98	
Satd. Flow (perm)	3374	1456		3539	1576		1757	3555			3429	
Peak-hour factor, PHF	0.91	0.91	0.91	0.91	0.91	0.92	0.91	0.91	0.91	0.91	0.91	0.91
Adj. Flow (vph)	692	242	11	407	275	22	231	342	11	264	242	11
RTOR Reduction (vph)	0	48	0	0	187	0	0	2	0	0	3	0
Lane Group Flow (vph)	716	181	0	407	88	0	253	351	0	0	547	0
Confl. Peds. (#/hr)					9		6		9	9		6
Confl. Bikes (#/hr)									6			6
Heavy Vehicles (%)	2%	1%	0%	2%	0%	0%	3%	1%	0%	1%	1%	0%
Turn Type	NA	Perm		NA	Perm	Split	Split	NA		Split	NA	
Protected Phases	2			2		3	3	3		4	4	
Permitted Phases		2			2							
Actuated Green, G (s)	32.2	32.2		32.2	32.2		21.0	21.0			22.4	
Effective Green, g (s)	32.2	32.2		32.2	32.2		21.0	21.0			22.4	
Actuated g/C Ratio	0.32	0.32		0.32	0.32		0.21	0.21			0.22	
Clearance Time (s)	4.5	4.5		4.5	4.5		4.5	4.5			4.5	
Vehicle Extension (s)	2.0	2.0		2.0	2.0		2.0	2.0			2.0	
Lane Grp Cap (vph)	1079	466		1132	504		366	742			763	
v/s Ratio Prot	c0.21			0.11			c0.14	0.10			c0.16	
v/s Ratio Perm		0.12			0.06							
v/c Ratio	0.66	0.39		0.36	0.17		0.69	0.47			0.72	
Uniform Delay, d1	29.5	26.5		26.3	24.6		36.8	34.9			36.2	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00			1.00	
Incremental Delay, d2	1.2	0.2		0.1	0.1		4.5	0.2			2.7	
Delay (s)	30.7	26.7		26.3	24.7		41.3	35.1			38.9	
Level of Service	C	C		C	C		D	D			D	
Approach Delay (s)	29.8			25.7				37.7			38.9	
Approach LOS	C			C				D			D	

Intersection Summary		
HCM 2000 Control Delay	32.4	HCM 2000 Level of Service
HCM 2000 Volume to Capacity ratio	0.62	C
Actuated Cycle Length (s)	100.6	Sum of lost time (s)
Intersection Capacity Utilization	73.8%	17.0
Analysis Period (min)	15	ICU Level of Service
		D

c Critical Lane Group



HCM Signalized Intersection Capacity Analysis  
 1: Sonoma Blvd & Curtola Pkwy






















Vallejo Marine Terminal  
 Year 2040 with VMT Project



Movement	SBR2	NEL2	NEL	NER	NER2
Lane Configurations					
Volume (vph)	30	10	10	10	10
Ideal Flow (vphpl)	1900	1900	1900	1900	1900
Total Lost time (s)			3.5		
Lane Util. Factor			1.00		
Frbp, ped/bikes			1.00		
Flpb, ped/bikes			1.00		
Frt			0.93		
Flt Protected			0.98		
Satd. Flow (prot)			1729		
Flt Permitted			0.98		
Satd. Flow (perm)			1729		
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	33	11	11	11	11
RTOR Reduction (vph)	0	0	41	0	0
Lane Group Flow (vph)	0	0	3	0	0
Confl. Peds. (#/hr)					
Confl. Bikes (#/hr)					
Heavy Vehicles (%)	5%	0%	0%	0%	0%
Turn Type		Prot	Prot		
Protected Phases		1	1		
Permitted Phases					
Actuated Green, G (s)			8.0		
Effective Green, g (s)			8.0		
Actuated g/C Ratio			0.08		
Clearance Time (s)			3.5		
Vehicle Extension (s)			2.0		
Lane Grp Cap (vph)			137		
v/s Ratio Prot			c0.00		
v/s Ratio Perm					
v/c Ratio			0.03		
Uniform Delay, d1			42.7		
Progression Factor			1.00		
Incremental Delay, d2			0.0		
Delay (s)			42.7		
Level of Service			D		
Approach Delay (s)			42.7		
Approach LOS			D		
<b>Intersection Summary</b>					



















HCM 2010 Signalized Intersection Summary  
 2: Solano Blvd & Sonoma Blvd

Vallejo Marine Terminal  
 Year 2040 with VMT Project

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	20	60	10	40	20	60	10	471	50	20	410	10
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		0.98	1.00		0.98	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1868	1900	1845	1836	1900	1900	1858	1900	1900	1882	1900
Adj Flow Rate, veh/h	23	69	4	46	23	3	11	541	51	23	471	10
Adj No. of Lanes	1	1	0	1	2	0	1	2	0	1	2	0
Peak Hour Factor	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87
Percent Heavy Veh, %	0	2	2	3	8	8	0	2	2	0	1	1
Cap, veh/h	68	208	12	111	449	57	46	1689	159	87	1939	41
Arrive On Green	0.04	0.12	0.12	0.06	0.14	0.14	0.03	0.52	0.52	0.05	0.54	0.54
Sat Flow, veh/h	1810	1749	101	1757	3104	396	1810	3255	306	1810	3578	76
Grp Volume(v), veh/h	23	0	73	46	13	13	11	293	299	23	235	246
Grp Sat Flow(s),veh/h/ln	1810	0	1850	1757	1744	1756	1810	1765	1797	1810	1788	1866
Q Serve(g_s), s	0.7	0.0	2.1	1.5	0.4	0.4	0.3	5.5	5.6	0.7	4.0	4.0
Cycle Q Clear(g_c), s	0.7	0.0	2.1	1.5	0.4	0.4	0.3	5.5	5.6	0.7	4.0	4.0
Prop In Lane	1.00		0.05	1.00		0.23	1.00		0.17	1.00		0.04
Lane Grp Cap(c), veh/h	68	0	220	111	252	254	46	916	932	87	969	1011
V/C Ratio(X)	0.34	0.00	0.33	0.41	0.05	0.05	0.24	0.32	0.32	0.26	0.24	0.24
Avail Cap(c_a), veh/h	470	0	768	532	724	729	595	916	932	563	969	1011
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	27.1	0.0	23.4	26.0	21.3	21.3	27.6	8.0	8.0	26.5	7.0	7.0
Incr Delay (d2), s/veh	1.1	0.0	0.3	0.9	0.0	0.0	1.0	0.9	0.9	0.6	0.6	0.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.4	0.0	1.1	0.7	0.2	0.2	0.2	2.9	3.0	0.4	2.1	2.2
LnGrp Delay(d),s/veh	28.2	0.0	23.7	27.0	21.3	21.3	28.6	8.9	8.9	27.1	7.6	7.6
LnGrp LOS	C		C	C	C	C	C	A	A	C	A	A
Approach Vol, veh/h		96			72			603			504	
Approach Delay, s/veh		24.8			24.9			9.3			8.5	
Approach LOS		C			C			A			A	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	5.8	34.5	6.7	10.9	4.5	35.8	5.2	12.4				
Change Period (Y+Rc), s	3.0	4.5	3.0	4.0	3.0	4.5	3.0	4.0				
Max Green Setting (Gmax), s	18.0	30.0	17.5	24.0	19.0	30.0	15.0	24.0				
Max Q Clear Time (g_c+I1), s	2.7	7.6	3.5	4.1	2.3	6.0	2.7	2.4				
Green Ext Time (p_c), s	0.0	4.4	0.0	0.3	0.0	4.5	0.0	0.3				
<b>Intersection Summary</b>												
HCM 2010 Ctrl Delay			11.0									
HCM 2010 LOS			B									
<b>Notes</b>												
User approved pedestrian interval to be less than phase max green.												



















HCM 2010 Signalized Intersection Summary  
3: Sonoma Blvd & Lemon St

Vallejo Marine Terminal  
Year 2040 with VMT Project

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	11	29	17	50	32	40	12	430	130	60	410	20
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	0.98		0.97	0.98		0.97	1.00		0.97	1.00		0.96
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1772	1900	1900	1848	1900	1624	1877	1900	1900	1882	1900
Adj Flow Rate, veh/h	11	30	9	52	33	11	12	448	113	62	427	18
Adj No. of Lanes	0	1	0	0	1	0	1	2	0	1	2	0
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	7	7	7	7	7	7	17	1	1	0	1	1
Cap, veh/h	119	242	62	245	140	37	33	1360	340	141	1889	79
Arrive On Green	0.21	0.21	0.21	0.21	0.21	0.21	0.04	0.97	0.97	0.08	0.54	0.54
Sat Flow, veh/h	183	1159	295	689	671	176	1547	2807	702	1810	3490	147
Grp Volume(v), veh/h	50	0	0	96	0	0	12	283	278	62	218	227
Grp Sat Flow(s),veh/h/ln	1637	0	0	1536	0	0	1547	1783	1725	1810	1788	1849
Q Serve(g_s), s	0.0	0.0	0.0	0.9	0.0	0.0	0.4	0.4	0.4	1.8	3.5	3.5
Cycle Q Clear(g_c), s	1.3	0.0	0.0	2.6	0.0	0.0	0.4	0.4	0.4	1.8	3.5	3.5
Prop In Lane	0.22		0.18	0.54		0.11	1.00		0.41	1.00		0.08
Lane Grp Cap(c), veh/h	422	0	0	422	0	0	33	864	836	141	968	1001
V/C Ratio(X)	0.12	0.00	0.00	0.23	0.00	0.00	0.36	0.33	0.33	0.44	0.23	0.23
Avail Cap(c_a), veh/h	755	0	0	738	0	0	311	864	836	430	968	1001
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	1.00	1.00	1.00	0.94	0.94	0.94
Uniform Delay (d), s/veh	17.6	0.0	0.0	18.1	0.0	0.0	25.8	0.4	0.4	24.1	6.6	6.6
Incr Delay (d2), s/veh	0.0	0.0	0.0	0.1	0.0	0.0	2.5	1.0	1.1	0.8	0.5	0.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.6	0.0	0.0	1.2	0.0	0.0	0.2	0.4	0.4	0.9	1.8	1.9
LnGrp Delay(d),s/veh	17.7	0.0	0.0	18.2	0.0	0.0	28.3	1.5	1.5	24.8	7.1	7.1
LnGrp LOS	B			B			C	A	A	C	A	A
Approach Vol, veh/h		50			96			573			507	
Approach Delay, s/veh		17.7			18.2			2.0			9.2	
Approach LOS		B			B			A			A	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	8.3	51.3		15.4	5.2	54.4		15.4				
Change Period (Y+Rc), s	4.0	4.5		4.0	4.0	4.5		4.0				
Max Green Setting (Gmax), s	13.0	26.5		23.0	11.0	28.5		23.0				
Max Q Clear Time (g_c+I1), s	3.8	2.4		3.3	2.4	5.5		4.6				
Green Ext Time (p_c), s	0.0	9.3		0.5	0.0	9.1		0.5				
<b>Intersection Summary</b>												
HCM 2010 Ctrl Delay			6.9									
HCM 2010 LOS			A									




















HCM 2010 Signalized Intersection Summary  
6: Sonoma Blvd & Magazine St

Vallejo Marine Terminal  
Year 2040 with VMT Project

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	30	60	10	30	60	90	20	402	130	90	297	30
Number	3	8	18	7	4	14	1	6	16	5	2	12
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	0.98		0.95	0.97		0.97	1.00		0.96	1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1900	1900	1900	1891	1900	1900	1872	1900	1900	1866	1900
Adj Flow Rate, veh/h	32	65	3	32	65	29	22	432	112	97	319	26
Adj No. of Lanes	0	1	0	0	1	0	1	2	0	1	2	0
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Percent Heavy Veh, %	0	0	0	0	0	0	0	2	2	0	2	2
Cap, veh/h	192	348	14	156	283	107	75	1103	283	203	1552	126
Arrive On Green	0.27	0.27	0.27	0.27	0.27	0.27	0.04	0.40	0.40	0.22	0.93	0.93
Sat Flow, veh/h	386	1268	51	271	1029	389	1810	2779	713	1810	3320	269
Grp Volume(v), veh/h	100	0	0	126	0	0	22	275	269	97	169	176
Grp Sat Flow(s),veh/h/ln	1706	0	0	1688	0	0	1810	1778	1714	1810	1773	1816
Q Serve(g_s), s	0.0	0.0	0.0	0.0	0.0	0.0	0.7	6.1	6.2	2.6	0.4	0.4
Cycle Q Clear(g_c), s	2.3	0.0	0.0	3.0	0.0	0.0	0.7	6.1	6.2	2.6	0.4	0.4
Prop In Lane	0.32		0.03	0.25		0.23	1.00		0.42	1.00		0.15
Lane Grp Cap(c), veh/h	554	0	0	545	0	0	75	706	680	203	829	849
V/C Ratio(X)	0.18	0.00	0.00	0.23	0.00	0.00	0.29	0.39	0.40	0.48	0.20	0.21
Avail Cap(c_a), veh/h	932	0	0	920	0	0	359	706	680	424	829	849
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	15.4	0.0	0.0	15.7	0.0	0.0	25.8	11.9	12.0	20.1	1.0	1.0
Incr Delay (d2), s/veh	0.1	0.0	0.0	0.1	0.0	0.0	0.8	1.6	1.7	0.7	0.6	0.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.2	0.0	0.0	1.5	0.0	0.0	0.3	3.3	3.2	1.3	0.3	0.3
LnGrp Delay(d),s/veh	15.5	0.0	0.0	15.8	0.0	0.0	26.6	13.5	13.7	20.8	1.5	1.5
LnGrp LOS	B			B			C	B	B	C	A	A
Approach Vol, veh/h		100			126			566			442	
Approach Delay, s/veh		15.5			15.8			14.1			5.8	
Approach LOS		B			B			B			A	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	5.8	50.5		18.7	9.7	46.6		18.7				
Change Period (Y+Rc), s	3.5	5.0		3.5	3.5	5.0		3.5				
Max Green Setting (Gmax), s	11.0	24.0		28.0	13.0	22.0		28.0				
Max Q Clear Time (g_c+I1), s	2.7	2.4		5.0	4.6	8.2		4.3				
Green Ext Time (p_c), s	0.0	7.8		0.8	0.1	6.1		0.8				
<b>Intersection Summary</b>												
HCM 2010 Ctrl Delay				11.4								
HCM 2010 LOS				B								



















HCM 2010 Signalized Intersection Summary  
8: Sonoma Blvd & Maritime Academy Dr

Vallejo Marine Terminal  
Year 2040 with VMT Project

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	120	20	20	20	50	130	20	362	50	30	237	50
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	0.99		0.97	0.99		0.97	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1900	1900	1900	1785	1900	1900	1863	1900	1810	1869	1900
Adj Flow Rate, veh/h	125	21	16	21	52	34	21	377	43	31	247	35
Adj No. of Lanes	0	1	0	0	1	1	1	2	0	1	2	0
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	0	0	0	5	5	0	0	2	2	5	2	2
Cap, veh/h	522	85	46	236	465	528	86	957	108	116	996	139
Arrive On Green	0.34	0.34	0.34	0.34	0.34	0.34	0.05	0.30	0.30	0.07	0.32	0.32
Sat Flow, veh/h	988	254	136	290	1387	1574	1810	3205	363	1723	3129	438
Grp Volume(v), veh/h	162	0	0	73	0	34	21	207	213	31	139	143
Grp Sat Flow(s),veh/h/ln	1378	0	0	1676	0	1574	1810	1770	1799	1723	1776	1792
Q Serve(g_s), s	2.1	0.0	0.0	0.0	0.0	0.5	0.4	3.1	3.2	0.6	1.9	2.0
Cycle Q Clear(g_c), s	3.1	0.0	0.0	0.9	0.0	0.5	0.4	3.1	3.2	0.6	1.9	2.0
Prop In Lane	0.77		0.10	0.29		1.00	1.00		0.20	1.00		0.24
Lane Grp Cap(c), veh/h	653	0	0	701	0	528	86	528	537	116	565	570
V/C Ratio(X)	0.25	0.00	0.00	0.10	0.00	0.06	0.24	0.39	0.40	0.27	0.25	0.25
Avail Cap(c_a), veh/h	1436	0	0	1603	0	1409	1296	2113	2148	1235	2120	2139
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	8.4	0.0	0.0	7.7	0.0	7.6	15.4	9.3	9.3	14.8	8.4	8.5
Incr Delay (d2), s/veh	0.1	0.0	0.0	0.0	0.0	0.0	0.5	0.5	0.5	0.5	0.2	0.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.1	0.0	0.0	0.5	0.0	0.2	0.2	1.6	1.6	0.3	1.0	1.0
LnGrp Delay(d),s/veh	8.5	0.0	0.0	7.7	0.0	7.6	15.9	9.8	9.8	15.3	8.7	8.7
LnGrp LOS	A			A		A	B	A	A	B	A	A
Approach Vol, veh/h		162			107			441			313	
Approach Delay, s/veh		8.5			7.7			10.1			9.3	
Approach LOS		A			A			B			A	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	5.3	14.0		14.2	4.6	14.7		14.2				
Change Period (Y+Rc), s	3.0	4.0		3.0	3.0	4.0		3.0				
Max Green Setting (Gmax), s	24.0	40.0		30.0	24.0	40.0		30.0				
Max Q Clear Time (g_c+I1), s	2.6	5.2		5.1	2.4	4.0		2.9				
Green Ext Time (p_c), s	0.0	4.7		1.0	0.0	4.7		1.0				
<b>Intersection Summary</b>												
HCM 2010 Ctrl Delay			9.4									
HCM 2010 LOS			A									

























HCM 2010 Signalized Intersection Summary  
 16: Lemon St & Carlson St

Vallejo Marine Terminal  
 Year 2040 with VMT Project

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	10	329	10	40	192	70	0	0	40	210	0	20
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	0.97		0.95	0.97		0.95	1.00		0.94	0.93		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1865	1900	1900	1759	1900	1900	1900	1900	1863	1869	1900
Adj Flow Rate, veh/h	11	354	9	43	206	52	0	0	13	232	0	0
Adj No. of Lanes	0	1	0	1	1	0	0	1	0	2	1	0
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Percent Heavy Veh, %	2	2	2	0	8	8	0	0	0	2	0	0
Cap, veh/h	132	783	19	543	589	149	0	0	441	1221	544	0
Arrive On Green	0.44	0.44	0.44	0.44	0.44	0.44	0.00	0.00	0.29	0.29	0.00	0.00
Sat Flow, veh/h	17	1780	44	1008	1340	338	0	0	1517	2586	1869	0
Grp Volume(v), veh/h	374	0	0	43	0	258	0	0	13	232	0	0
Grp Sat Flow(s),veh/h/ln	1842	0	0	1008	0	1678	0	0	1517	1293	1869	0
Q Serve(g_s), s	0.0	0.0	0.0	0.9	0.0	3.0	0.0	0.0	0.2	2.1	0.0	0.0
Cycle Q Clear(g_c), s	4.2	0.0	0.0	5.1	0.0	3.0	0.0	0.0	0.2	2.3	0.0	0.0
Prop In Lane	0.03		0.02	1.00		0.20	0.00		1.00	1.00		0.00
Lane Grp Cap(c), veh/h	935	0	0	543	0	738	0	0	441	1221	544	0
V/C Ratio(X)	0.40	0.00	0.00	0.08	0.00	0.35	0.00	0.00	0.03	0.19	0.00	0.00
Avail Cap(c_a), veh/h	2398	0	0	1355	0	2090	0	0	1532	3080	1888	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	1.00	0.00	0.00	1.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	5.8	0.0	0.0	7.6	0.0	5.5	0.0	0.0	7.5	8.3	0.0	0.0
Incr Delay (d2), s/veh	0.3	0.0	0.0	0.1	0.0	0.3	0.0	0.0	0.0	0.1	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.1	0.0	0.0	0.3	0.0	1.4	0.0	0.0	0.1	0.8	0.0	0.0
LnGrp Delay(d),s/veh	6.1	0.0	0.0	7.7	0.0	5.8	0.0	0.0	7.6	8.4	0.0	0.0
LnGrp LOS	A			A		A			A	A		
Approach Vol, veh/h		374			301			13			232	
Approach Delay, s/veh		6.1			6.1			7.6			8.4	
Approach LOS		A			A			A			A	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		17.1		12.6		17.1		12.6				
Change Period (Y+Rc), s		4.0		4.0		4.0		4.0				
Max Green Setting (Gmax), s		37.0		30.0		37.0		30.0				
Max Q Clear Time (g_c+I1), s		6.2		4.3		7.1		2.2				
Green Ext Time (p_c), s		4.6		0.9		4.6		1.0				
<b>Intersection Summary</b>												
HCM 2010 Ctrl Delay			6.7									
HCM 2010 LOS			A									
<b>Notes</b>												
User approved volume balancing among the lanes for turning movement.												

HCM 2010 Signalized Intersection Summary  
 17: Lemon St & Curtola Pkwy

Vallejo Marine Terminal  
 Year 2040 with VMT Project

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	60	160	439	110	100	30	202	720	170	50	990	30
Number	3	8	18	7	4	14	1	6	16	5	2	12
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		0.92	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1759	1881	1881	1881	1863	1900	1759	1881	1900	1900	1846	1900
Adj Flow Rate, veh/h	62	195	185	113	103	8	208	742	0	52	1021	0
Adj No. of Lanes	1	1	1	1	1	1	1	2	0	1	2	0
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %	8	1	1	1	2	0	8	1	1	0	3	3
Cap, veh/h	78	317	264	145	378	301	247	1696	0	77	1298	0
Arrive On Green	0.05	0.17	0.17	0.08	0.20	0.20	0.15	0.47	0.00	0.04	0.37	0.00
Sat Flow, veh/h	1675	1881	1567	1792	1863	1479	1675	3668	0	1810	3600	0
Grp Volume(v), veh/h	62	195	185	113	103	8	208	742	0	52	1021	0
Grp Sat Flow(s),veh/h/ln	1675	1881	1567	1792	1863	1479	1675	1787	0	1810	1754	0
Q Serve(g_s), s	3.0	7.8	9.0	5.0	3.8	0.4	9.8	11.2	0.0	2.3	21.0	0.0
Cycle Q Clear(g_c), s	3.0	7.8	9.0	5.0	3.8	0.4	9.8	11.2	0.0	2.3	21.0	0.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.00	1.00		0.00
Lane Grp Cap(c), veh/h	78	317	264	145	378	301	247	1696	0	77	1298	0
V/C Ratio(X)	0.79	0.61	0.70	0.78	0.27	0.03	0.84	0.44	0.00	0.68	0.79	0.00
Avail Cap(c_a), veh/h	516	812	676	552	804	638	516	1696	0	558	1513	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	38.3	31.3	31.8	36.6	27.3	25.9	33.7	14.1	0.0	38.3	22.7	0.0
Incr Delay (d2), s/veh	6.6	2.0	3.5	3.4	0.5	0.0	3.0	0.3	0.0	3.8	2.6	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.5	4.2	4.1	2.6	2.0	0.1	4.7	5.5	0.0	1.2	10.5	0.0
LnGrp Delay(d),s/veh	44.9	33.3	35.3	39.9	27.8	25.9	36.7	14.4	0.0	42.1	25.3	0.0
LnGrp LOS	D	C	D	D	C	C	D	B		D	C	
Approach Vol, veh/h		442			224			950			1073	
Approach Delay, s/veh		35.7			33.8			19.3			26.1	
Approach LOS		D			C			B			C	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	15.9	36.0	7.8	21.4	7.5	44.5	10.6	18.6				
Change Period (Y+Rc), s	4.0	6.0	4.0	4.9	4.0	6.0	4.0	4.9				
Max Green Setting (Gmax), s	25.0	35.0	25.0	35.0	25.0	35.0	25.0	35.0				
Max Q Clear Time (g_c+I1), s	11.8	23.0	5.0	5.8	4.3	13.2	7.0	11.0				
Green Ext Time (p_c), s	0.2	7.0	0.1	2.8	0.0	15.4	0.1	2.7				
<b>Intersection Summary</b>												
HCM 2010 Ctrl Delay			25.9									
HCM 2010 LOS			C									
<b>Notes</b>												
User approved volume balancing among the lanes for turning movement.												

**Intersection**

Int Delay, s/veh 1.5

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR
Vol, veh/h	20	10	10	10	10	10	10	572	10
Conflicting Peds, #/hr	0	0	0	0	0	0	7	0	10
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-
Peak Hour Factor	97	97	97	97	97	97	97	97	97
Heavy Vehicles, %	15	0	0	0	0	0	0	2	0
Mvmt Flow	21	10	10	10	10	10	10	590	10

Major/Minor	Minor2			Minor1			Major1		
Conflicting Flow All	823	1123	256	876	1127	310	492	0	0
Stage 1	502	502	-	615	615	-	-	-	-
Stage 2	321	621	-	261	512	-	-	-	-
Critical Hdwy	7.8	6.5	6.9	7.5	6.5	6.9	4.1	-	-
Critical Hdwy Stg 1	6.8	5.5	-	6.5	5.5	-	-	-	-
Critical Hdwy Stg 2	6.8	5.5	-	6.5	5.5	-	-	-	-
Follow-up Hdwy	3.65	4	3.3	3.5	4	3.3	2.2	-	-
Pot Cap-1 Maneuver	244	207	749	246	206	692	1082	-	-
Stage 1	488	545	-	450	485	-	-	-	-
Stage 2	630	482	-	727	540	-	-	-	-
Platoon blocked, %									
Mov Cap-1 Maneuver	224	201	743	226	200	686	1073	-	-
Mov Cap-2 Maneuver	224	201	-	226	200	-	-	-	-
Stage 1	481	537	-	444	478	-	-	-	-
Stage 2	594	475	-	688	532	-	-	-	-

Approach	EB	WB	NB
HCM Control Delay, s	21.3	19.7	0.2
HCM LOS	C	C	

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1073	-	-	262	276	979	-	-
HCM Lane V/C Ratio	0.01	-	-	0.157	0.112	0.011	-	-
HCM Control Delay (s)	8.4	0.1	-	21.3	19.7	8.7	0.1	-
HCM Lane LOS	A	A	-	C	C	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0.5	0.4	0	-	-



**Intersection**

Int Delay, s/veh

Movement	SBL	SBT	SBR
Vol, veh/h	10	457	20
Conflicting Peds, #/hr	10	0	7
Sign Control	Free	Free	Free
RT Channelized	-	-	None
Storage Length	-	-	-
Veh in Median Storage, #	-	0	-
Grade, %	-	0	-
Peak Hour Factor	97	97	97
Heavy Vehicles, %	0	2	0
Mvmt Flow	10	471	21

**Major/Minor Major2**

Conflicting Flow All	600	0	0
Stage 1	-	-	-
Stage 2	-	-	-
Critical Hdwy	4.1	-	-
Critical Hdwy Stg 1	-	-	-
Critical Hdwy Stg 2	-	-	-
Follow-up Hdwy	2.2	-	-
Pot Cap-1 Maneuver	987	-	-
Stage 1	-	-	-
Stage 2	-	-	-
Platoon blocked, %		-	-
Mov Cap-1 Maneuver	979	-	-
Mov Cap-2 Maneuver	-	-	-
Stage 1	-	-	-
Stage 2	-	-	-

**Approach SB**

HCM Control Delay, s 0.3

HCM LOS

**Minor Lane/Major Mvmt**

**Intersection**

Int Delay, s/veh 2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR
Vol, veh/h	40	10	10	10	0	20	20	512	10
Conflicting Peds, #/hr	0	0	6	6	0	0	6	0	7
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-
Peak Hour Factor	97	97	97	97	97	97	97	97	97
Heavy Vehicles, %	3	0	0	0	0	0	0	2	0
Mvmt Flow	41	10	10	10	0	21	21	528	10

Major/Minor	Minor2			Minor1			Major1		
Conflicting Flow All	804	1078	243	847	1088	282	467	0	0
Stage 1	493	493	-	580	580	-	-	-	-
Stage 2	311	585	-	267	508	-	-	-	-
Critical Hdwy	7.56	6.5	6.9	7.5	6.5	6.9	4.1	-	-
Critical Hdwy Stg 1	6.56	5.5	-	6.5	5.5	-	-	-	-
Critical Hdwy Stg 2	6.56	5.5	-	6.5	5.5	-	-	-	-
Follow-up Hdwy	3.53	4	3.3	3.5	4	3.3	2.2	-	-
Pot Cap-1 Maneuver	272	220	764	259	218	721	1105	-	-
Stage 1	524	550	-	472	503	-	-	-	-
Stage 2	671	501	-	721	542	-	-	-	-
Platoon blocked, %									
Mov Cap-1 Maneuver	250	206	756	233	204	713	1099	-	-
Mov Cap-2 Maneuver	250	206	-	233	204	-	-	-	-
Stage 1	507	532	-	457	487	-	-	-	-
Stage 2	630	485	-	674	524	-	-	-	-

Approach	EB	WB	NB
HCM Control Delay, s	22.2	14.2	0.4
HCM LOS	C	B	

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1099	-	-	271	423	1029	-	-
HCM Lane V/C Ratio	0.019	-	-	0.228	0.073	0.02	-	-
HCM Control Delay (s)	8.3	0.1	-	22.2	14.2	8.6	0.1	-
HCM Lane LOS	A	A	-	C	B	A	A	-
HCM 95th %tile Q(veh)	0.1	-	-	0.9	0.2	0.1	-	-

**Intersection**

Int Delay, s/veh

Movement	SBL	SBT	SBR
Vol, veh/h	20	417	30
Conflicting Peds, #/hr	7	0	6
Sign Control	Free	Free	Free
RT Channelized	-	-	None
Storage Length	-	-	-
Veh in Median Storage, #	-	0	-
Grade, %	-	0	-
Peak Hour Factor	97	97	97
Heavy Vehicles, %	0	2	0
Mvmt Flow	21	430	31

**Major/Minor Major2**

Conflicting Flow All	544	0	0
Stage 1	-	-	-
Stage 2	-	-	-
Critical Hdwy	4.1	-	-
Critical Hdwy Stg 1	-	-	-
Critical Hdwy Stg 2	-	-	-
Follow-up Hdwy	2.2	-	-
Pot Cap-1 Maneuver	1035	-	-
Stage 1	-	-	-
Stage 2	-	-	-
Platoon blocked, %		-	-
Mov Cap-1 Maneuver	1029	-	-
Mov Cap-2 Maneuver	-	-	-
Stage 1	-	-	-
Stage 2	-	-	-

**Approach SB**

HCM Control Delay, s 0.5

HCM LOS

**Minor Lane/Major Mvmt**

**Intersection**

Int Delay, s/veh 2.2

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Vol, veh/h	50	30	110	522	287	40
Conflicting Peds, #/hr	0	0	7	0	0	7
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	60	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	0	0	0	2	2	0
Mvmt Flow	53	32	116	549	302	42

Major/Minor	Minor2	Major1	Major2
Conflicting Flow All	829	179	344
Stage 1	323	-	-
Stage 2	506	-	-
Critical Hdwy	6.8	6.9	4.1
Critical Hdwy Stg 1	5.8	-	-
Critical Hdwy Stg 2	5.8	-	-
Follow-up Hdwy	3.5	3.3	2.2
Pot Cap-1 Maneuver	313	839	1226
Stage 1	712	-	-
Stage 2	576	-	-
Platoon blocked, %			-
Mov Cap-1 Maneuver	283	834	1219
Mov Cap-2 Maneuver	283	-	-
Stage 1	712	-	-
Stage 2	521	-	-

Approach	EB	NB	SB
HCM Control Delay, s	17.3	1.4	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1219	-	376	-	-
HCM Lane V/C Ratio	0.095	-	0.224	-	-
HCM Control Delay (s)	8.3	-	17.3	-	-
HCM Lane LOS	A	-	C	-	-
HCM 95th %tile Q(veh)	0.3	-	0.8	-	-

**Intersection**

Int Delay, s/veh 2.8

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR
Vol, veh/h	0	27	0	10	14	20	0	0	10
Conflicting Peds, #/hr	6	0	0	0	0	6	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-
Peak Hour Factor	80	80	80	80	80	80	80	80	80
Heavy Vehicles, %	0	15	0	0	29	0	0	0	0
Mvmt Flow	0	34	0	12	18	25	0	0	12

Major/Minor	Major1	Major2	Minor1						
Conflicting Flow All	43	0	0	34	0	0	89	102	40
Stage 1	-	-	-	-	-	-	34	34	-
Stage 2	-	-	-	-	-	-	55	68	-
Critical Hdwy	4.1	-	-	4.1	-	-	7.1	6.5	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-
Follow-up Hdwy	2.2	-	-	2.2	-	-	3.5	4	3.3
Pot Cap-1 Maneuver	1579	-	-	1591	-	-	901	792	1037
Stage 1	-	-	-	-	-	-	987	871	-
Stage 2	-	-	-	-	-	-	962	842	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1571	-	-	1583	-	-	891	786	1032
Mov Cap-2 Maneuver	-	-	-	-	-	-	891	786	-
Stage 1	-	-	-	-	-	-	987	871	-
Stage 2	-	-	-	-	-	-	950	835	-

Approach	EB	WB	NB
HCM Control Delay, s	0	1.7	8.5
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	1032	1571	-	-	1583	-	-	872
HCM Lane V/C Ratio	0.012	-	-	-	0.008	-	-	0.014
HCM Control Delay (s)	8.5	0	-	-	7.3	0	-	9.2
HCM Lane LOS	A	A	-	-	A	A	-	A
HCM 95th %tile Q(veh)	0	0	-	-	0	-	-	0

**Intersection**

Int Delay, s/veh

Movement	SBL	SBT	SBR
Vol, veh/h	10	0	0
Conflicting Peds, #/hr	0	0	0
Sign Control	Stop	Stop	Stop
RT Channelized	-	-	None
Storage Length	-	-	-
Veh in Median Storage, #	-	0	-
Grade, %	-	0	-
Peak Hour Factor	80	80	80
Heavy Vehicles, %	0	0	0
Mvmt Flow	12	0	0

**Major/Minor**

Minor2

Conflicting Flow All	95	89	36
Stage 1	55	55	-
Stage 2	40	34	-
Critical Hdwy	7.1	6.5	6.2
Critical Hdwy Stg 1	6.1	5.5	-
Critical Hdwy Stg 2	6.1	5.5	-
Follow-up Hdwy	3.5	4	3.3
Pot Cap-1 Maneuver	893	805	1042
Stage 1	962	853	-
Stage 2	980	871	-
Platoon blocked, %			
Mov Cap-1 Maneuver	872	799	1037
Mov Cap-2 Maneuver	872	799	-
Stage 1	962	846	-
Stage 2	963	871	-

**Approach**

SB

HCM Control Delay, s	9.2
HCM LOS	A

**Minor Lane/Major Mvmt**

Intersection	
Int Delay, s/veh	3.4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR
Vol, veh/h	0	37	0	10	34	10	10	0	20
Conflicting Peds, #/hr	0	0	6	6	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-
Peak Hour Factor	80	80	80	80	80	80	80	80	80
Heavy Vehicles, %	0	11	0	0	12	0	0	0	0
Mvmt Flow	0	46	0	12	42	12	12	0	25

Major/Minor	Major1	Major2	Minor1						
Conflicting Flow All	55	0	0	46	0	0	126	126	52
Stage 1	-	-	-	-	-	-	46	46	-
Stage 2	-	-	-	-	-	-	80	80	-
Critical Hdwy	4.1	-	-	4.1	-	-	7.1	6.5	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-
Follow-up Hdwy	2.2	-	-	2.2	-	-	3.5	4	3.3
Pot Cap-1 Maneuver	1563	-	-	1575	-	-	852	768	1021
Stage 1	-	-	-	-	-	-	973	861	-
Stage 2	-	-	-	-	-	-	934	832	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1555	-	-	1567	-	-	831	761	1016
Mov Cap-2 Maneuver	-	-	-	-	-	-	831	761	-
Stage 1	-	-	-	-	-	-	973	861	-
Stage 2	-	-	-	-	-	-	907	825	-

Approach	EB	WB	NB
HCM Control Delay, s	0	1.4	9
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	946	1555	-	-	1567	-	-	767
HCM Lane V/C Ratio	0.04	-	-	-	0.008	-	-	0.016
HCM Control Delay (s)	9	0	-	-	7.3	0	-	9.8
HCM Lane LOS	A	A	-	-	A	A	-	A
HCM 95th %tile Q(veh)	0.1	0	-	-	0	-	-	0.1

**Intersection**

Int Delay, s/veh

Movement	SBL	SBT	SBR
Vol, veh/h	0	10	0
Conflicting Peds, #/hr	0	0	0
Sign Control	Stop	Stop	Stop
RT Channelized	-	-	None
Storage Length	-	-	-
Veh in Median Storage, #	-	0	-
Grade, %	-	0	-
Peak Hour Factor	80	80	80
Heavy Vehicles, %	0	0	0
Mvmt Flow	0	12	0

**Major/Minor**

	Minor2		
Conflicting Flow All	133	120	55
Stage 1	74	74	-
Stage 2	59	46	-
Critical Hdwy	7.1	6.5	6.2
Critical Hdwy Stg 1	6.1	5.5	-
Critical Hdwy Stg 2	6.1	5.5	-
Follow-up Hdwy	3.5	4	3.3
Pot Cap-1 Maneuver	844	774	1018
Stage 1	940	837	-
Stage 2	958	861	-
Platoon blocked, %			
Mov Cap-1 Maneuver	813	767	1013
Mov Cap-2 Maneuver	813	767	-
Stage 1	940	829	-
Stage 2	930	861	-

**Approach**

Approach	SB
HCM Control Delay, s	9.8
HCM LOS	A

**Minor Lane/Major Mvmt**



Intersection									
Int Delay, s/veh	2.3								

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR
Vol, veh/h	10	199	10	20	102	10	10	10	10
Conflicting Peds, #/hr	10	0	9	9	0	10	8	0	9
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-
Peak Hour Factor	88	88	88	88	88	88	88	88	88
Heavy Vehicles, %	0	3	0	0	3	14	0	0	0
Mvmt Flow	11	226	11	23	116	11	11	11	11

Major/Minor	Major1			Major2			Minor1		
Conflicting Flow All	136	0	0	247	0	0	451	446	251
Stage 1	-	-	-	-	-	-	264	264	-
Stage 2	-	-	-	-	-	-	187	182	-
Critical Hdwy	4.1	-	-	4.1	-	-	7.1	6.5	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-
Follow-up Hdwy	2.2	-	-	2.2	-	-	3.5	4	3.3
Pot Cap-1 Maneuver	1461	-	-	1331	-	-	522	510	793
Stage 1	-	-	-	-	-	-	746	694	-
Stage 2	-	-	-	-	-	-	819	753	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1449	-	-	1320	-	-	488	488	780
Mov Cap-2 Maneuver	-	-	-	-	-	-	488	488	-
Stage 1	-	-	-	-	-	-	734	683	-
Stage 2	-	-	-	-	-	-	775	733	-

Approach	EB	WB	NB
HCM Control Delay, s	0.3	1.2	11.9
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	558	1449	-	-	1320	-	-	576
HCM Lane V/C Ratio	0.061	0.008	-	-	0.017	-	-	0.059
HCM Control Delay (s)	11.9	7.5	0	-	7.8	0	-	11.6
HCM Lane LOS	B	A	A	-	A	A	-	B
HCM 95th %tile Q(veh)	0.2	0	-	-	0.1	-	-	0.2

**Intersection**

Int Delay, s/veh

Movement	SBL	SBT	SBR
Vol, veh/h	10	10	10
Conflicting Peds, #/hr	9	0	8
Sign Control	Stop	Stop	Stop
RT Channelized	-	-	None
Storage Length	-	-	-
Veh in Median Storage, #	-	0	-
Grade, %	-	0	-
Peak Hour Factor	88	88	88
Heavy Vehicles, %	0	0	0
Mvmt Flow	11	11	11

**Major/Minor**

**Minor2**

Conflicting Flow All	451	445	141
Stage 1	176	176	-
Stage 2	275	269	-
Critical Hdwy	7.1	6.5	6.2
Critical Hdwy Stg 1	6.1	5.5	-
Critical Hdwy Stg 2	6.1	5.5	-
Follow-up Hdwy	3.5	4	3.3
Pot Cap-1 Maneuver	522	511	912
Stage 1	831	757	-
Stage 2	736	690	-
Platoon blocked, %			
Mov Cap-1 Maneuver	487	489	898
Mov Cap-2 Maneuver	487	489	-
Stage 1	817	737	-
Stage 2	701	679	-

**Approach**

SB

HCM Control Delay, s	11.6
HCM LOS	B

**Minor Lane/Major Mvmt**

Intersection										
Int Delay, s/veh	5.9									

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR
Vol, veh/h	10	189	10	30	112	40	10	60	20
Conflicting Peds, #/hr	8	0	0	0	0	8	6	0	9
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-
Peak Hour Factor	94	94	94	94	94	94	94	94	94
Heavy Vehicles, %	0	3	0	5	4	6	0	0	0
Mvmt Flow	11	201	11	32	119	43	11	64	21

Major/Minor	Major1	Major2	Minor1						
Conflicting Flow All	171	0	0	221	0	0	487	472	223
Stage 1	-	-	-	-	-	-	237	237	-
Stage 2	-	-	-	-	-	-	250	235	-
Critical Hdwy	4.1	-	-	4.15	-	-	7.1	6.5	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-
Follow-up Hdwy	2.2	-	-	2.245	-	-	3.5	4	3.3
Pot Cap-1 Maneuver	1418	-	-	1331	-	-	494	493	822
Stage 1	-	-	-	-	-	-	771	713	-
Stage 2	-	-	-	-	-	-	759	714	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1409	-	-	1322	-	-	423	468	810
Mov Cap-2 Maneuver	-	-	-	-	-	-	423	468	-
Stage 1	-	-	-	-	-	-	758	701	-
Stage 2	-	-	-	-	-	-	662	690	-

Approach	EB	WB	NB
HCM Control Delay, s	0.4	1.3	13.7
HCM LOS	B		

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	510	1409	-	-	1322	-	-	474
HCM Lane V/C Ratio	0.188	0.008	-	-	0.024	-	-	0.292
HCM Control Delay (s)	13.7	7.6	0	-	7.8	0	-	15.7
HCM Lane LOS	B	A	A	-	A	A	-	C
HCM 95th %tile Q(veh)	0.7	0	-	-	0.1	-	-	1.2

**Intersection**

Int Delay, s/veh

Movement	SBL	SBT	SBR
Vol, veh/h	60	50	20
Conflicting Peds, #/hr	9	0	6
Sign Control	Stop	Stop	Stop
RT Channelized	-	-	None
Storage Length	-	-	-
Veh in Median Storage, #	-	0	-
Grade, %	-	0	-
Peak Hour Factor	94	94	94
Heavy Vehicles, %	2	0	0
Mvmt Flow	64	53	21

**Major/Minor**

	Minor2		
Conflicting Flow All	492	455	157
Stage 1	213	213	-
Stage 2	279	242	-
Critical Hdwy	7.12	6.5	6.2
Critical Hdwy Stg 1	6.12	5.5	-
Critical Hdwy Stg 2	6.12	5.5	-
Follow-up Hdwy	3.518	4	3.3
Pot Cap-1 Maneuver	487	504	894
Stage 1	789	730	-
Stage 2	728	709	-
Platoon blocked, %			
Mov Cap-1 Maneuver	407	479	881
Mov Cap-2 Maneuver	407	479	-
Stage 1	776	705	-
Stage 2	634	697	-

**Approach**

	SB
HCM Control Delay, s	15.7
HCM LOS	C

**Minor Lane/Major Mvmt**

**Intersection**

Int Delay, s/veh 1.4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR
Vol, veh/h	10	249	10	20	152	0	10	0	20
Conflicting Peds, #/hr	6	0	6	6	0	6	9	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	0	2	0	0	5	0	0	0	0
Mvmt Flow	11	277	11	22	169	0	11	0	22

Major/Minor	Major1	Major2	Minor1						
Conflicting Flow All	178	0	0	297	0	0	541	535	297
Stage 1	-	-	-	-	-	-	313	313	-
Stage 2	-	-	-	-	-	-	228	222	-
Critical Hdwy	4.1	-	-	4.1	-	-	7.1	6.5	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-
Follow-up Hdwy	2.2	-	-	2.2	-	-	3.5	4	3.3
Pot Cap-1 Maneuver	1410	-	-	1276	-	-	455	454	747
Stage 1	-	-	-	-	-	-	702	661	-
Stage 2	-	-	-	-	-	-	779	723	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1403	-	-	1270	-	-	434	435	738
Mov Cap-2 Maneuver	-	-	-	-	-	-	434	435	-
Stage 1	-	-	-	-	-	-	690	650	-
Stage 2	-	-	-	-	-	-	750	704	-

Approach	EB	WB	NB
HCM Control Delay, s	0.3	0.9	11.4
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	598	1403	-	-	1270	-	-	853
HCM Lane V/C Ratio	0.056	0.008	-	-	0.017	-	-	0.013
HCM Control Delay (s)	11.4	7.6	0	-	7.9	0	-	9.3
HCM Lane LOS	B	A	A	-	A	A	-	A
HCM 95th %tile Q(veh)	0.2	0	-	-	0.1	-	-	0

**Intersection**

Int Delay, s/veh

Movement	SBL	SBT	SBR
Vol, veh/h	0	0	10
Conflicting Peds, #/hr	0	0	9
Sign Control	Stop	Stop	Stop
RT Channelized	-	-	None
Storage Length	-	-	-
Veh in Median Storage, #	-	0	-
Grade, %	-	0	-
Peak Hour Factor	90	90	90
Heavy Vehicles, %	0	0	0
Mvmt Flow	0	0	11

**Major/Minor**

**Minor2**

Conflicting Flow All	547	541	184
Stage 1	222	222	-
Stage 2	325	319	-
Critical Hdwy	7.1	6.5	6.2
Critical Hdwy Stg 1	6.1	5.5	-
Critical Hdwy Stg 2	6.1	5.5	-
Follow-up Hdwy	3.5	4	3.3
Pot Cap-1 Maneuver	451	451	864
Stage 1	785	723	-
Stage 2	692	657	-
Platoon blocked, %			
Mov Cap-1 Maneuver	423	432	853
Mov Cap-2 Maneuver	423	432	-
Stage 1	772	704	-
Stage 2	662	646	-

**Approach**

**SB**

HCM Control Delay, s	9.3
HCM LOS	A

**Minor Lane/Major Mvmt**

Intersection									
Int Delay, s/veh	0.5								

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR
Vol, veh/h	0	269	10	0	172	10	0	0	0
Conflicting Peds, #/hr	6	0	7	7	0	6	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-
Peak Hour Factor	87	87	87	87	87	87	87	87	87
Heavy Vehicles, %	0	2	0	0	5	0	0	0	0
Mvmt Flow	0	309	11	0	198	11	0	0	0

Major/Minor	Major1			Major2			Minor1		
Conflicting Flow All	209	0	0	321	0	0	524	524	322
Stage 1	-	-	-	-	-	-	315	315	-
Stage 2	-	-	-	-	-	-	209	209	-
Critical Hdwy	4.1	-	-	4.1	-	-	7.1	6.5	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-
Follow-up Hdwy	2.2	-	-	2.2	-	-	3.5	4	3.3
Pot Cap-1 Maneuver	1374	-	-	1250	-	-	467	461	724
Stage 1	-	-	-	-	-	-	700	659	-
Stage 2	-	-	-	-	-	-	798	733	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1366	-	-	1243	-	-	458	461	720
Mov Cap-2 Maneuver	-	-	-	-	-	-	458	461	-
Stage 1	-	-	-	-	-	-	700	659	-
Stage 2	-	-	-	-	-	-	782	733	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0	0
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	-	1366	-	-	1243	-	-	599
HCM Lane V/C Ratio	-	-	-	-	-	-	-	0.038
HCM Control Delay (s)	0	0	-	-	0	-	-	11.3
HCM Lane LOS	A	A	-	-	A	-	-	B
HCM 95th %tile Q(veh)	-	0	-	-	0	-	-	0.1

**Intersection**

Int Delay, s/veh

Movement	SBL	SBT	SBR
Vol, veh/h	10	0	10
Conflicting Peds, #/hr	0	0	0
Sign Control	Stop	Stop	Stop
RT Channelized	-	-	None
Storage Length	-	-	-
Veh in Median Storage, #	-	0	-
Grade, %	-	0	-
Peak Hour Factor	87	87	87
Heavy Vehicles, %	0	0	0
Mvmt Flow	11	0	11

**Major/Minor**

	Minor2		
Conflicting Flow All	518	524	210
Stage 1	203	203	-
Stage 2	315	321	-
Critical Hdwy	7.1	6.5	6.2
Critical Hdwy Stg 1	6.1	5.5	-
Critical Hdwy Stg 2	6.1	5.5	-
Follow-up Hdwy	3.5	4	3.3
Pot Cap-1 Maneuver	471	461	835
Stage 1	804	737	-
Stage 2	700	655	-
Platoon blocked, %			
Mov Cap-1 Maneuver	468	461	830
Mov Cap-2 Maneuver	468	461	-
Stage 1	804	737	-
Stage 2	696	655	-

**Approach**

	SB
HCM Control Delay, s	11.3
HCM LOS	B

**Minor Lane/Major Mvmt**



**Intersection**

Int Delay, s/veh 1.4

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Vol, veh/h	279	10	20	182	10	40
Conflicting Peds, #/hr	0	10	10	0	0	7
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	84	84	84	84	84	84
Heavy Vehicles, %	1	17	36	5	0	0
Mvmt Flow	332	12	24	217	12	48

Major/Minor	Major1	Major2	Minor1
Conflicting Flow All	0	351	609
Stage 1	-	-	345
Stage 2	-	-	264
Critical Hdwy	-	4.46	6.4
Critical Hdwy Stg 1	-	-	5.4
Critical Hdwy Stg 2	-	-	5.4
Follow-up Hdwy	-	2.524	3.5
Pot Cap-1 Maneuver	-	1042	462
Stage 1	-	-	722
Stage 2	-	-	785
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	-	1033	444
Mov Cap-2 Maneuver	-	-	444
Stage 1	-	-	718
Stage 2	-	-	758

Approach	EB	WB	NB
HCM Control Delay, s	0	0.8	11.5
HCM LOS			B

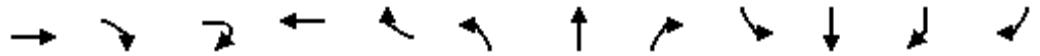
Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	617	-	-	1033	-
HCM Lane V/C Ratio	0.096	-	-	0.023	-
HCM Control Delay (s)	11.5	-	-	8.6	0
HCM Lane LOS	B	-	-	A	A
HCM 95th %tile Q(veh)	0.3	-	-	0.1	-

**APPENDIX L.4.7 — CUMULATIVE PLUS ORCEM PROJECT**



HCM Signalized Intersection Capacity Analysis  
 1: Sonoma Blvd & Curtola Pkwy

Vallejo Marine Terminal  
 Year 2040 AM with Orcem Project



Movement	EBT	EBR	EBR2	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	SBR2
Lane Configurations	↑↑	←		↑↑	↑	↑	↑↑			↑↑		
Volume (vph)	310	130	10	510	210	240	221	10	180	182	10	20
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	4.5		4.5	4.5	4.5	4.5			4.5		
Lane Util. Factor	0.91	0.91		0.95	1.00	1.00	0.95			0.95		
Frbp, ped/bikes	1.00	1.00		1.00	0.98	1.00	1.00			1.00		
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00			1.00		
Frt	0.99	0.85		1.00	0.85	1.00	0.99			0.99		
Flt Protected	1.00	1.00		1.00	1.00	0.95	1.00			0.98		
Satd. Flow (prot)	3336	1418		3539	1587	1752	3486			3371		
Flt Permitted	1.00	1.00		1.00	1.00	0.95	1.00			0.98		
Satd. Flow (perm)	3336	1418		3539	1587	1752	3486			3371		
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.92
Adj. Flow (vph)	333	140	11	548	226	258	238	11	194	196	11	22
RTOR Reduction (vph)	0	51	0	0	163	0	2	0	0	3	0	0
Lane Group Flow (vph)	347	86	0	548	63	258	247	0	0	420	0	0
Confl. Peds. (#/hr)						7		7	7			7
Confl. Bikes (#/hr)					7							
Heavy Vehicles (%)	3%	4%	0%	2%	0%	3%	2%	20%	2%	4%	0%	8%
Turn Type	NA	Perm		NA	Perm	Split	NA		Split	NA		
Protected Phases	2			2		3	3		4	4		
Permitted Phases		2			2							
Actuated Green, G (s)	22.8	22.8		22.8	22.8	18.6	18.6			17.4		
Effective Green, g (s)	22.8	22.8		22.8	22.8	18.6	18.6			17.4		
Actuated g/C Ratio	0.28	0.28		0.28	0.28	0.23	0.23			0.21		
Clearance Time (s)	4.5	4.5		4.5	4.5	4.5	4.5			4.5		
Vehicle Extension (s)	2.0	2.0		2.0	2.0	2.0	2.0			2.0		
Lane Grp Cap (vph)	936	398		993	445	401	798			722		
v/s Ratio Prot	0.10			c0.15		c0.15	0.07			c0.12		
v/s Ratio Perm		0.06			0.04							
v/c Ratio	0.37	0.22		0.55	0.14	0.64	0.31			0.58		
Uniform Delay, d1	23.4	22.4		24.9	21.9	28.3	26.0			28.6		
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00			1.00		
Incremental Delay, d2	0.1	0.1		0.4	0.1	2.6	0.1			0.8		
Delay (s)	23.5	22.5		25.2	21.9	30.9	26.0			29.4		
Level of Service	C	C		C	C	C	C			C		
Approach Delay (s)	23.2			24.3			28.5			29.4		
Approach LOS	C			C			C			C		

Intersection Summary		
HCM 2000 Control Delay	26.2	HCM 2000 Level of Service C
HCM 2000 Volume to Capacity ratio	0.54	
Actuated Cycle Length (s)	81.2	Sum of lost time (s) 17.0
Intersection Capacity Utilization	65.6%	ICU Level of Service C
Analysis Period (min)	15	

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis  
 1: Sonoma Blvd & Curtola Pkwy

Vallejo Marine Terminal  
 Year 2040 AM with Orcem Project























Movement	NEL2	NEL	NER2
Lane Configurations			
Volume (vph)	10	10	10
Ideal Flow (vphpl)	1900	1900	1900
Total Lost time (s)		3.5	
Lane Util. Factor		1.00	
Frbp, ped/bikes		1.00	
Flpb, ped/bikes		1.00	
Frt		0.95	
Flt Protected		0.97	
Satd. Flow (prot)		1756	
Flt Permitted		0.97	
Satd. Flow (perm)		1756	
Peak-hour factor, PHF	0.92	0.92	0.92
Adj. Flow (vph)	11	11	11
RTOR Reduction (vph)	0	31	0
Lane Group Flow (vph)	0	2	0
Confl. Peds. (#/hr)			
Confl. Bikes (#/hr)			
Heavy Vehicles (%)	0%	0%	0%
Turn Type	Prot	Prot	
Protected Phases	1	1	
Permitted Phases			
Actuated Green, G (s)		5.4	
Effective Green, g (s)		5.4	
Actuated g/C Ratio		0.07	
Clearance Time (s)		3.5	
Vehicle Extension (s)		2.0	
Lane Grp Cap (vph)		116	
v/s Ratio Prot		c0.00	
v/s Ratio Perm			
v/c Ratio		0.02	
Uniform Delay, d1		35.4	
Progression Factor		1.00	
Incremental Delay, d2		0.0	
Delay (s)		35.4	
Level of Service		D	
Approach Delay (s)		35.4	
Approach LOS		D	
<b>Intersection Summary</b>			

# HCM 2010 Signalized Intersection Summary



















## 2: Solano Blvd & Sonoma Blvd

Vallejo Marine Terminal  
Year 2040 AM with Orcem Project

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	10	10	20	30	20	20	20	441	60	20	282	20
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		1.00	1.00		0.98	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1583	1536	1900	1696	1836	1900	1900	1863	1900	1610	1841	1900
Adj Flow Rate, veh/h	11	11	15	33	22	-30	22	479	60	22	307	22
Adj No. of Lanes	1	1	0	1	2	0	1	2	0	1	2	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	20	13	13	12	0	0	0	2	2	18	3	3
Cap, veh/h	30	41	56	82	176	360	85	1773	221	72	1856	132
Arrive On Green	0.02	0.07	0.07	0.05	0.10	0.00	0.05	0.56	0.56	0.05	0.56	0.56
Sat Flow, veh/h	1508	586	798	1616	3580	0	1810	3160	394	1533	3308	236
Grp Volume(v), veh/h	11	0	26	33	-8	-30	22	267	272	22	161	168
Grp Sat Flow(s),veh/h/ln	1508	0	1384	1616	1744	1560	1810	1770	1785	1533	1749	1794
Q Serve(g_s), s	0.4	0.0	1.0	1.1	0.0	0.0	0.6	4.2	4.2	0.7	2.4	2.4
Cycle Q Clear(g_c), s	0.4	0.0	1.0	1.1	0.0	0.0	0.6	4.2	4.2	0.7	2.4	2.4
Prop In Lane	1.00		0.58	1.00		0.00	1.00		0.22	1.00		0.13
Lane Grp Cap(c), veh/h	30	0	97	82	176	0	85	993	1001	72	981	1007
V/C Ratio(X)	0.37	0.00	0.27	0.40	-0.05	0.00	0.26	0.27	0.27	0.31	0.16	0.17
Avail Cap(c_a), veh/h	423	0	621	529	783	0	643	993	1001	516	981	1007
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	25.9	0.0	23.6	24.6	0.0	0.0	24.6	6.1	6.1	24.6	5.7	5.7
Incr Delay (d2), s/veh	2.8	0.0	0.5	1.2	0.0	0.0	0.6	0.7	0.7	0.9	0.4	0.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.2	0.0	0.4	0.5	0.0	0.0	0.3	2.2	2.2	0.3	1.2	1.3
LnGrp Delay(d),s/veh	28.7	0.0	24.1	25.8	0.0	0.0	25.2	6.7	6.7	25.5	6.0	6.0
LnGrp LOS	C		C	C			C	A	A	C	A	A
Approach Vol, veh/h		37			-5			561			351	
Approach Delay, s/veh		25.5			-170.1			7.5			7.3	
Approach LOS		C			A			A			A	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	5.5	34.5	5.7	7.7	5.5	34.5	4.1	9.4				
Change Period (Y+Rc), s	3.0	4.5	3.0	4.0	3.0	4.5	3.0	4.0				
Max Green Setting (Gmax), s	18.0	30.0	17.5	24.0	19.0	30.0	15.0	24.0				
Max Q Clear Time (g_c+I1), s	2.7	6.2	3.1	3.0	2.6	4.4	2.4	0.0				
Green Ext Time (p_c), s	0.0	3.5	0.0	0.0	0.0	3.6	0.0	0.0				
<b>Intersection Summary</b>												
HCM 2010 Ctrl Delay			9.0									
HCM 2010 LOS			A									
<b>Notes</b>												
User approved pedestrian interval to be less than phase max green.												



















HCM 2010 Signalized Intersection Summary  
3: Sonoma Blvd & Lemon St

Vallejo Marine Terminal  
Year 2040 AM with Orcem Project

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	21	35	20	60	47	40	28	430	70	30	300	22
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	0.99		0.99	0.99		0.99	1.00		0.97	1.00		0.96
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1775	1900	1900	1780	1900	1557	1845	1900	1727	1799	1900
Adj Flow Rate, veh/h	23	38	18	66	52	14	31	473	51	33	330	23
Adj No. of Lanes	0	1	0	0	1	0	1	2	0	1	2	0
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Percent Heavy Veh, %	9	9	9	7	7	7	22	3	3	10	6	6
Cap, veh/h	138	184	70	214	146	31	72	1674	180	83	1709	118
Arrive On Green	0.19	0.19	0.19	0.19	0.19	0.19	0.10	1.00	1.00	0.05	0.53	0.53
Sat Flow, veh/h	270	960	363	594	761	161	1483	3182	342	1645	3235	224
Grp Volume(v), veh/h	79	0	0	132	0	0	31	259	265	33	173	180
Grp Sat Flow(s),veh/h/ln	1593	0	0	1516	0	0	1483	1752	1771	1645	1709	1750
Q Serve(g_s), s	0.0	0.0	0.0	1.8	0.0	0.0	1.1	0.0	0.0	1.0	2.9	2.9
Cycle Q Clear(g_c), s	2.1	0.0	0.0	3.9	0.0	0.0	1.1	0.0	0.0	1.0	2.9	2.9
Prop In Lane	0.29		0.23	0.50		0.11	1.00		0.19	1.00		0.13
Lane Grp Cap(c), veh/h	391	0	0	391	0	0	72	922	932	83	903	925
V/C Ratio(X)	0.20	0.00	0.00	0.34	0.00	0.00	0.43	0.28	0.28	0.40	0.19	0.19
Avail Cap(c_a), veh/h	749	0	0	732	0	0	302	922	932	396	903	925
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	1.00	1.00	1.00	0.97	0.97	0.97
Uniform Delay (d), s/veh	18.5	0.0	0.0	19.1	0.0	0.0	23.7	0.0	0.0	24.8	6.7	6.7
Incr Delay (d2), s/veh	0.1	0.0	0.0	0.2	0.0	0.0	1.5	0.8	0.8	1.1	0.5	0.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.0	0.0	0.0	1.7	0.0	0.0	0.5	0.2	0.2	0.5	1.5	1.5
LnGrp Delay(d),s/veh	18.6	0.0	0.0	19.3	0.0	0.0	25.2	0.8	0.8	25.9	7.1	7.1
LnGrp LOS	B			B			C	A	A	C	A	A
Approach Vol, veh/h		79			132			555			386	
Approach Delay, s/veh		18.6			19.3			2.1			8.7	
Approach LOS		B			B			A			A	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	6.7	53.9		14.3	6.6	54.1		14.3				
Change Period (Y+Rc), s	4.0	4.5		4.0	4.0	4.5		4.0				
Max Green Setting (Gmax), s	13.0	26.5		23.0	11.0	28.5		23.0				
Max Q Clear Time (g_c+I1), s	3.0	2.0		4.1	3.1	4.9		5.9				
Green Ext Time (p_c), s	0.0	8.0		0.7	0.0	7.9		0.7				
<b>Intersection Summary</b>												
HCM 2010 Ctrl Delay			7.4									
HCM 2010 LOS			A									




















HCM 2010 Signalized Intersection Summary  
6: Sonoma Blvd & Magazine St

Vallejo Marine Terminal  
Year 2040 AM with Orcem Project

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	80	140	20	40	50	100	20	278	90	70	270	30
Number	3	8	18	7	4	14	1	6	16	5	2	12
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	0.98		0.96	0.98		0.97	1.00		0.97	1.00		0.95
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1889	1900	1900	1871	1900	1900	1840	1900	1727	1799	1900
Adj Flow Rate, veh/h	93	163	16	47	58	38	23	323	69	81	314	28
Adj No. of Lanes	0	1	0	0	1	0	1	2	0	1	2	0
Peak Hour Factor	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86
Percent Heavy Veh, %	1	1	1	0	0	0	0	4	4	10	5	5
Cap, veh/h	212	332	29	197	229	123	78	1119	235	168	1426	126
Arrive On Green	0.29	0.29	0.29	0.29	0.29	0.29	0.04	0.39	0.39	0.20	0.90	0.90
Sat Flow, veh/h	432	1134	98	382	782	421	1810	2856	601	1645	3161	279
Grp Volume(v), veh/h	272	0	0	143	0	0	23	196	196	81	169	173
Grp Sat Flow(s),veh/h/ln	1664	0	0	1585	0	0	1810	1748	1709	1645	1709	1731
Q Serve(g_s), s	3.9	0.0	0.0	0.0	0.0	0.0	0.7	4.3	4.4	2.4	0.7	0.7
Cycle Q Clear(g_c), s	7.4	0.0	0.0	3.5	0.0	0.0	0.7	4.3	4.4	2.4	0.7	0.7
Prop In Lane	0.34		0.06	0.33		0.27	1.00		0.35	1.00		0.16
Lane Grp Cap(c), veh/h	573	0	0	549	0	0	78	685	669	168	771	781
V/C Ratio(X)	0.48	0.00	0.00	0.26	0.00	0.00	0.30	0.29	0.29	0.48	0.22	0.22
Avail Cap(c_a), veh/h	904	0	0	858	0	0	354	685	669	381	771	781
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	16.6	0.0	0.0	15.3	0.0	0.0	26.1	11.7	11.7	21.0	1.5	1.5
Incr Delay (d2), s/veh	0.2	0.0	0.0	0.1	0.0	0.0	0.8	1.0	1.1	0.8	0.7	0.7
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.6	0.0	0.0	1.7	0.0	0.0	0.4	2.3	2.3	1.1	0.4	0.4
LnGrp Delay(d),s/veh	16.8	0.0	0.0	15.4	0.0	0.0	26.8	12.7	12.8	21.8	2.2	2.2
LnGrp LOS	B			B			C	B	B	C	A	A
Approach Vol, veh/h		272			143			415			423	
Approach Delay, s/veh		16.8			15.4			13.6			6.0	
Approach LOS		B			B			B			A	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	5.9	49.2		19.9	9.2	45.8		19.9				
Change Period (Y+Rc), s	3.5	5.0		3.5	3.5	5.0		3.5				
Max Green Setting (Gmax), s	11.0	24.0		28.0	13.0	22.0		28.0				
Max Q Clear Time (g_c+I1), s	2.7	2.7		5.5	4.4	6.4		9.4				
Green Ext Time (p_c), s	0.0	6.3		1.7	0.1	5.4		1.6				
<b>Intersection Summary</b>												
HCM 2010 Ctrl Delay				11.9								
HCM 2010 LOS				B								

HCM 2010 Signalized Intersection Summary  
8: Sonoma Blvd & Maritime Academy Dr



















Vallejo Marine Terminal  
Year 2040 AM with Orcem Project

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	30	20	10	20	90	100	10	218	20	40	190	40
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		1.00	1.00		0.99	1.00		0.97
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1746	1900	1900	1778	1863	1900	1817	1900	1900	1792	1900
Adj Flow Rate, veh/h	33	22	6	22	98	5	11	237	12	43	207	26
Adj No. of Lanes	0	1	0	0	1	1	1	2	0	1	2	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	0	0	0	5	5	2	0	5	5	0	6	6
Cap, veh/h	323	178	36	171	399	401	47	1152	58	162	1239	153
Arrive On Green	0.25	0.25	0.25	0.25	0.25	0.25	0.03	0.34	0.34	0.09	0.41	0.41
Sat Flow, veh/h	589	703	141	149	1577	1583	1810	3343	168	1810	3038	376
Grp Volume(v), veh/h	61	0	0	120	0	5	11	122	127	43	115	118
Grp Sat Flow(s),veh/h/ln	1432	0	0	1726	0	1583	1810	1726	1785	1810	1703	1711
Q Serve(g_s), s	0.0	0.0	0.0	0.0	0.0	0.1	0.2	1.6	1.6	0.7	1.4	1.4
Cycle Q Clear(g_c), s	1.7	0.0	0.0	1.7	0.0	0.1	0.2	1.6	1.6	0.7	1.4	1.4
Prop In Lane	0.54		0.10	0.18		1.00	1.00		0.09	1.00		0.22
Lane Grp Cap(c), veh/h	536	0	0	570	0	401	47	595	615	162	694	698
V/C Ratio(X)	0.11	0.00	0.00	0.21	0.00	0.01	0.23	0.20	0.21	0.27	0.17	0.17
Avail Cap(c_a), veh/h	1486	0	0	1716	0	1487	1360	2162	2236	1360	2133	2143
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	9.2	0.0	0.0	9.6	0.0	8.9	15.2	7.4	7.4	13.6	6.0	6.0
Incr Delay (d2), s/veh	0.0	0.0	0.0	0.1	0.0	0.0	0.9	0.2	0.2	0.3	0.1	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.4	0.0	0.0	0.8	0.0	0.0	0.1	0.8	0.8	0.4	0.7	0.7
LnGrp Delay(d),s/veh	9.3	0.0	0.0	9.6	0.0	8.9	16.2	7.5	7.6	13.9	6.1	6.1
LnGrp LOS	A			A		A	B	A	A	B	A	A
Approach Vol, veh/h		61			125			260			276	
Approach Delay, s/veh		9.3			9.6			7.9			7.3	
Approach LOS		A			A			A			A	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	5.9	15.0		11.1	3.8	17.0		11.1				
Change Period (Y+Rc), s	3.0	4.0		3.0	3.0	4.0		3.0				
Max Green Setting (Gmax), s	24.0	40.0		30.0	24.0	40.0		30.0				
Max Q Clear Time (g_c+I1), s	2.7	3.6		3.7	2.2	3.4		3.7				
Green Ext Time (p_c), s	0.0	3.1		0.7	0.0	3.1		0.7				
<b>Intersection Summary</b>												
HCM 2010 Ctrl Delay			8.1									
HCM 2010 LOS			A									



























HCM 2010 Signalized Intersection Summary  
 16: Lemon St & Carlson St

Vallejo Marine Terminal  
 Year 2040 AM with Orcem Project

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	10	175	10	20	187	150	10	10	20	150	10	10
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	0.99		0.98	0.99		0.95	0.98		1.00	0.98		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1771	1900	1743	1829	1900	1900	1597	1900	1881	1886	1900
Adj Flow Rate, veh/h	12	206	11	24	220	154	12	12	0	187	0	0
Adj No. of Lanes	0	1	0	1	1	0	0	1	0	2	1	0
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85
Percent Heavy Veh, %	7	7	7	9	7	7	50	50	50	1	0	0
Cap, veh/h	174	741	38	707	450	315	320	201	0	1139	384	0
Arrive On Green	0.46	0.46	0.46	0.46	0.46	0.46	0.20	0.20	0.00	0.20	0.00	0.00
Sat Flow, veh/h	30	1614	83	1069	981	687	452	990	0	2774	1886	0
Grp Volume(v), veh/h	229	0	0	24	0	374	24	0	0	187	0	0
Grp Sat Flow(s),veh/h/ln	1727	0	0	1069	0	1667	1442	0	0	1387	1886	0
Q Serve(g_s), s	0.0	0.0	0.0	0.3	0.0	3.7	0.0	0.0	0.0	1.4	0.0	0.0
Cycle Q Clear(g_c), s	1.9	0.0	0.0	2.3	0.0	3.7	0.3	0.0	0.0	1.7	0.0	0.0
Prop In Lane	0.05		0.05	1.00		0.41	0.50		0.00	1.00		0.00
Lane Grp Cap(c), veh/h	952	0	0	707	0	765	521	0	0	1139	384	0
V/C Ratio(X)	0.24	0.00	0.00	0.03	0.00	0.49	0.05	0.00	0.00	0.16	0.00	0.00
Avail Cap(c_a), veh/h	2802	0	0	1886	0	2603	1970	0	0	4087	2387	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	1.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	4.0	0.0	0.0	4.7	0.0	4.5	7.6	0.0	0.0	8.3	0.0	0.0
Incr Delay (d2), s/veh	0.1	0.0	0.0	0.0	0.0	0.5	0.0	0.0	0.0	0.1	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.9	0.0	0.0	0.1	0.0	1.8	0.1	0.0	0.0	0.5	0.0	0.0
LnGrp Delay(d),s/veh	4.1	0.0	0.0	4.7	0.0	5.0	7.7	0.0	0.0	8.4	0.0	0.0
LnGrp LOS	A			A		A	A			A		
Approach Vol, veh/h		229			398			24			187	
Approach Delay, s/veh		4.1			4.9			7.7			8.4	
Approach LOS		A			A			A			A	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		14.9		8.8		14.9		8.8				
Change Period (Y+Rc), s		4.0		4.0		4.0		4.0				
Max Green Setting (Gmax), s		37.0		30.0		37.0		30.0				
Max Q Clear Time (g_c+I1), s		3.9		3.7		5.7		2.3				
Green Ext Time (p_c), s		4.5		0.8		4.4		0.8				
<b>Intersection Summary</b>												
HCM 2010 Ctrl Delay				5.6								
HCM 2010 LOS				A								
<b>Notes</b>												
User approved volume balancing among the lanes for turning movement.												

HCM 2010 Signalized Intersection Summary  
 17: Lemon St & Curtola Pkwy

Vallejo Marine Terminal  
 Year 2040 AM with Orcem Project

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	30	80	235	130	100	30	227	920	120	30	520	40
Number	3	8	18	7	4	14	1	6	16	5	2	12
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		0.91	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1696	1852	1810	1827	1827	1900	1827	1849	1900	1827	1845	1900
Adj Flow Rate, veh/h	33	89	5	144	111	16	252	1022	0	33	578	0
Adj No. of Lanes	1	1	1	1	1	1	1	2	0	1	2	0
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	12	0	5	4	4	0	4	3	3	4	3	3
Cap, veh/h	54	206	167	182	333	270	298	1722	0	58	1236	0
Arrive On Green	0.03	0.11	0.11	0.10	0.18	0.18	0.17	0.49	0.00	0.03	0.35	0.00
Sat Flow, veh/h	1616	1852	1501	1740	1827	1478	1740	3605	0	1740	3597	0
Grp Volume(v), veh/h	33	89	5	144	111	16	252	1022	0	33	578	0
Grp Sat Flow(s),veh/h/ln	1616	1852	1501	1740	1827	1478	1740	1756	0	1740	1752	0
Q Serve(g_s), s	1.5	3.3	0.2	5.9	3.8	0.6	10.2	15.2	0.0	1.4	9.3	0.0
Cycle Q Clear(g_c), s	1.5	3.3	0.2	5.9	3.8	0.6	10.2	15.2	0.0	1.4	9.3	0.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.00	1.00		0.00
Lane Grp Cap(c), veh/h	54	206	167	182	333	270	298	1722	0	58	1236	0
V/C Ratio(X)	0.61	0.43	0.03	0.79	0.33	0.06	0.85	0.59	0.00	0.57	0.47	0.00
Avail Cap(c_a), veh/h	556	893	724	599	881	712	599	1722	0	599	1689	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	34.6	30.1	28.8	31.7	25.8	24.5	29.2	13.3	0.0	34.6	18.2	0.0
Incr Delay (d2), s/veh	4.1	1.5	0.1	2.9	0.7	0.1	2.6	0.7	0.0	3.2	0.3	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.7	1.7	0.1	2.9	2.0	0.3	5.1	7.4	0.0	0.7	4.6	0.0
LnGrp Delay(d),s/veh	38.7	31.6	28.8	34.7	26.6	24.6	31.8	14.0	0.0	37.8	18.5	0.0
LnGrp LOS	D	C	C	C	C	C	C	B		D	B	
Approach Vol, veh/h		127			271			1274			611	
Approach Delay, s/veh		33.3			30.8			17.5			19.6	
Approach LOS		C			C			B			B	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	16.4	31.6	6.4	18.2	6.4	41.6	11.6	13.0				
Change Period (Y+Rc), s	4.0	6.0	4.0	4.9	4.0	6.0	4.0	4.9				
Max Green Setting (Gmax), s	25.0	35.0	25.0	35.0	25.0	35.0	25.0	35.0				
Max Q Clear Time (g_c+I1), s	12.2	11.3	3.5	5.8	3.4	17.2	7.9	5.3				
Green Ext Time (p_c), s	0.3	14.3	0.0	1.4	0.0	12.5	0.2	1.4				
<b>Intersection Summary</b>												
HCM 2010 Ctrl Delay			20.5									
HCM 2010 LOS			C									
<b>Notes</b>												
User approved volume balancing among the lanes for turning movement.												

**Intersection**

Int Delay, s/veh 1.7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR
Vol, veh/h	20	10	10	10	10	10	10	508	10
Conflicting Peds, #/hr	0	0	7	7	0	0	11	0	8
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-
Peak Hour Factor	89	89	89	89	89	89	89	89	89
Heavy Vehicles, %	13	0	0	0	0	0	0	3	33
Mvmt Flow	22	11	11	11	11	11	11	571	11

Major/Minor	Minor2			Minor1			Major1		
Conflicting Flow All	782	1073	237	855	1074	309	445	0	0
Stage 1	462	462	-	606	606	-	-	-	-
Stage 2	320	611	-	249	468	-	-	-	-
Critical Hdwy	7.76	6.5	6.9	7.5	6.5	6.9	4.1	-	-
Critical Hdwy Stg 1	6.76	5.5	-	6.5	5.5	-	-	-	-
Critical Hdwy Stg 2	6.76	5.5	-	6.5	5.5	-	-	-	-
Follow-up Hdwy	3.63	4	3.3	3.5	4	3.3	2.2	-	-
Pot Cap-1 Maneuver	266	222	771	255	222	693	1126	-	-
Stage 1	521	568	-	456	490	-	-	-	-
Stage 2	636	487	-	739	565	-	-	-	-
Platoon blocked, %									
Mov Cap-1 Maneuver	242	213	759	232	213	683	1116	-	-
Mov Cap-2 Maneuver	242	213	-	232	213	-	-	-	-
Stage 1	510	556	-	447	480	-	-	-	-
Stage 2	596	477	-	696	553	-	-	-	-

Approach	EB	WB	NB
HCM Control Delay, s	20.3	19.2	0.3
HCM LOS	C	C	

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1116	-	-	280	287	987	-	-
HCM Lane V/C Ratio	0.01	-	-	0.161	0.117	0.011	-	-
HCM Control Delay (s)	8.3	0.1	-	20.3	19.2	8.7	0.1	-
HCM Lane LOS	A	A	-	C	C	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0.6	0.4	0	-	-

**Intersection**

Int Delay, s/veh

Movement	SBL	SBT	SBR
Vol, veh/h	10	380	10
Conflicting Peds, #/hr	8	0	11
Sign Control	Free	Free	Free
RT Channelized	-	-	None
Storage Length	-	-	-
Veh in Median Storage, #	-	0	-
Grade, %	-	0	-
Peak Hour Factor	89	89	89
Heavy Vehicles, %	0	7	20
Mvmt Flow	11	427	11

**Major/Minor Major2**

Conflicting Flow All	589	0	0
Stage 1	-	-	-
Stage 2	-	-	-
Critical Hdwy	4.1	-	-
Critical Hdwy Stg 1	-	-	-
Critical Hdwy Stg 2	-	-	-
Follow-up Hdwy	2.2	-	-
Pot Cap-1 Maneuver	996	-	-
Stage 1	-	-	-
Stage 2	-	-	-
Platoon blocked, %		-	-
Mov Cap-1 Maneuver	987	-	-
Mov Cap-2 Maneuver	-	-	-
Stage 1	-	-	-
Stage 2	-	-	-

**Approach SB**

HCM Control Delay, s 0.3

HCM LOS

**Minor Lane/Major Mvmt**

**Intersection**

Int Delay, s/veh 2.1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR
Vol, veh/h	30	10	10	10	10	20	10	458	10
Conflicting Peds, #/hr	6	0	9	9	0	6	18	0	10
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-
Peak Hour Factor	91	91	91	91	91	91	91	91	91
Heavy Vehicles, %	0	0	0	0	0	15	0	4	0
Mvmt Flow	33	11	11	11	11	22	11	503	11

Major/Minor	Minor2			Minor1			Major1		
Conflicting Flow All	748	1005	236	796	1011	284	427	0	0
Stage 1	460	460	-	540	540	-	-	-	-
Stage 2	288	545	-	256	471	-	-	-	-
Critical Hdwy	7.5	6.5	6.9	7.5	6.5	7.2	4.1	-	-
Critical Hdwy Stg 1	6.5	5.5	-	6.5	5.5	-	-	-	-
Critical Hdwy Stg 2	6.5	5.5	-	6.5	5.5	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	3.5	4	3.45	2.2	-	-
Pot Cap-1 Maneuver	305	243	772	281	241	675	1143	-	-
Stage 1	556	569	-	499	524	-	-	-	-
Stage 2	701	522	-	732	563	-	-	-	-
Platoon blocked, %									
Mov Cap-1 Maneuver	268	229	755	252	227	660	1126	-	-
Mov Cap-2 Maneuver	268	229	-	252	227	-	-	-	-
Stage 1	544	548	-	488	513	-	-	-	-
Stage 2	644	511	-	675	542	-	-	-	-

Approach	EB	WB	NB
HCM Control Delay, s	19.9	16.7	0.3
HCM LOS	C	C	

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1126	-	-	296	351	971	-	-
HCM Lane V/C Ratio	0.01	-	-	0.186	0.125	0.023	-	-
HCM Control Delay (s)	8.2	0.1	-	19.9	16.7	8.8	0.1	-
HCM Lane LOS	A	A	-	C	C	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0.7	0.4	0.1	-	-

**Intersection**

Int Delay, s/veh

Movement	SBL	SBT	SBR
Vol, veh/h	20	360	20
Conflicting Peds, #/hr	10	0	18
Sign Control	Free	Free	Free
RT Channelized	-	-	None
Storage Length	-	-	-
Veh in Median Storage, #	-	0	-
Grade, %	-	0	-
Peak Hour Factor	91	91	91
Heavy Vehicles, %	10	7	0
Mvmt Flow	22	396	22

**Major/Minor Major2**

Conflicting Flow All	523	0	0
Stage 1	-	-	-
Stage 2	-	-	-
Critical Hdwy	4.3	-	-
Critical Hdwy Stg 1	-	-	-
Critical Hdwy Stg 2	-	-	-
Follow-up Hdwy	2.3	-	-
Pot Cap-1 Maneuver	986	-	-
Stage 1	-	-	-
Stage 2	-	-	-
Platoon blocked, %		-	-
Mov Cap-1 Maneuver	971	-	-
Mov Cap-2 Maneuver	-	-	-
Stage 1	-	-	-
Stage 2	-	-	-

**Approach SB**

HCM Control Delay, s 0.5

HCM LOS

**Minor Lane/Major Mvmt**

Intersection						
Int Delay, s/veh	4.7					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Vol, veh/h	100	50	100	258	220	100
Conflicting Peds, #/hr	0	0	13	0	0	13
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	60	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	85	85	85	85	85	85
Heavy Vehicles, %	3	3	3	4	4	3
Mvmt Flow	118	59	118	304	259	118
Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	705	201	376	0	-	0
Stage 1	318	-	-	-	-	-
Stage 2	387	-	-	-	-	-
Critical Hdwy	6.86	6.96	4.16	-	-	-
Critical Hdwy Stg 1	5.86	-	-	-	-	-
Critical Hdwy Stg 2	5.86	-	-	-	-	-
Follow-up Hdwy	3.53	3.33	2.23	-	-	-
Pot Cap-1 Maneuver	369	803	1172	-	-	-
Stage 1	707	-	-	-	-	-
Stage 2	653	-	-	-	-	-
Platoon blocked, %	-	-	-	-	-	-
Mov Cap-1 Maneuver	331	794	1159	-	-	-
Mov Cap-2 Maneuver	331	-	-	-	-	-
Stage 1	707	-	-	-	-	-
Stage 2	587	-	-	-	-	-
Approach	EB		NB		SB	
HCM Control Delay, s	20.2		2.4		0	
HCM LOS	C					
Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR	
Capacity (veh/h)	1159	-	411	-	-	
HCM Lane V/C Ratio	0.102	-	0.429	-	-	
HCM Control Delay (s)	8.5	-	20.2	-	-	
HCM Lane LOS	A	-	C	-	-	
HCM 95th %tile Q(veh)	0.3	-	2.1	-	-	

**Intersection**

Int Delay, s/veh 1.3

Movement	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBL	NBT	NBR
Vol, veh/h	0	37	0	10	0	57	10	0	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	-	0	-	-	0	-
Grade, %	-	0	-	-	-	0	-	-	0	-
Peak Hour Factor	82	82	82	82	82	82	82	82	82	82
Heavy Vehicles, %	0	17	0	0	0	11	0	0	0	0
Mvmt Flow	0	45	0	12	0	70	12	0	0	0

Major/Minor	Major1	Major2	Minor1							
Conflicting Flow All	82	0	0	45	45	0	0	127	151	57
Stage 1	-	-	-	-	-	-	-	45	45	-
Stage 2	-	-	-	-	-	-	-	82	106	-
Critical Hdwy	4.1	-	-	-	4.1	-	-	7.1	6.5	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	-	6.1	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	-	6.1	5.5	-
Follow-up Hdwy	2.2	-	-	-	2.2	-	-	3.5	4	3.3
Pot Cap-1 Maneuver	1528	-	-	-	1576	-	-	851	744	1015
Stage 1	-	-	-	-	-	-	-	974	861	-
Stage 2	-	-	-	-	-	-	-	931	811	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1528	-	-	-	-	-	-	841	744	1015
Mov Cap-2 Maneuver	-	-	-	-	-	-	-	841	744	-
Stage 1	-	-	-	-	-	-	-	974	861	-
Stage 2	-	-	-	-	-	-	-	920	811	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0	0
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	-	1528	-	-	-	-	-	920
HCM Lane V/C Ratio	-	-	-	-	-	-	-	0.027
HCM Control Delay (s)	0	0	-	-	-	-	-	9
HCM Lane LOS	A	A	-	-	-	-	-	A
HCM 95th %tile Q(veh)	-	0	-	-	-	-	-	0.1



**Intersection**

Int Delay, s/veh

Movement	SBL	SBT	SBR
Vol, veh/h	10	0	10
Conflicting Peds, #/hr	0	0	0
Sign Control	Stop	Stop	Stop
RT Channelized	-	-	None
Storage Length	-	-	-
Veh in Median Storage, #	-	0	-
Grade, %	-	0	-
Peak Hour Factor	82	82	82
Heavy Vehicles, %	0	0	0
Mvmt Flow	12	0	12

**Major/Minor**                      **Minor2**

Conflicting Flow All	121	145	76
Stage 1	76	100	-
Stage 2	45	45	-
Critical Hdwy	7.1	6.5	6.2
Critical Hdwy Stg 1	6.1	5.5	-
Critical Hdwy Stg 2	6.1	5.5	-
Follow-up Hdwy	3.5	4	3.3
Pot Cap-1 Maneuver	859	750	991
Stage 1	938	816	-
Stage 2	974	861	-
Platoon blocked, %			
Mov Cap-1 Maneuver	859	750	991
Mov Cap-2 Maneuver	859	750	-
Stage 1	938	816	-
Stage 2	974	861	-

**Approach**                      **SB**

HCM Control Delay, s	9
HCM LOS	A

**Minor Lane/Major Mvmt**

**Intersection**

Int Delay, s/veh 2.9

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR
Vol, veh/h	10	47	0	10	67	10	10	10	10
Conflicting Peds, #/hr	0	0	0	0	0	0	7	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-
Peak Hour Factor	88	88	88	88	88	88	88	88	88
Heavy Vehicles, %	0	13	0	0	9	0	0	0	0
Mvmt Flow	11	53	0	11	76	11	11	11	11

Major/Minor	Major1	Major2	Minor1						
Conflicting Flow All	95	0	0	60	0	0	195	200	60
Stage 1	-	-	-	-	-	-	83	83	-
Stage 2	-	-	-	-	-	-	112	117	-
Critical Hdwy	4.1	-	-	4.1	-	-	7.1	6.5	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-
Follow-up Hdwy	2.2	-	-	2.2	-	-	3.5	4	3.3
Pot Cap-1 Maneuver	1512	-	-	1556	-	-	769	699	1011
Stage 1	-	-	-	-	-	-	930	830	-
Stage 2	-	-	-	-	-	-	898	803	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1512	-	-	1556	-	-	756	681	1005
Mov Cap-2 Maneuver	-	-	-	-	-	-	756	681	-
Stage 1	-	-	-	-	-	-	918	819	-
Stage 2	-	-	-	-	-	-	892	793	-

Approach	EB	WB	NB
HCM Control Delay, s	1.3	0.8	9.8
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	792	1512	-	-	1556	-	-	725
HCM Lane V/C Ratio	0.043	0.008	-	-	0.007	-	-	0.016
HCM Control Delay (s)	9.8	7.4	0	-	7.3	0	-	10
HCM Lane LOS	A	A	A	-	A	A	-	B
HCM 95th %tile Q(veh)	0.1	0	-	-	0	-	-	0

**Intersection**

Int Delay, s/veh

Movement	SBL	SBT	SBR
Vol, veh/h	10	0	0
Conflicting Peds, #/hr	0	0	7
Sign Control	Stop	Stop	Stop
RT Channelized	-	-	None
Storage Length	-	-	-
Veh in Median Storage, #	-	0	-
Grade, %	-	0	-
Peak Hour Factor	88	88	88
Heavy Vehicles, %	0	0	0
Mvmt Flow	11	0	0

**Major/Minor**

**Minor2**

Conflicting Flow All	207	195	89
Stage 1	112	112	-
Stage 2	95	83	-
Critical Hdwy	7.1	6.5	6.2
Critical Hdwy Stg 1	6.1	5.5	-
Critical Hdwy Stg 2	6.1	5.5	-
Follow-up Hdwy	3.5	4	3.3
Pot Cap-1 Maneuver	755	704	975
Stage 1	898	807	-
Stage 2	917	830	-
Platoon blocked, %			
Mov Cap-1 Maneuver	725	686	969
Mov Cap-2 Maneuver	725	686	-
Stage 1	887	797	-
Stage 2	888	819	-

**Approach**

SB

HCM Control Delay, s	10
HCM LOS	B

**Minor Lane/Major Mvmt**

**Intersection**

Int Delay, s/veh 2.4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR
Vol, veh/h	10	115	10	10	127	10	10	10	10
Conflicting Peds, #/hr	7	0	7	7	0	7	0	0	6
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-
Peak Hour Factor	85	85	85	85	85	85	85	85	85
Heavy Vehicles, %	0	8	0	17	10	0	0	0	25
Mvmt Flow	12	135	12	12	149	12	12	12	12

Major/Minor	Major1	Major2	Minor1						
Conflicting Flow All	167	0	0	153	0	0	368	362	154
Stage 1	-	-	-	-	-	-	171	171	-
Stage 2	-	-	-	-	-	-	197	191	-
Critical Hdwy	4.1	-	-	4.27	-	-	7.1	6.5	6.45
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-
Follow-up Hdwy	2.2	-	-	2.353	-	-	3.5	4	3.525
Pot Cap-1 Maneuver	1423	-	-	1341	-	-	592	569	835
Stage 1	-	-	-	-	-	-	836	761	-
Stage 2	-	-	-	-	-	-	809	746	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1415	-	-	1333	-	-	560	553	826
Mov Cap-2 Maneuver	-	-	-	-	-	-	560	553	-
Stage 1	-	-	-	-	-	-	824	750	-
Stage 2	-	-	-	-	-	-	773	735	-

Approach	EB	WB	NB
HCM Control Delay, s	0.6	0.5	11.1
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	624	1415	-	-	1333	-	-	633
HCM Lane V/C Ratio	0.057	0.008	-	-	0.009	-	-	0.056
HCM Control Delay (s)	11.1	7.6	0	-	7.7	0	-	11
HCM Lane LOS	B	A	A	-	A	A	-	B
HCM 95th %tile Q(veh)	0.2	0	-	-	0	-	-	0.2

**Intersection**

Int Delay, s/veh

Movement	SBL	SBT	SBR
Vol, veh/h	10	10	10
Conflicting Peds, #/hr	6	0	0
Sign Control	Stop	Stop	Stop
RT Channelized	-	-	None
Storage Length	-	-	-
Veh in Median Storage, #	-	0	-
Grade, %	-	0	-
Peak Hour Factor	85	85	85
Heavy Vehicles, %	0	0	0
Mvmt Flow	12	12	12

**Major/Minor**

**Minor2**

Conflicting Flow All	367	362	168
Stage 1	185	185	-
Stage 2	182	177	-
Critical Hdwy	7.1	6.5	6.2
Critical Hdwy Stg 1	6.1	5.5	-
Critical Hdwy Stg 2	6.1	5.5	-
Follow-up Hdwy	3.5	4	3.3
Pot Cap-1 Maneuver	593	569	881
Stage 1	821	751	-
Stage 2	824	756	-
Platoon blocked, %			
Mov Cap-1 Maneuver	561	553	871
Mov Cap-2 Maneuver	561	553	-
Stage 1	810	740	-
Stage 2	788	745	-

**Approach**

SB

HCM Control Delay, s	11
HCM LOS	B

**Minor Lane/Major Mvmt**

**Intersection**

Int Delay, s/veh 5

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR
Vol, veh/h	20	105	10	20	117	20	10	40	30
Conflicting Peds, #/hr	6	0	8	8	0	6	6	0	6
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	8	7	0	0	11	6	0	4	0
Mvmt Flow	22	117	11	22	130	22	11	44	33

Major/Minor	Major1	Major2	Minor1						
Conflicting Flow All	158	0	0	134	0	0	398	376	136
Stage 1	-	-	-	-	-	-	173	173	-
Stage 2	-	-	-	-	-	-	225	203	-
Critical Hdwy	4.18	-	-	4.1	-	-	7.1	6.54	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.54	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.54	-
Follow-up Hdwy	2.272	-	-	2.2	-	-	3.5	4.036	3.3
Pot Cap-1 Maneuver	1386	-	-	1463	-	-	566	552	918
Stage 1	-	-	-	-	-	-	834	752	-
Stage 2	-	-	-	-	-	-	782	730	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1377	-	-	1453	-	-	497	528	907
Mov Cap-2 Maneuver	-	-	-	-	-	-	497	528	-
Stage 1	-	-	-	-	-	-	816	736	-
Stage 2	-	-	-	-	-	-	698	714	-

Approach	EB	WB	NB
HCM Control Delay, s	1.1	1	11.8
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	620	1377	-	-	1453	-	-	574
HCM Lane V/C Ratio	0.143	0.016	-	-	0.015	-	-	0.155
HCM Control Delay (s)	11.8	7.7	0	-	7.5	0	-	12.4
HCM Lane LOS	B	A	A	-	A	A	-	B
HCM 95th %tile Q(veh)	0.5	0	-	-	0	-	-	0.5

**Intersection**

Int Delay, s/veh

Movement	SBL	SBT	SBR
Vol, veh/h	20	40	20
Conflicting Peds, #/hr	6	0	6
Sign Control	Stop	Stop	Stop
RT Channelized	-	-	None
Storage Length	-	-	-
Veh in Median Storage, #	-	0	-
Grade, %	-	0	-
Peak Hour Factor	90	90	90
Heavy Vehicles, %	0	4	7
Mvmt Flow	22	44	22

**Major/Minor**

	Minor2		
Conflicting Flow All	404	370	155
Stage 1	192	192	-
Stage 2	212	178	-
Critical Hdwy	7.1	6.54	6.27
Critical Hdwy Stg 1	6.1	5.54	-
Critical Hdwy Stg 2	6.1	5.54	-
Follow-up Hdwy	3.5	4.036	3.363
Pot Cap-1 Maneuver	561	556	878
Stage 1	814	738	-
Stage 2	795	748	-
Platoon blocked, %			
Mov Cap-1 Maneuver	487	532	868
Mov Cap-2 Maneuver	487	532	-
Stage 1	796	722	-
Stage 2	703	732	-

**Approach**

	SB
HCM Control Delay, s	12.4
HCM LOS	B

**Minor Lane/Major Mvmt**

**Intersection**

Int Delay, s/veh 2.5

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR
Vol, veh/h	10	145	10	20	137	10	10	0	30
Conflicting Peds, #/hr	9	0	12	12	0	9	9	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-
Peak Hour Factor	81	81	81	81	81	81	81	81	81
Heavy Vehicles, %	0	6	0	0	9	33	0	5	0
Mvmt Flow	12	179	12	25	169	12	12	0	37

Major/Minor	Major1	Major2	Minor1						
Conflicting Flow All	190	0	0	200	0	0	465	459	206
Stage 1	-	-	-	-	-	-	219	219	-
Stage 2	-	-	-	-	-	-	246	240	-
Critical Hdwy	4.1	-	-	4.1	-	-	7.1	6.55	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.55	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.55	-
Follow-up Hdwy	2.2	-	-	2.2	-	-	3.5	4.045	3.3
Pot Cap-1 Maneuver	1396	-	-	1384	-	-	511	494	840
Stage 1	-	-	-	-	-	-	788	716	-
Stage 2	-	-	-	-	-	-	762	701	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1382	-	-	1370	-	-	473	472	825
Mov Cap-2 Maneuver	-	-	-	-	-	-	473	472	-
Stage 1	-	-	-	-	-	-	774	704	-
Stage 2	-	-	-	-	-	-	714	682	-

Approach	EB	WB	NB
HCM Control Delay, s	0.5	0.9	10.6
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	696	1382	-	-	1370	-	-	540
HCM Lane V/C Ratio	0.071	0.009	-	-	0.018	-	-	0.069
HCM Control Delay (s)	10.6	7.6	0	-	7.7	0	-	12.2
HCM Lane LOS	B	A	A	-	A	A	-	B
HCM 95th %tile Q(veh)	0.2	0	-	-	0.1	-	-	0.2



**Intersection**

Int Delay, s/veh

Movement	SBL	SBT	SBR
Vol, veh/h	10	10	10
Conflicting Peds, #/hr	0	0	9
Sign Control	Stop	Stop	Stop
RT Channelized	-	-	None
Storage Length	-	-	-
Veh in Median Storage, #	-	0	-
Grade, %	-	0	-
Peak Hour Factor	81	81	81
Heavy Vehicles, %	0	0	33
Mvmt Flow	12	12	12

**Major/Minor**

	Minor2		
Conflicting Flow All	471	459	196
Stage 1	234	234	-
Stage 2	237	225	-
Critical Hdwy	7.1	6.5	6.53
Critical Hdwy Stg 1	6.1	5.5	-
Critical Hdwy Stg 2	6.1	5.5	-
Follow-up Hdwy	3.5	4	3.597
Pot Cap-1 Maneuver	506	502	772
Stage 1	774	715	-
Stage 2	771	721	-
Platoon blocked, %			
Mov Cap-1 Maneuver	464	480	759
Mov Cap-2 Maneuver	464	480	-
Stage 1	761	695	-
Stage 2	722	708	-

**Approach**

	SB
HCM Control Delay, s	12.2
HCM LOS	B

**Minor Lane/Major Mvmt**

**Intersection**

Int Delay, s/veh 0.6

Movement	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBL	NBT	NBR
Vol, veh/h	0	175	0	10	0	157	10	10	0	0
Conflicting Peds, #/hr	12	0	8	0	8	0	12	8	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	-	0	-	-	0	-
Grade, %	-	0	-	-	-	0	-	-	0	-
Peak Hour Factor	83	83	83	83	83	83	83	83	83	83
Heavy Vehicles, %	0	5	0	0	0	7	0	0	0	0
Mvmt Flow	0	211	0	12	0	189	12	12	0	0

Major/Minor	Major1	Major2	Minor1	Minor2	Minor3
Conflicting Flow All	209	0	0	211	219
Stage 1	-	-	-	-	-
Stage 2	-	-	-	-	-
Critical Hdwy	4.1	-	-	-	4.1
Critical Hdwy Stg 1	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-
Follow-up Hdwy	2.2	-	-	-	2.2
Pot Cap-1 Maneuver	1374	-	-	-	1362
Stage 1	-	-	-	-	-
Stage 2	-	-	-	-	-
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	1360	-	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-
Stage 1	-	-	-	-	-
Stage 2	-	-	-	-	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0	11.9
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	537	1360	-	-	-	-	-	537
HCM Lane V/C Ratio	0.022	-	-	-	-	-	-	0.022
HCM Control Delay (s)	11.9	0	-	-	-	-	-	11.9
HCM Lane LOS	B	A	-	-	-	-	-	B
HCM 95th %tile Q(veh)	0.1	0	-	-	-	-	-	0.1

**Intersection**

Int Delay, s/veh

Movement	SBL	SBT	SBR
Vol, veh/h	10	0	0
Conflicting Peds, #/hr	0	0	8
Sign Control	Stop	Stop	Stop
RT Channelized	-	-	None
Storage Length	-	-	-
Veh in Median Storage, #	-	0	-
Grade, %	-	0	-
Peak Hour Factor	83	83	83
Heavy Vehicles, %	0	0	0
Mvmt Flow	12	0	0

**Major/Minor**

	Minor2		
Conflicting Flow All	422	446	215
Stage 1	203	227	-
Stage 2	219	219	-
Critical Hdwy	7.1	6.5	6.2
Critical Hdwy Stg 1	6.1	5.5	-
Critical Hdwy Stg 2	6.1	5.5	-
Follow-up Hdwy	3.5	4	3.3
Pot Cap-1 Maneuver	546	510	830
Stage 1	804	720	-
Stage 2	788	726	-
Platoon blocked, %			
Mov Cap-1 Maneuver	537	503	816
Mov Cap-2 Maneuver	537	503	-
Stage 1	799	715	-
Stage 2	780	721	-

**Approach**

	SB
HCM Control Delay, s	11.9
HCM LOS	B

**Minor Lane/Major Mvmt**

**Intersection**

Int Delay, s/veh 0.8

Movement	EBT	EBR	WBU	WBL	WBT	NBL	NBR
Vol, veh/h	165	10	10	20	167	10	20
Conflicting Peds, #/hr	0	9	0	9	0	0	6
Sign Control	Free	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	-	None	-	None
Storage Length	-	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	-	0	0	-
Grade, %	0	-	-	-	0	0	-
Peak Hour Factor	88	88	88	88	88	88	88
Heavy Vehicles, %	5	0	0	13	6	40	0
Mvmt Flow	188	11	11	23	190	11	23

Major/Minor	Major1	Major2	Minor1				
Conflicting Flow All	0	0	222	205	0	434	220
Stage 1	-	-	-	-	-	199	-
Stage 2	-	-	-	-	-	235	-
Critical Hdwy	-	-	-	4.23	-	6.8	6.2
Critical Hdwy Stg 1	-	-	-	-	-	5.8	-
Critical Hdwy Stg 2	-	-	-	-	-	5.8	-
Follow-up Hdwy	-	-	-	2.317	-	3.86	3.3
Pot Cap-1 Maneuver	-	-	-	1303	-	514	825
Stage 1	-	-	-	-	-	752	-
Stage 2	-	-	-	-	-	723	-
Platoon blocked, %	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	-3	-3	-	508	815
Mov Cap-2 Maneuver	-	-	-	-	-	508	-
Stage 1	-	-	-	-	-	748	-
Stage 2	-	-	-	-	-	718	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0	10.6
HCM LOS			B

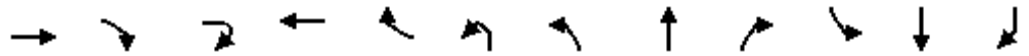
Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	678	-	-	+	-
HCM Lane V/C Ratio	0.05	-	-	-	-
HCM Control Delay (s)	10.6	-	-	-	-
HCM Lane LOS	B	-	-	-	-
HCM 95th %tile Q(veh)	0.2	-	-	-	-

**Notes**

-: Volume exceeds capacity    \$: Delay exceeds 300s    +: Computation Not Defined    \*: All major volume in platoon

HCM Signalized Intersection Capacity Analysis  
 1: Sonoma Blvd & Curtola Pkwy

Vallejo Marine Terminal  
 Year 2040 with Orcem Project



Movement	EBT	EBR	EBR2	WBT	WBR	NBL2	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↑↑	↑		↑↑	↑		↑	↑↑			↑↑	
Volume (vph)	630	220	10	370	250	20	210	312	10	240	221	10
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	4.5		4.5	4.5		4.5	4.5			4.5	
Lane Util. Factor	0.91	0.91		0.95	1.00		1.00	0.95			0.95	
Frbp, ped/bikes	1.00	1.00		1.00	0.98		1.00	1.00			1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00			1.00	
Frt	0.99	0.85		1.00	0.85		1.00	1.00			0.99	
Flt Protected	1.00	1.00		1.00	1.00		0.95	1.00			0.98	
Satd. Flow (prot)	3374	1456		3539	1576		1757	3556			3429	
Flt Permitted	1.00	1.00		1.00	1.00		0.95	1.00			0.98	
Satd. Flow (perm)	3374	1456		3539	1576		1757	3556			3429	
Peak-hour factor, PHF	0.91	0.91	0.91	0.91	0.91	0.92	0.91	0.91	0.91	0.91	0.91	0.91
Adj. Flow (vph)	692	242	11	407	275	22	231	343	11	264	243	11
RTOR Reduction (vph)	0	48	0	0	187	0	0	2	0	0	3	0
Lane Group Flow (vph)	716	181	0	407	88	0	253	352	0	0	548	0
Confl. Peds. (#/hr)					9		6		9	9		6
Confl. Bikes (#/hr)									6			6
Heavy Vehicles (%)	2%	1%	0%	2%	0%	0%	3%	1%	0%	1%	1%	0%
Turn Type	NA	Perm		NA	Perm	Split	Split	NA		Split	NA	
Protected Phases	2			2		3	3	3		4		4
Permitted Phases		2			2							
Actuated Green, G (s)	32.2	32.2		32.2	32.2		21.0	21.0			22.5	
Effective Green, g (s)	32.2	32.2		32.2	32.2		21.0	21.0			22.5	
Actuated g/C Ratio	0.32	0.32		0.32	0.32		0.21	0.21			0.22	
Clearance Time (s)	4.5	4.5		4.5	4.5		4.5	4.5			4.5	
Vehicle Extension (s)	2.0	2.0		2.0	2.0		2.0	2.0			2.0	
Lane Grp Cap (vph)	1078	465		1131	503		366	741			766	
v/s Ratio Prot	c0.21			0.11			c0.14	0.10			c0.16	
v/s Ratio Perm		0.12			0.06							
v/c Ratio	0.66	0.39		0.36	0.17		0.69	0.48			0.72	
Uniform Delay, d1	29.6	26.6		26.3	24.7		36.9	35.0			36.1	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00			1.00	
Incremental Delay, d2	1.2	0.2		0.1	0.1		4.5	0.2			2.7	
Delay (s)	30.8	26.8		26.4	24.7		41.4	35.2			38.8	
Level of Service	C	C		C	C		D	D			D	
Approach Delay (s)	29.8			25.7				37.8			38.8	
Approach LOS	C			C				D			D	

Intersection Summary			
HCM 2000 Control Delay	32.5	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.62		
Actuated Cycle Length (s)	100.7	Sum of lost time (s)	17.0
Intersection Capacity Utilization	73.8%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis  
 1: Sonoma Blvd & Curtola Pkwy






















Vallejo Marine Terminal  
 Year 2040 with Orcem Project



Movement	SBR2	NEL2	NEL	NER	NER2
Lane Configurations					
Volume (vph)	30	10	10	10	10
Ideal Flow (vphpl)	1900	1900	1900	1900	1900
Total Lost time (s)			3.5		
Lane Util. Factor			1.00		
Frbp, ped/bikes			1.00		
Flpb, ped/bikes			1.00		
Frt			0.93		
Flt Protected			0.98		
Satd. Flow (prot)			1729		
Flt Permitted			0.98		
Satd. Flow (perm)			1729		
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	33	11	11	11	11
RTOR Reduction (vph)	0	0	41	0	0
Lane Group Flow (vph)	0	0	3	0	0
Confl. Peds. (#/hr)					
Confl. Bikes (#/hr)					
Heavy Vehicles (%)	5%	0%	0%	0%	0%
Turn Type		Prot	Prot		
Protected Phases		1	1		
Permitted Phases					
Actuated Green, G (s)			8.0		
Effective Green, g (s)			8.0		
Actuated g/C Ratio			0.08		
Clearance Time (s)			3.5		
Vehicle Extension (s)			2.0		
Lane Grp Cap (vph)			137		
v/s Ratio Prot			c0.00		
v/s Ratio Perm					
v/c Ratio			0.03		
Uniform Delay, d1			42.8		
Progression Factor			1.00		
Incremental Delay, d2			0.0		
Delay (s)			42.8		
Level of Service			D		
Approach Delay (s)			42.8		
Approach LOS			D		
<b>Intersection Summary</b>					



















HCM 2010 Signalized Intersection Summary  
2: Solano Blvd & Sonoma Blvd

Vallejo Marine Terminal  
Year 2040 with Orcem Project

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	20	60	10	40	20	60	10	472	50	20	411	10
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		0.98	1.00		0.98	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1868	1900	1845	1836	1900	1900	1858	1900	1900	1882	1900
Adj Flow Rate, veh/h	23	69	4	46	23	3	11	543	51	23	472	10
Adj No. of Lanes	1	1	0	1	2	0	1	2	0	1	2	0
Peak Hour Factor	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87
Percent Heavy Veh, %	0	2	2	3	8	8	0	2	2	0	1	1
Cap, veh/h	68	208	12	111	449	57	46	1690	158	87	1939	41
Arrive On Green	0.04	0.12	0.12	0.06	0.14	0.14	0.03	0.52	0.52	0.05	0.54	0.54
Sat Flow, veh/h	1810	1749	101	1757	3104	396	1810	3256	305	1810	3578	76
Grp Volume(v), veh/h	23	0	73	46	13	13	11	294	300	23	236	246
Grp Sat Flow(s),veh/h/ln	1810	0	1850	1757	1744	1756	1810	1765	1797	1810	1788	1866
Q Serve(g_s), s	0.7	0.0	2.1	1.5	0.4	0.4	0.3	5.5	5.6	0.7	4.0	4.0
Cycle Q Clear(g_c), s	0.7	0.0	2.1	1.5	0.4	0.4	0.3	5.5	5.6	0.7	4.0	4.0
Prop In Lane	1.00		0.05	1.00		0.23	1.00		0.17	1.00		0.04
Lane Grp Cap(c), veh/h	68	0	220	111	252	254	46	916	932	87	969	1011
V/C Ratio(X)	0.34	0.00	0.33	0.41	0.05	0.05	0.24	0.32	0.32	0.26	0.24	0.24
Avail Cap(c_a), veh/h	470	0	768	532	724	729	595	916	932	563	969	1011
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	27.1	0.0	23.4	26.0	21.3	21.3	27.6	8.0	8.0	26.5	7.0	7.0
Incr Delay (d2), s/veh	1.1	0.0	0.3	0.9	0.0	0.0	1.0	0.9	0.9	0.6	0.6	0.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.4	0.0	1.1	0.7	0.2	0.2	0.2	2.9	3.0	0.4	2.1	2.2
LnGrp Delay(d),s/veh	28.2	0.0	23.7	27.0	21.3	21.3	28.6	8.9	8.9	27.1	7.6	7.6
LnGrp LOS	C		C	C	C	C	C	A	A	C	A	A
Approach Vol, veh/h		96			72			605			505	
Approach Delay, s/veh		24.8			24.9			9.3			8.5	
Approach LOS		C			C			A			A	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	5.8	34.5	6.7	10.9	4.5	35.8	5.2	12.4				
Change Period (Y+Rc), s	3.0	4.5	3.0	4.0	3.0	4.5	3.0	4.0				
Max Green Setting (Gmax), s	18.0	30.0	17.5	24.0	19.0	30.0	15.0	24.0				
Max Q Clear Time (g_c+I1), s	2.7	7.6	3.5	4.1	2.3	6.0	2.7	2.4				
Green Ext Time (p_c), s	0.0	4.5	0.0	0.3	0.0	4.5	0.0	0.3				
<b>Intersection Summary</b>												
HCM 2010 Ctrl Delay			11.0									
HCM 2010 LOS			B									
<b>Notes</b>												
User approved pedestrian interval to be less than phase max green.												

HCM 2010 Signalized Intersection Summary  
3: Sonoma Blvd & Lemon St



















Vallejo Marine Terminal  
Year 2040 with Orcem Project

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	12	46	28	50	40	40	17	430	130	60	410	21
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	0.98		0.97	0.98		0.97	1.00		0.97	1.00		0.96
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1804	1900	1900	1849	1900	1696	1877	1900	1900	1882	1900
Adj Flow Rate, veh/h	12	48	20	52	42	11	18	448	113	62	427	19
Adj No. of Lanes	0	1	0	0	1	0	1	2	0	1	2	0
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	5	5	5	6	6	6	12	1	1	0	1	1
Cap, veh/h	97	247	90	230	165	35	49	1351	338	141	1840	82
Arrive On Green	0.21	0.21	0.21	0.21	0.21	0.21	0.06	0.96	0.96	0.08	0.53	0.53
Sat Flow, veh/h	104	1153	419	616	773	163	1616	2807	701	1810	3481	154
Grp Volume(v), veh/h	80	0	0	105	0	0	18	283	278	62	219	227
Grp Sat Flow(s),veh/h/ln	1675	0	0	1552	0	0	1616	1783	1725	1810	1788	1847
Q Serve(g_s), s	0.0	0.0	0.0	0.7	0.0	0.0	0.6	0.5	0.5	1.8	3.6	3.6
Cycle Q Clear(g_c), s	2.1	0.0	0.0	2.8	0.0	0.0	0.6	0.5	0.5	1.8	3.6	3.6
Prop In Lane	0.15		0.25	0.50		0.10	1.00		0.41	1.00		0.08
Lane Grp Cap(c), veh/h	434	0	0	430	0	0	49	858	830	141	945	976
V/C Ratio(X)	0.18	0.00	0.00	0.24	0.00	0.00	0.36	0.33	0.33	0.44	0.23	0.23
Avail Cap(c_a), veh/h	764	0	0	734	0	0	323	858	830	427	945	976
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	1.00	1.00	1.00	0.94	0.94	0.94
Uniform Delay (d), s/veh	17.8	0.0	0.0	18.1	0.0	0.0	25.3	0.5	0.5	24.2	7.0	7.0
Incr Delay (d2), s/veh	0.1	0.0	0.0	0.1	0.0	0.0	1.7	1.0	1.1	0.8	0.5	0.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.0	0.0	0.0	1.3	0.0	0.0	0.3	0.4	0.4	0.9	1.9	2.0
LnGrp Delay(d),s/veh	17.9	0.0	0.0	18.2	0.0	0.0	27.0	1.6	1.6	25.0	7.5	7.5
LnGrp LOS	B			B			C	A	A	C	A	A
Approach Vol, veh/h		80			105			579			508	
Approach Delay, s/veh		17.9			18.2			2.4			9.6	
Approach LOS		B			B			A			A	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	8.3	50.9		15.8	5.7	53.5		15.8				
Change Period (Y+Rc), s	4.0	4.5		4.0	4.0	4.5		4.0				
Max Green Setting (Gmax), s	13.0	26.5		23.0	11.0	28.5		23.0				
Max Q Clear Time (g_c+I1), s	3.8	2.5		4.1	2.6	5.6		4.8				
Green Ext Time (p_c), s	0.0	9.3		0.6	0.0	9.1		0.6				
<b>Intersection Summary</b>												
HCM 2010 Ctrl Delay			7.6									
HCM 2010 LOS			A									






















HCM 2010 Signalized Intersection Summary  
6: Sonoma Blvd & Magazine St

Vallejo Marine Terminal  
Year 2040 with Orcem Project

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	30	60	10	30	60	90	20	407	130	90	308	30
Number	3	8	18	7	4	14	1	6	16	5	2	12
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	0.98		0.95	0.97		0.97	1.00		0.96	1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1900	1900	1900	1891	1900	1900	1872	1900	1900	1866	1900
Adj Flow Rate, veh/h	32	65	3	32	65	29	22	438	112	97	331	26
Adj No. of Lanes	0	1	0	0	1	0	1	2	0	1	2	0
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Percent Heavy Veh, %	0	0	0	0	0	0	0	2	2	0	2	2
Cap, veh/h	192	348	14	156	283	107	75	1107	280	203	1556	122
Arrive On Green	0.27	0.27	0.27	0.27	0.27	0.27	0.04	0.40	0.40	0.22	0.93	0.93
Sat Flow, veh/h	386	1268	51	271	1029	389	1810	2788	706	1810	3330	260
Grp Volume(v), veh/h	100	0	0	126	0	0	22	278	272	97	175	182
Grp Sat Flow(s),veh/h/ln	1706	0	0	1688	0	0	1810	1778	1716	1810	1773	1818
Q Serve(g_s), s	0.0	0.0	0.0	0.0	0.0	0.0	0.7	6.2	6.3	2.6	0.4	0.5
Cycle Q Clear(g_c), s	2.3	0.0	0.0	3.0	0.0	0.0	0.7	6.2	6.3	2.6	0.4	0.5
Prop In Lane	0.32		0.03	0.25		0.23	1.00		0.41	1.00		0.14
Lane Grp Cap(c), veh/h	554	0	0	545	0	0	75	706	681	203	828	850
V/C Ratio(X)	0.18	0.00	0.00	0.23	0.00	0.00	0.29	0.39	0.40	0.48	0.21	0.21
Avail Cap(c_a), veh/h	932	0	0	920	0	0	359	706	681	424	828	850
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	15.4	0.0	0.0	15.7	0.0	0.0	25.8	11.9	12.0	20.1	1.0	1.0
Incr Delay (d2), s/veh	0.1	0.0	0.0	0.1	0.0	0.0	0.8	1.6	1.8	0.7	0.6	0.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.2	0.0	0.0	1.5	0.0	0.0	0.3	3.3	3.3	1.3	0.3	0.3
LnGrp Delay(d),s/veh	15.5	0.0	0.0	15.8	0.0	0.0	26.6	13.6	13.7	20.8	1.6	1.6
LnGrp LOS	B			B			C	B	B	C	A	A
Approach Vol, veh/h		100			126			572			454	
Approach Delay, s/veh		15.5			15.8			14.2			5.7	
Approach LOS		B			B			B			A	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	5.8	50.5		18.7	9.7	46.6		18.7				
Change Period (Y+Rc), s	3.5	5.0		3.5	3.5	5.0		3.5				
Max Green Setting (Gmax), s	11.0	24.0		28.0	13.0	22.0		28.0				
Max Q Clear Time (g_c+I1), s	2.7	2.5		5.0	4.6	8.3		4.3				
Green Ext Time (p_c), s	0.0	7.9		0.8	0.1	6.2		0.8				
<b>Intersection Summary</b>												
HCM 2010 Ctrl Delay			11.3									
HCM 2010 LOS			B									



















HCM 2010 Signalized Intersection Summary  
8: Sonoma Blvd & Maritime Academy Dr

Vallejo Marine Terminal  
Year 2040 with Orcem Project

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	120	20	20	20	50	130	20	367	50	30	248	50
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	0.99		0.97	0.99		0.97	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1900	1900	1900	1785	1900	1900	1863	1900	1810	1869	1900
Adj Flow Rate, veh/h	125	21	16	21	52	34	21	382	43	31	258	35
Adj No. of Lanes	0	1	0	0	1	1	1	2	0	1	2	0
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	0	0	0	5	5	0	0	2	2	5	2	2
Cap, veh/h	522	85	46	236	465	528	86	958	107	116	1001	134
Arrive On Green	0.34	0.34	0.34	0.34	0.34	0.34	0.05	0.30	0.30	0.07	0.32	0.32
Sat Flow, veh/h	988	254	136	290	1387	1574	1810	3210	359	1723	3148	422
Grp Volume(v), veh/h	162	0	0	73	0	34	21	210	215	31	144	149
Grp Sat Flow(s),veh/h/ln	1378	0	0	1676	0	1574	1810	1770	1799	1723	1775	1794
Q Serve(g_s), s	2.1	0.0	0.0	0.0	0.0	0.5	0.4	3.2	3.2	0.6	2.0	2.1
Cycle Q Clear(g_c), s	3.1	0.0	0.0	0.9	0.0	0.5	0.4	3.2	3.2	0.6	2.0	2.1
Prop In Lane	0.77		0.10	0.29		1.00	1.00		0.20	1.00		0.24
Lane Grp Cap(c), veh/h	653	0	0	701	0	528	86	528	537	116	565	571
V/C Ratio(X)	0.25	0.00	0.00	0.10	0.00	0.06	0.24	0.40	0.40	0.27	0.26	0.26
Avail Cap(c_a), veh/h	1436	0	0	1603	0	1409	1296	2113	2148	1235	2120	2142
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	8.4	0.0	0.0	7.7	0.0	7.6	15.4	9.4	9.4	14.8	8.5	8.5
Incr Delay (d2), s/veh	0.1	0.0	0.0	0.0	0.0	0.0	0.5	0.5	0.5	0.5	0.2	0.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.1	0.0	0.0	0.5	0.0	0.2	0.2	1.6	1.6	0.3	1.0	1.0
LnGrp Delay(d),s/veh	8.5	0.0	0.0	7.7	0.0	7.6	15.9	9.8	9.8	15.3	8.7	8.7
LnGrp LOS	A			A		A	B	A	A	B	A	A
Approach Vol, veh/h		162			107			446			324	
Approach Delay, s/veh		8.5			7.7			10.1			9.4	
Approach LOS		A			A			B			A	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	5.3	14.0		14.2	4.6	14.7		14.2				
Change Period (Y+Rc), s	3.0	4.0		3.0	3.0	4.0		3.0				
Max Green Setting (Gmax), s	24.0	40.0		30.0	24.0	40.0		30.0				
Max Q Clear Time (g_c+I1), s	2.6	5.2		5.1	2.4	4.1		2.9				
Green Ext Time (p_c), s	0.0	4.8		1.0	0.0	4.8		1.0				
<b>Intersection Summary</b>												
HCM 2010 Ctrl Delay			9.4									
HCM 2010 LOS			A									

























HCM 2010 Signalized Intersection Summary  
 16: Lemon St & Carlson St

Vallejo Marine Terminal  
 Year 2040 with Orcem Project

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	10	346	10	40	200	70	0	0	40	210	0	20
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	0.97		0.95	0.98		0.95	1.00		0.94	0.93		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1865	1900	1900	1759	1900	1900	1900	1900	1863	1869	1900
Adj Flow Rate, veh/h	11	372	9	43	215	52	0	0	13	232	0	0
Adj No. of Lanes	0	1	0	1	1	0	0	1	0	2	1	0
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Percent Heavy Veh, %	2	2	2	0	8	8	0	0	0	2	0	0
Cap, veh/h	130	795	19	534	604	146	0	0	438	1208	540	0
Arrive On Green	0.45	0.45	0.45	0.45	0.45	0.45	0.00	0.00	0.29	0.29	0.00	0.00
Sat Flow, veh/h	16	1784	42	993	1354	327	0	0	1516	2584	1869	0
Grp Volume(v), veh/h	392	0	0	43	0	267	0	0	13	232	0	0
Grp Sat Flow(s),veh/h/ln	1843	0	0	993	0	1681	0	0	1516	1292	1869	0
Q Serve(g_s), s	0.0	0.0	0.0	1.0	0.0	3.2	0.0	0.0	0.2	2.1	0.0	0.0
Cycle Q Clear(g_c), s	4.5	0.0	0.0	5.4	0.0	3.2	0.0	0.0	0.2	2.3	0.0	0.0
Prop In Lane	0.03		0.02	1.00		0.19	0.00		1.00	1.00		0.00
Lane Grp Cap(c), veh/h	944	0	0	534	0	749	0	0	438	1208	540	0
V/C Ratio(X)	0.42	0.00	0.00	0.08	0.00	0.36	0.00	0.00	0.03	0.19	0.00	0.00
Avail Cap(c_a), veh/h	2366	0	0	1311	0	2064	0	0	1510	3035	1861	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	1.00	0.00	0.00	1.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	5.9	0.0	0.0	7.8	0.0	5.5	0.0	0.0	7.7	8.5	0.0	0.0
Incr Delay (d2), s/veh	0.3	0.0	0.0	0.1	0.0	0.3	0.0	0.0	0.0	0.1	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.3	0.0	0.0	0.3	0.0	1.5	0.0	0.0	0.1	0.8	0.0	0.0
LnGrp Delay(d),s/veh	6.2	0.0	0.0	7.8	0.0	5.8	0.0	0.0	7.7	8.6	0.0	0.0
LnGrp LOS	A			A		A			A	A		
Approach Vol, veh/h		392			310			13			232	
Approach Delay, s/veh		6.2			6.1			7.7			8.6	
Approach LOS		A			A			A			A	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		17.4		12.7		17.4		12.7				
Change Period (Y+Rc), s		4.0		4.0		4.0		4.0				
Max Green Setting (Gmax), s		37.0		30.0		37.0		30.0				
Max Q Clear Time (g_c+I1), s		6.5		4.3		7.4		2.2				
Green Ext Time (p_c), s		4.8		0.9		4.8		1.0				
<b>Intersection Summary</b>												
HCM 2010 Ctrl Delay			6.7									
HCM 2010 LOS			A									
<b>Notes</b>												
User approved volume balancing among the lanes for turning movement.												

HCM 2010 Signalized Intersection Summary  
 17: Lemon St & Curtola Pkwy

Vallejo Marine Terminal  
 Year 2040 with Orcem Project

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	60	160	456	110	100	30	210	720	170	50	990	30
Number	3	8	18	7	4	14	1	6	16	5	2	12
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		0.92	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1759	1881	1881	1881	1863	1900	1759	1881	1900	1900	1846	1900
Adj Flow Rate, veh/h	62	208	194	113	103	8	216	742	0	52	1021	0
Adj No. of Lanes	1	1	1	1	1	1	1	2	0	1	2	0
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %	8	1	1	1	2	0	8	1	1	0	3	3
Cap, veh/h	78	328	274	145	389	310	254	1689	0	76	1274	0
Arrive On Green	0.05	0.17	0.17	0.08	0.21	0.21	0.15	0.47	0.00	0.04	0.36	0.00
Sat Flow, veh/h	1675	1881	1568	1792	1863	1483	1675	3668	0	1810	3600	0
Grp Volume(v), veh/h	62	208	194	113	103	8	216	742	0	52	1021	0
Grp Sat Flow(s),veh/h/ln	1675	1881	1568	1792	1863	1483	1675	1787	0	1810	1754	0
Q Serve(g_s), s	3.0	8.4	9.6	5.1	3.8	0.4	10.3	11.4	0.0	2.3	21.5	0.0
Cycle Q Clear(g_c), s	3.0	8.4	9.6	5.1	3.8	0.4	10.3	11.4	0.0	2.3	21.5	0.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.00	1.00		0.00
Lane Grp Cap(c), veh/h	78	328	274	145	389	310	254	1689	0	76	1274	0
V/C Ratio(X)	0.79	0.63	0.71	0.78	0.26	0.03	0.85	0.44	0.00	0.68	0.80	0.00
Avail Cap(c_a), veh/h	509	800	666	544	792	630	509	1689	0	549	1491	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	38.9	31.5	32.0	37.1	27.3	25.9	34.0	14.5	0.0	38.9	23.6	0.0
Incr Delay (d2), s/veh	6.6	2.1	3.5	3.4	0.5	0.0	3.1	0.3	0.0	3.9	2.9	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.5	4.6	4.4	2.6	2.0	0.1	5.0	5.6	0.0	1.3	10.9	0.0
LnGrp Delay(d),s/veh	45.4	33.6	35.5	40.5	27.7	26.0	37.1	14.7	0.0	42.8	26.5	0.0
LnGrp LOS	D	C	D	D	C	C	D	B		D	C	
Approach Vol, veh/h		464			224			958			1073	
Approach Delay, s/veh		36.0			34.1			19.8			27.3	
Approach LOS		D			C			B			C	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	16.5	35.9	7.8	22.1	7.5	44.9	10.7	19.3				
Change Period (Y+Rc), s	4.0	6.0	4.0	4.9	4.0	6.0	4.0	4.9				
Max Green Setting (Gmax), s	25.0	35.0	25.0	35.0	25.0	35.0	25.0	35.0				
Max Q Clear Time (g_c+I1), s	12.3	23.5	5.0	5.8	4.3	13.4	7.1	11.6				
Green Ext Time (p_c), s	0.2	6.4	0.1	2.9	0.0	15.3	0.1	2.8				
<b>Intersection Summary</b>												
HCM 2010 Ctrl Delay			26.7									
HCM 2010 LOS			C									
<b>Notes</b>												
User approved volume balancing among the lanes for turning movement.												

**Intersection**

Int Delay, s/veh 1.5

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR
Vol, veh/h	20	10	10	10	10	10	10	577	10
Conflicting Peds, #/hr	0	0	0	0	0	0	7	0	10
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-
Peak Hour Factor	97	97	97	97	97	97	97	97	97
Heavy Vehicles, %	15	0	0	0	0	0	0	2	0
Mvmt Flow	21	10	10	10	10	10	10	595	10

Major/Minor	Minor2			Minor1			Major1		
Conflicting Flow All	836	1139	262	888	1145	313	503	0	0
Stage 1	513	513	-	621	621	-	-	-	-
Stage 2	323	626	-	267	524	-	-	-	-
Critical Hdwy	7.8	6.5	6.9	7.5	6.5	6.9	4.1	-	-
Critical Hdwy Stg 1	6.8	5.5	-	6.5	5.5	-	-	-	-
Critical Hdwy Stg 2	6.8	5.5	-	6.5	5.5	-	-	-	-
Follow-up Hdwy	3.65	4	3.3	3.5	4	3.3	2.2	-	-
Pot Cap-1 Maneuver	239	203	743	241	201	689	1072	-	-
Stage 1	480	539	-	446	482	-	-	-	-
Stage 2	628	480	-	721	533	-	-	-	-
Platoon blocked, %									
Mov Cap-1 Maneuver	219	197	737	221	195	683	1063	-	-
Mov Cap-2 Maneuver	219	197	-	221	195	-	-	-	-
Stage 1	473	531	-	440	475	-	-	-	-
Stage 2	592	473	-	682	526	-	-	-	-

Approach	EB	WB	NB
HCM Control Delay, s	21.7	20.1	0.2
HCM LOS	C	C	

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1063	-	-	257	270	975	-	-
HCM Lane V/C Ratio	0.01	-	-	0.16	0.115	0.011	-	-
HCM Control Delay (s)	8.4	0.1	-	21.7	20.1	8.7	0.1	-
HCM Lane LOS	A	A	-	C	C	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0.6	0.4	0	-	-

**Intersection**

Int Delay, s/veh

Movement	SBL	SBT	SBR
Vol, veh/h	10	468	20
Conflicting Peds, #/hr	10	0	7
Sign Control	Free	Free	Free
RT Channelized	-	-	None
Storage Length	-	-	-
Veh in Median Storage, #	-	0	-
Grade, %	-	0	-
Peak Hour Factor	97	97	97
Heavy Vehicles, %	0	2	0
Mvmt Flow	10	482	21

**Major/Minor Major2**

Conflicting Flow All	605	0	0
Stage 1	-	-	-
Stage 2	-	-	-
Critical Hdwy	4.1	-	-
Critical Hdwy Stg 1	-	-	-
Critical Hdwy Stg 2	-	-	-
Follow-up Hdwy	2.2	-	-
Pot Cap-1 Maneuver	983	-	-
Stage 1	-	-	-
Stage 2	-	-	-
Platoon blocked, %		-	-
Mov Cap-1 Maneuver	975	-	-
Mov Cap-2 Maneuver	-	-	-
Stage 1	-	-	-
Stage 2	-	-	-

**Approach SB**

HCM Control Delay, s	0.3
HCM LOS	

**Minor Lane/Major Mvmt**

**Intersection**

Int Delay, s/veh 2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR
Vol, veh/h	40	10	10	10	0	20	20	517	10
Conflicting Peds, #/hr	0	0	6	6	0	0	6	0	7
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-
Peak Hour Factor	97	97	97	97	97	97	97	97	97
Heavy Vehicles, %	3	0	0	0	0	0	0	2	0
Mvmt Flow	41	10	10	10	0	21	21	533	10

Major/Minor	Minor2			Minor1			Major1		
Conflicting Flow All	818	1095	249	858	1104	285	478	0	0
Stage 1	504	504	-	585	585	-	-	-	-
Stage 2	314	591	-	273	519	-	-	-	-
Critical Hdwy	7.56	6.5	6.9	7.5	6.5	6.9	4.1	-	-
Critical Hdwy Stg 1	6.56	5.5	-	6.5	5.5	-	-	-	-
Critical Hdwy Stg 2	6.56	5.5	-	6.5	5.5	-	-	-	-
Follow-up Hdwy	3.53	4	3.3	3.5	4	3.3	2.2	-	-
Pot Cap-1 Maneuver	266	215	757	254	213	718	1095	-	-
Stage 1	516	544	-	469	501	-	-	-	-
Stage 2	669	498	-	715	536	-	-	-	-
Platoon blocked, %									
Mov Cap-1 Maneuver	245	201	749	228	199	710	1089	-	-
Mov Cap-2 Maneuver	245	201	-	228	199	-	-	-	-
Stage 1	499	526	-	454	485	-	-	-	-
Stage 2	628	482	-	668	518	-	-	-	-

Approach	EB	WB	NB
HCM Control Delay, s	22.7	14.3	0.4
HCM LOS	C	B	

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1089	-	-	265	417	1025	-	-
HCM Lane V/C Ratio	0.019	-	-	0.233	0.074	0.02	-	-
HCM Control Delay (s)	8.4	0.1	-	22.7	14.3	8.6	0.1	-
HCM Lane LOS	A	A	-	C	B	A	A	-
HCM 95th %tile Q(veh)	0.1	-	-	0.9	0.2	0.1	-	-

**Intersection**

Int Delay, s/veh

Movement	SBL	SBT	SBR
Vol, veh/h	20	428	30
Conflicting Peds, #/hr	7	0	6
Sign Control	Free	Free	Free
RT Channelized	-	-	None
Storage Length	-	-	-
Veh in Median Storage, #	-	0	-
Grade, %	-	0	-
Peak Hour Factor	97	97	97
Heavy Vehicles, %	0	2	0
Mvmt Flow	21	441	31

**Major/Minor**

	Major2		
Conflicting Flow All	549	0	0
Stage 1	-	-	-
Stage 2	-	-	-
Critical Hdwy	4.1	-	-
Critical Hdwy Stg 1	-	-	-
Critical Hdwy Stg 2	-	-	-
Follow-up Hdwy	2.2	-	-
Pot Cap-1 Maneuver	1031	-	-
Stage 1	-	-	-
Stage 2	-	-	-
Platoon blocked, %		-	-
Mov Cap-1 Maneuver	1025	-	-
Mov Cap-2 Maneuver	-	-	-
Stage 1	-	-	-
Stage 2	-	-	-

**Approach**

	SB
HCM Control Delay, s	0.4
HCM LOS	

**Minor Lane/Major Mvmt**



Intersection						
Int Delay, s/veh	2.2					
<hr/>						
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Vol, veh/h	50	30	110	527	298	40
Conflicting Peds, #/hr	0	0	7	0	0	7
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	60	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	0	0	0	2	2	0
Mvmt Flow	53	32	116	555	314	42
<hr/>						
Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	844	185	356	0	-	0
Stage 1	335	-	-	-	-	-
Stage 2	509	-	-	-	-	-
Critical Hdwy	6.8	6.9	4.1	-	-	-
Critical Hdwy Stg 1	5.8	-	-	-	-	-
Critical Hdwy Stg 2	5.8	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	2.2	-	-	-
Pot Cap-1 Maneuver	306	832	1214	-	-	-
Stage 1	702	-	-	-	-	-
Stage 2	574	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	277	827	1207	-	-	-
Mov Cap-2 Maneuver	277	-	-	-	-	-
Stage 1	702	-	-	-	-	-
Stage 2	519	-	-	-	-	-
<hr/>						
Approach	EB		NB		SB	
HCM Control Delay, s	17.6		1.4		0	
HCM LOS	C					
<hr/>						
Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR	
Capacity (veh/h)	1207	-	369	-	-	
HCM Lane V/C Ratio	0.096	-	0.228	-	-	
HCM Control Delay (s)	8.3	-	17.6	-	-	
HCM Lane LOS	A	-	C	-	-	
HCM 95th %tile Q(veh)	0.3	-	0.9	-	-	

**Intersection**

Int Delay, s/veh 1.9

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR
Vol, veh/h	0	55	0	10	27	20	0	0	10
Conflicting Peds, #/hr	6	0	0	0	0	6	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-
Peak Hour Factor	80	80	80	80	80	80	80	80	80
Heavy Vehicles, %	0	8	0	0	15	0	0	0	0
Mvmt Flow	0	69	0	12	34	25	0	0	12

**Major/Minor**

	Major1	Major2	Minor1
Conflicting Flow All	59	0	0
Stage 1	-	-	-
Stage 2	-	-	-
Critical Hdwy	4.1	-	-
Critical Hdwy Stg 1	-	-	-
Critical Hdwy Stg 2	-	-	-
Follow-up Hdwy	2.2	-	-
Pot Cap-1 Maneuver	1558	-	-
Stage 1	-	-	-
Stage 2	-	-	-
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	1550	-	-
Mov Cap-2 Maneuver	-	-	-
Stage 1	-	-	-
Stage 2	-	-	-

**Approach**

	EB	WB	NB
HCM Control Delay, s	0	1.3	8.7
HCM LOS			A

**Minor Lane/Major Mvmt**

	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	987	1550	-	-	1537	-	-	807
HCM Lane V/C Ratio	0.013	-	-	-	0.008	-	-	0.015
HCM Control Delay (s)	8.7	0	-	-	7.4	0	-	9.5
HCM Lane LOS	A	A	-	-	A	A	-	A
HCM 95th %tile Q(veh)	0	0	-	-	0	-	-	0

**Intersection**

Int Delay, s/veh

Movement	SBL	SBT	SBR
Vol, veh/h	10	0	0
Conflicting Peds, #/hr	0	0	0
Sign Control	Stop	Stop	Stop
RT Channelized	-	-	None
Storage Length	-	-	-
Veh in Median Storage, #	-	0	-
Grade, %	-	0	-
Peak Hour Factor	80	80	80
Heavy Vehicles, %	0	0	0
Mvmt Flow	12	0	0

**Major/Minor**                      **Minor2**

Conflicting Flow All	146	140	52
Stage 1	71	71	-
Stage 2	75	69	-
Critical Hdwy	7.1	6.5	6.2
Critical Hdwy Stg 1	6.1	5.5	-
Critical Hdwy Stg 2	6.1	5.5	-
Follow-up Hdwy	3.5	4	3.3
Pot Cap-1 Maneuver	827	755	1021
Stage 1	944	840	-
Stage 2	939	841	-
Platoon blocked, %			
Mov Cap-1 Maneuver	807	748	1016
Mov Cap-2 Maneuver	807	748	-
Stage 1	944	832	-
Stage 2	922	841	-

**Approach**                      **SB**

HCM Control Delay, s	9.5
HCM LOS	A

**Minor Lane/Major Mvmt**

Intersection									
Int Delay, s/veh	2.6								

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR
Vol, veh/h	0	65	0	10	47	10	10	0	20
Conflicting Peds, #/hr	0	0	6	6	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-
Peak Hour Factor	80	80	80	80	80	80	80	80	80
Heavy Vehicles, %	0	7	0	0	9	0	0	0	0
Mvmt Flow	0	81	0	12	59	12	12	0	25

Major/Minor	Major1			Major2			Minor1		
Conflicting Flow All	71	0	0	81	0	0	177	177	87
Stage 1	-	-	-	-	-	-	81	81	-
Stage 2	-	-	-	-	-	-	96	96	-
Critical Hdwy	4.1	-	-	4.1	-	-	7.1	6.5	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-
Follow-up Hdwy	2.2	-	-	2.2	-	-	3.5	4	3.3
Pot Cap-1 Maneuver	1542	-	-	1529	-	-	790	720	977
Stage 1	-	-	-	-	-	-	932	832	-
Stage 2	-	-	-	-	-	-	916	819	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1534	-	-	1521	-	-	770	714	972
Mov Cap-2 Maneuver	-	-	-	-	-	-	770	714	-
Stage 1	-	-	-	-	-	-	932	832	-
Stage 2	-	-	-	-	-	-	889	812	-

Approach	EB	WB	NB
HCM Control Delay, s	0	1.1	9.2
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	894	1534	-	-	1521	-	-	719
HCM Lane V/C Ratio	0.042	-	-	-	0.008	-	-	0.017
HCM Control Delay (s)	9.2	0	-	-	7.4	0	-	10.1
HCM Lane LOS	A	A	-	-	A	A	-	B
HCM 95th %tile Q(veh)	0.1	0	-	-	0	-	-	0.1

**Intersection**

Int Delay, s/veh

Movement	SBL	SBT	SBR
Vol, veh/h	0	10	0
Conflicting Peds, #/hr	0	0	0
Sign Control	Stop	Stop	Stop
RT Channelized	-	-	None
Storage Length	-	-	-
Veh in Median Storage, #	-	0	-
Grade, %	-	0	-
Peak Hour Factor	80	80	80
Heavy Vehicles, %	0	0	0
Mvmt Flow	0	12	0

**Major/Minor**

**Minor2**

Conflicting Flow All	184	171	71
Stage 1	90	90	-
Stage 2	94	81	-
Critical Hdwy	7.1	6.5	6.2
Critical Hdwy Stg 1	6.1	5.5	-
Critical Hdwy Stg 2	6.1	5.5	-
Follow-up Hdwy	3.5	4	3.3
Pot Cap-1 Maneuver	781	726	997
Stage 1	922	824	-
Stage 2	918	832	-
Platoon blocked, %			
Mov Cap-1 Maneuver	752	719	992
Mov Cap-2 Maneuver	752	719	-
Stage 1	922	817	-
Stage 2	890	832	-

**Approach**

SB

HCM Control Delay, s	10.1
HCM LOS	B

**Minor Lane/Major Mvmt**

**Intersection**

Int Delay, s/veh 2.2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR
Vol, veh/h	10	216	10	20	110	10	10	10	10
Conflicting Peds, #/hr	10	0	9	9	0	10	8	0	9
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-
Peak Hour Factor	88	88	88	88	88	88	88	88	88
Heavy Vehicles, %	0	2	0	0	3	14	0	0	0
Mvmt Flow	11	245	11	23	125	11	11	11	11

Major/Minor	Major1	Major2	Minor1						
Conflicting Flow All	145	0	0	266	0	0	480	474	270
Stage 1	-	-	-	-	-	-	283	283	-
Stage 2	-	-	-	-	-	-	197	191	-
Critical Hdwy	4.1	-	-	4.1	-	-	7.1	6.5	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-
Follow-up Hdwy	2.2	-	-	2.2	-	-	3.5	4	3.3
Pot Cap-1 Maneuver	1450	-	-	1310	-	-	499	492	774
Stage 1	-	-	-	-	-	-	728	681	-
Stage 2	-	-	-	-	-	-	809	746	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1438	-	-	1299	-	-	466	471	762
Mov Cap-2 Maneuver	-	-	-	-	-	-	466	471	-
Stage 1	-	-	-	-	-	-	716	670	-
Stage 2	-	-	-	-	-	-	765	726	-

Approach	EB	WB	NB
HCM Control Delay, s	0.3	1.1	12.2
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	537	1438	-	-	1299	-	-	556
HCM Lane V/C Ratio	0.063	0.008	-	-	0.017	-	-	0.061
HCM Control Delay (s)	12.2	7.5	0	-	7.8	0	-	11.9
HCM Lane LOS	B	A	A	-	A	A	-	B
HCM 95th %tile Q(veh)	0.2	0	-	-	0.1	-	-	0.2

**Intersection**

Int Delay, s/veh

Movement	SBL	SBT	SBR
Vol, veh/h	10	10	10
Conflicting Peds, #/hr	9	0	8
Sign Control	Stop	Stop	Stop
RT Channelized	-	-	None
Storage Length	-	-	-
Veh in Median Storage, #	-	0	-
Grade, %	-	0	-
Peak Hour Factor	88	88	88
Heavy Vehicles, %	0	0	0
Mvmt Flow	11	11	11

**Major/Minor**

	Minor2		
Conflicting Flow All	479	474	150
Stage 1	185	185	-
Stage 2	294	289	-
Critical Hdwy	7.1	6.5	6.2
Critical Hdwy Stg 1	6.1	5.5	-
Critical Hdwy Stg 2	6.1	5.5	-
Follow-up Hdwy	3.5	4	3.3
Pot Cap-1 Maneuver	500	492	902
Stage 1	821	751	-
Stage 2	719	677	-
Platoon blocked, %			
Mov Cap-1 Maneuver	466	471	888
Mov Cap-2 Maneuver	466	471	-
Stage 1	808	731	-
Stage 2	684	666	-

**Approach**

	SB
HCM Control Delay, s	11.9
HCM LOS	B

**Minor Lane/Major Mvmt**

**Intersection**

Int Delay, s/veh 5.8

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR
Vol, veh/h	10	206	10	30	120	40	10	60	20
Conflicting Peds, #/hr	8	0	0	0	0	8	6	0	9
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-
Peak Hour Factor	94	94	94	94	94	94	94	94	94
Heavy Vehicles, %	0	2	0	5	4	6	0	0	0
Mvmt Flow	11	219	11	32	128	43	11	64	21

Major/Minor	Major1	Major2	Minor1						
Conflicting Flow All	179	0	0	239	0	0	514	498	241
Stage 1	-	-	-	-	-	-	255	255	-
Stage 2	-	-	-	-	-	-	259	243	-
Critical Hdwy	4.1	-	-	4.15	-	-	7.1	6.5	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-
Follow-up Hdwy	2.2	-	-	2.245	-	-	3.5	4	3.3
Pot Cap-1 Maneuver	1409	-	-	1310	-	-	474	477	803
Stage 1	-	-	-	-	-	-	754	700	-
Stage 2	-	-	-	-	-	-	750	708	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1400	-	-	1301	-	-	405	453	792
Mov Cap-2 Maneuver	-	-	-	-	-	-	405	453	-
Stage 1	-	-	-	-	-	-	742	688	-
Stage 2	-	-	-	-	-	-	653	684	-

Approach	EB	WB	NB
HCM Control Delay, s	0.3	1.2	14.1
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	493	1400	-	-	1301	-	-	456
HCM Lane V/C Ratio	0.194	0.008	-	-	0.025	-	-	0.303
HCM Control Delay (s)	14.1	7.6	0	-	7.8	0	-	16.3
HCM Lane LOS	B	A	A	-	A	A	-	C
HCM 95th %tile Q(veh)	0.7	0	-	-	0.1	-	-	1.3



**Intersection**

Int Delay, s/veh

Movement	SBL	SBT	SBR
Vol, veh/h	60	50	20
Conflicting Peds, #/hr	9	0	6
Sign Control	Stop	Stop	Stop
RT Channelized	-	-	None
Storage Length	-	-	-
Veh in Median Storage, #	-	0	-
Grade, %	-	0	-
Peak Hour Factor	94	94	94
Heavy Vehicles, %	2	0	0
Mvmt Flow	64	53	21

**Major/Minor**

	Minor2		
Conflicting Flow All	519	482	166
Stage 1	222	222	-
Stage 2	297	260	-
Critical Hdwy	7.12	6.5	6.2
Critical Hdwy Stg 1	6.12	5.5	-
Critical Hdwy Stg 2	6.12	5.5	-
Follow-up Hdwy	3.518	4	3.3
Pot Cap-1 Maneuver	467	487	884
Stage 1	780	723	-
Stage 2	712	697	-
Platoon blocked, %			
Mov Cap-1 Maneuver	389	463	872
Mov Cap-2 Maneuver	389	463	-
Stage 1	767	698	-
Stage 2	619	686	-

**Approach**

	SB
HCM Control Delay, s	16.3
HCM LOS	C

**Minor Lane/Major Mvmt**

Intersection	
Int Delay, s/veh	1.4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR
Vol, veh/h	10	266	10	20	160	0	10	0	20
Conflicting Peds, #/hr	6	0	6	6	0	6	9	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	0	2	0	0	5	0	0	0	0
Mvmt Flow	11	296	11	22	178	0	11	0	22

Major/Minor	Major1	Major2	Minor1						
Conflicting Flow All	187	0	0	316	0	0	569	563	316
Stage 1	-	-	-	-	-	-	332	332	-
Stage 2	-	-	-	-	-	-	237	231	-
Critical Hdwy	4.1	-	-	4.1	-	-	7.1	6.5	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-
Follow-up Hdwy	2.2	-	-	2.2	-	-	3.5	4	3.3
Pot Cap-1 Maneuver	1399	-	-	1256	-	-	436	438	729
Stage 1	-	-	-	-	-	-	686	648	-
Stage 2	-	-	-	-	-	-	771	717	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1392	-	-	1250	-	-	415	419	720
Mov Cap-2 Maneuver	-	-	-	-	-	-	415	419	-
Stage 1	-	-	-	-	-	-	674	637	-
Stage 2	-	-	-	-	-	-	742	697	-

Approach	EB	WB	NB
HCM Control Delay, s	0.3	0.9	11.6
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	578	1392	-	-	1250	-	-	843
HCM Lane V/C Ratio	0.058	0.008	-	-	0.018	-	-	0.013
HCM Control Delay (s)	11.6	7.6	0	-	7.9	0	-	9.3
HCM Lane LOS	B	A	A	-	A	A	-	A
HCM 95th %tile Q(veh)	0.2	0	-	-	0.1	-	-	0

**Intersection**

Int Delay, s/veh

Movement	SBL	SBT	SBR
Vol, veh/h	0	0	10
Conflicting Peds, #/hr	0	0	9
Sign Control	Stop	Stop	Stop
RT Channelized	-	-	None
Storage Length	-	-	-
Veh in Median Storage, #	-	0	-
Grade, %	-	0	-
Peak Hour Factor	90	90	90
Heavy Vehicles, %	0	0	0
Mvmt Flow	0	0	11

**Major/Minor**

**Minor2**

Conflicting Flow All	574	569	193
Stage 1	231	231	-
Stage 2	343	338	-
Critical Hdwy	7.1	6.5	6.2
Critical Hdwy Stg 1	6.1	5.5	-
Critical Hdwy Stg 2	6.1	5.5	-
Follow-up Hdwy	3.5	4	3.3
Pot Cap-1 Maneuver	433	435	854
Stage 1	776	717	-
Stage 2	676	644	-
Platoon blocked, %			
Mov Cap-1 Maneuver	405	416	843
Mov Cap-2 Maneuver	405	416	-
Stage 1	762	697	-
Stage 2	645	633	-

**Approach**

SB

HCM Control Delay, s	9.3
HCM LOS	A

**Minor Lane/Major Mvmt**

**Intersection**

Int Delay, s/veh 0.5

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR
Vol, veh/h	0	286	10	0	180	10	0	0	0
Conflicting Peds, #/hr	6	0	7	7	0	6	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-
Peak Hour Factor	87	87	87	87	87	87	87	87	87
Heavy Vehicles, %	0	2	0	0	5	0	0	0	0
Mvmt Flow	0	329	11	0	207	11	0	0	0

Major/Minor	Major1	Major2	Minor1						
Conflicting Flow All	218	0	0	340	0	0	552	552	341
Stage 1	-	-	-	-	-	-	334	334	-
Stage 2	-	-	-	-	-	-	218	218	-
Critical Hdwy	4.1	-	-	4.1	-	-	7.1	6.5	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-
Follow-up Hdwy	2.2	-	-	2.2	-	-	3.5	4	3.3
Pot Cap-1 Maneuver	1364	-	-	1230	-	-	447	444	706
Stage 1	-	-	-	-	-	-	684	647	-
Stage 2	-	-	-	-	-	-	789	726	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1356	-	-	1223	-	-	438	444	702
Mov Cap-2 Maneuver	-	-	-	-	-	-	438	444	-
Stage 1	-	-	-	-	-	-	684	647	-
Stage 2	-	-	-	-	-	-	773	726	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0	0
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	-	1356	-	-	1223	-	-	579
HCM Lane V/C Ratio	-	-	-	-	-	-	-	0.04
HCM Control Delay (s)	0	0	-	-	0	-	-	11.5
HCM Lane LOS	A	A	-	-	A	-	-	B
HCM 95th %tile Q(veh)	-	0	-	-	0	-	-	0.1

**Intersection**

Int Delay, s/veh

Movement	SBL	SBT	SBR
Vol, veh/h	10	0	10
Conflicting Peds, #/hr	0	0	0
Sign Control	Stop	Stop	Stop
RT Channelized	-	-	None
Storage Length	-	-	-
Veh in Median Storage, #	-	0	-
Grade, %	-	0	-
Peak Hour Factor	87	87	87
Heavy Vehicles, %	0	0	0
Mvmt Flow	11	0	11

**Major/Minor**

	Minor2		
Conflicting Flow All	547	553	220
Stage 1	213	213	-
Stage 2	334	340	-
Critical Hdwy	7.1	6.5	6.2
Critical Hdwy Stg 1	6.1	5.5	-
Critical Hdwy Stg 2	6.1	5.5	-
Follow-up Hdwy	3.5	4	3.3
Pot Cap-1 Maneuver	451	444	825
Stage 1	794	730	-
Stage 2	684	643	-
Platoon blocked, %			
Mov Cap-1 Maneuver	448	444	820
Mov Cap-2 Maneuver	448	444	-
Stage 1	794	730	-
Stage 2	680	643	-

**Approach**

	SB
HCM Control Delay, s	11.5
HCM LOS	B

**Minor Lane/Major Mvmt**

**Intersection**

Int Delay, s/veh 1.3

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Vol, veh/h	296	10	20	190	10	40
Conflicting Peds, #/hr	0	10	10	0	0	7
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	84	84	84	84	84	84
Heavy Vehicles, %	1	17	36	5	0	0
Mvmt Flow	352	12	24	226	12	48

Major/Minor	Major1	Major2	Minor1
Conflicting Flow All	0	371	639
Stage 1	-	-	365
Stage 2	-	-	274
Critical Hdwy	-	4.46	6.4
Critical Hdwy Stg 1	-	-	5.4
Critical Hdwy Stg 2	-	-	5.4
Follow-up Hdwy	-	2.524	3.5
Pot Cap-1 Maneuver	-	1023	443
Stage 1	-	-	707
Stage 2	-	-	777
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	-	1014	425
Mov Cap-2 Maneuver	-	-	425
Stage 1	-	-	703
Stage 2	-	-	750

Approach	EB	WB	NB
HCM Control Delay, s	0	0.8	11.7
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	598	-	-	1014	-
HCM Lane V/C Ratio	0.1	-	-	0.023	-
HCM Control Delay (s)	11.7	-	-	8.6	0
HCM Lane LOS	B	-	-	A	A
HCM 95th %tile Q(veh)	0.3	-	-	0.1	-

**APPENDIX L.4.8 —CUMULATIVE PLUS COMBINED PROJECTS**



# HCM Signalized Intersection Capacity Analysis

## 1: Sonoma Blvd & Curtola Pkwy

Vallejo Marine Terminal  
Year 2040 AM with VMT and Orcem Projects

	→	↘	↙	←	↖	↗	↑	↘	↙	↓	↖	↗
Movement	EBT	EBR	EBR2	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	SBR2
Lane Configurations	↑↑	↘		↑↑	↗	↘	↑↑			↑↑		
Volume (vph)	310	130	10	510	210	240	222	10	180	183	10	20
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	4.5		4.5	4.5	4.5	4.5			4.5		
Lane Util. Factor	0.91	0.91		0.95	1.00	1.00	0.95			0.95		
Frbp, ped/bikes	1.00	1.00		1.00	0.98	1.00	1.00			1.00		
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00			1.00		
Frt	0.99	0.85		1.00	0.85	1.00	0.99			0.99		
Flt Protected	1.00	1.00		1.00	1.00	0.95	1.00			0.98		
Satd. Flow (prot)	3336	1418		3539	1587	1752	3486			3372		
Flt Permitted	1.00	1.00		1.00	1.00	0.95	1.00			0.98		
Satd. Flow (perm)	3336	1418		3539	1587	1752	3486			3372		
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.92
Adj. Flow (vph)	333	140	11	548	226	258	239	11	194	197	11	22
RTOR Reduction (vph)	0	51	0	0	163	0	2	0	0	3	0	0
Lane Group Flow (vph)	347	86	0	548	63	258	248	0	0	421	0	0
Confl. Peds. (#/hr)						7		7	7		7	
Confl. Bikes (#/hr)					7							
Heavy Vehicles (%)	3%	4%	0%	2%	0%	3%	2%	20%	2%	4%	0%	8%
Turn Type	NA	Perm		NA	Perm	Split	NA		Split	NA		
Protected Phases	2			2		3	3		4	4		
Permitted Phases		2			2							
Actuated Green, G (s)	22.8	22.8		22.8	22.8	18.6	18.6			17.4		
Effective Green, g (s)	22.8	22.8		22.8	22.8	18.6	18.6			17.4		
Actuated g/C Ratio	0.28	0.28		0.28	0.28	0.23	0.23			0.21		
Clearance Time (s)	4.5	4.5		4.5	4.5	4.5	4.5			4.5		
Vehicle Extension (s)	2.0	2.0		2.0	2.0	2.0	2.0			2.0		
Lane Grp Cap (vph)	936	398		993	445	401	798			722		
v/s Ratio Prot	0.10			c0.15		c0.15	0.07			c0.12		
v/s Ratio Perm		0.06			0.04							
v/c Ratio	0.37	0.22		0.55	0.14	0.64	0.31			0.58		
Uniform Delay, d1	23.4	22.4		24.9	21.9	28.3	26.0			28.6		
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00			1.00		
Incremental Delay, d2	0.1	0.1		0.4	0.1	2.6	0.1			0.8		
Delay (s)	23.5	22.5		25.2	21.9	30.9	26.1			29.4		
Level of Service	C	C		C	C	C	C			C		
Approach Delay (s)	23.2			24.3			28.5			29.4		
Approach LOS	C			C			C			C		
<b>Intersection Summary</b>												
HCM 2000 Control Delay			26.2			HCM 2000 Level of Service				C		
HCM 2000 Volume to Capacity ratio			0.54									
Actuated Cycle Length (s)			81.2			Sum of lost time (s)				17.0		
Intersection Capacity Utilization			65.7%			ICU Level of Service				C		
Analysis Period (min)			15									
c Critical Lane Group												



HCM Signalized Intersection Capacity Analysis  
 1: Sonoma Blvd & Curtola Pkwy

Vallejo Marine Terminal  
 Year 2040 AM with VMT and Orcem Projects























Movement	NEL2	NEL	NER2
Lane Configurations			
Volume (vph)	10	10	10
Ideal Flow (vphpl)	1900	1900	1900
Total Lost time (s)		3.5	
Lane Util. Factor		1.00	
Frbp, ped/bikes		1.00	
Flpb, ped/bikes		1.00	
Frt		0.95	
Flt Protected		0.97	
Satd. Flow (prot)		1756	
Flt Permitted		0.97	
Satd. Flow (perm)		1756	
Peak-hour factor, PHF	0.92	0.92	0.92
Adj. Flow (vph)	11	11	11
RTOR Reduction (vph)	0	31	0
Lane Group Flow (vph)	0	2	0
Confl. Peds. (#/hr)			
Confl. Bikes (#/hr)			
Heavy Vehicles (%)	0%	0%	0%
Turn Type	Prot	Prot	
Protected Phases	1	1	
Permitted Phases			
Actuated Green, G (s)		5.4	
Effective Green, g (s)		5.4	
Actuated g/C Ratio		0.07	
Clearance Time (s)		3.5	
Vehicle Extension (s)		2.0	
Lane Grp Cap (vph)		116	
v/s Ratio Prot		c0.00	
v/s Ratio Perm			
v/c Ratio		0.02	
Uniform Delay, d1		35.4	
Progression Factor		1.00	
Incremental Delay, d2		0.0	
Delay (s)		35.4	
Level of Service		D	
Approach Delay (s)		35.4	
Approach LOS		D	
<b>Intersection Summary</b>			

# HCM 2010 Signalized Intersection Summary

## 2: Solano Blvd & Sonoma Blvd



















Vallejo Marine Terminal  
Year 2040 AM with VMT and Orcem Projects

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	10	10	20	30	20	20	20	442	60	20	283	20
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		1.00	1.00		0.98	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1583	1536	1900	1696	1836	1900	1900	1863	1900	1610	1841	1900
Adj Flow Rate, veh/h	11	11	15	33	22	-30	22	480	60	22	308	22
Adj No. of Lanes	1	1	0	1	2	0	1	2	0	1	2	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	20	13	13	12	0	0	0	2	2	18	3	3
Cap, veh/h	30	41	56	82	176	360	85	1774	221	72	1857	132
Arrive On Green	0.02	0.07	0.07	0.05	0.10	0.00	0.05	0.56	0.56	0.05	0.56	0.56
Sat Flow, veh/h	1508	586	798	1616	3580	0	1810	3161	393	1533	3308	235
Grp Volume(v), veh/h	11	0	26	33	-8	-30	22	268	272	22	162	168
Grp Sat Flow(s),veh/h/ln	1508	0	1384	1616	1744	1560	1810	1770	1785	1533	1749	1794
Q Serve(g_s), s	0.4	0.0	1.0	1.1	0.0	0.0	0.6	4.2	4.2	0.7	2.4	2.4
Cycle Q Clear(g_c), s	0.4	0.0	1.0	1.1	0.0	0.0	0.6	4.2	4.2	0.7	2.4	2.4
Prop In Lane	1.00		0.58	1.00		0.00	1.00		0.22	1.00		0.13
Lane Grp Cap(c), veh/h	30	0	97	82	176	0	85	993	1001	72	981	1007
V/C Ratio(X)	0.37	0.00	0.27	0.40	-0.05	0.00	0.26	0.27	0.27	0.31	0.17	0.17
Avail Cap(c_a), veh/h	423	0	621	529	783	0	643	993	1001	516	981	1007
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	25.9	0.0	23.6	24.6	0.0	0.0	24.6	6.1	6.1	24.6	5.7	5.7
Incr Delay (d2), s/veh	2.8	0.0	0.5	1.2	0.0	0.0	0.6	0.7	0.7	0.9	0.4	0.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.2	0.0	0.4	0.5	0.0	0.0	0.3	2.2	2.2	0.3	1.2	1.3
LnGrp Delay(d),s/veh	28.7	0.0	24.1	25.8	0.0	0.0	25.2	6.7	6.7	25.5	6.0	6.0
LnGrp LOS	C		C	C			C	A	A	C	A	A
Approach Vol, veh/h		37			-5			562			352	
Approach Delay, s/veh		25.5			-170.1			7.5			7.3	
Approach LOS		C			A			A			A	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	5.5	34.5	5.7	7.7	5.5	34.5	4.1	9.4				
Change Period (Y+Rc), s	3.0	4.5	3.0	4.0	3.0	4.5	3.0	4.0				
Max Green Setting (Gmax), s	18.0	30.0	17.5	24.0	19.0	30.0	15.0	24.0				
Max Q Clear Time (g_c+I1), s	2.7	6.2	3.1	3.0	2.6	4.4	2.4	0.0				
Green Ext Time (p_c), s	0.0	3.5	0.0	0.0	0.0	3.6	0.0	0.0				
<b>Intersection Summary</b>												
HCM 2010 Ctrl Delay			9.0									
HCM 2010 LOS			A									
<b>Notes</b>												
User approved pedestrian interval to be less than phase max green.												

# HCM 2010 Signalized Intersection Summary



















## 3: Sonoma Blvd & Lemon St

Vallejo Marine Terminal  
Year 2040 AM with VMT and Orcem Projects

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	22	46	28	60	57	40	36	430	70	30	300	23
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	0.99		0.99	0.99		0.99	1.00		0.97	1.00		0.96
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1797	1900	1900	1786	1900	1583	1845	1900	1727	1800	1900
Adj Flow Rate, veh/h	24	51	27	66	63	14	40	473	51	33	330	24
Adj No. of Lanes	0	1	0	0	1	0	1	2	0	1	2	0
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Percent Heavy Veh, %	7	7	7	6	6	6	20	3	3	10	6	6
Cap, veh/h	121	190	83	200	164	29	88	1683	181	83	1680	121
Arrive On Green	0.19	0.19	0.19	0.19	0.19	0.19	0.12	1.00	1.00	0.05	0.52	0.52
Sat Flow, veh/h	204	992	431	540	853	151	1508	3182	342	1645	3225	233
Grp Volume(v), veh/h	102	0	0	143	0	0	40	259	265	33	174	180
Grp Sat Flow(s),veh/h/ln	1627	0	0	1544	0	0	1508	1752	1771	1645	1710	1748
Q Serve(g_s), s	0.0	0.0	0.0	1.4	0.0	0.0	1.4	0.0	0.0	1.1	3.0	3.0
Cycle Q Clear(g_c), s	2.8	0.0	0.0	4.2	0.0	0.0	1.4	0.0	0.0	1.1	3.0	3.0
Prop In Lane	0.24		0.26	0.46		0.10	1.00		0.19	1.00		0.13
Lane Grp Cap(c), veh/h	394	0	0	393	0	0	88	927	937	83	891	911
V/C Ratio(X)	0.26	0.00	0.00	0.36	0.00	0.00	0.46	0.28	0.28	0.40	0.20	0.20
Avail Cap(c_a), veh/h	750	0	0	728	0	0	303	927	937	391	891	911
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	1.00	1.00	1.00	0.97	0.97	0.97
Uniform Delay (d), s/veh	19.0	0.0	0.0	19.5	0.0	0.0	23.3	0.0	0.0	25.2	7.0	7.0
Incr Delay (d2), s/veh	0.1	0.0	0.0	0.2	0.0	0.0	1.4	0.8	0.8	1.1	0.5	0.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.3	0.0	0.0	1.9	0.0	0.0	0.6	0.2	0.2	0.5	1.5	1.6
LnGrp Delay(d),s/veh	19.1	0.0	0.0	19.7	0.0	0.0	24.7	0.8	0.8	26.3	7.5	7.5
LnGrp LOS	B			B			C	A	A	C	A	A
Approach Vol, veh/h		102			143			564			387	
Approach Delay, s/veh		19.1			19.7			2.5			9.1	
Approach LOS		B			B			A			A	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	6.8	53.7		14.5	7.2	53.3		14.5				
Change Period (Y+Rc), s	4.0	4.5		4.0	4.0	4.5		4.0				
Max Green Setting (Gmax), s	13.0	26.5		23.0	11.0	28.5		23.0				
Max Q Clear Time (g_c+I1), s	3.1	2.0		4.8	3.4	5.0		6.2				
Green Ext Time (p_c), s	0.0	8.1		0.9	0.0	7.9		0.8				
<b>Intersection Summary</b>												
HCM 2010 Ctrl Delay			8.1									
HCM 2010 LOS			A									




















HCM 2010 Signalized Intersection Summary  
6: Sonoma Blvd & Magazine St

Vallejo Marine Terminal  
Year 2040 AM with VMT and Orcem Projects

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	80	140	20	40	50	100	20	286	90	70	278	30
Number	3	8	18	7	4	14	1	6	16	5	2	12
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	0.98		0.96	0.98		0.97	1.00		0.97	1.00		0.95
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1889	1900	1900	1871	1900	1900	1840	1900	1727	1799	1900
Adj Flow Rate, veh/h	93	163	16	47	58	38	23	333	69	81	323	28
Adj No. of Lanes	0	1	0	0	1	0	1	2	0	1	2	0
Peak Hour Factor	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86
Percent Heavy Veh, %	1	1	1	0	0	0	0	4	4	10	5	5
Cap, veh/h	212	332	29	197	229	123	78	1125	230	168	1430	123
Arrive On Green	0.29	0.29	0.29	0.29	0.29	0.29	0.04	0.39	0.39	0.20	0.90	0.90
Sat Flow, veh/h	432	1134	98	382	782	421	1810	2873	587	1645	3170	273
Grp Volume(v), veh/h	272	0	0	143	0	0	23	201	201	81	173	178
Grp Sat Flow(s),veh/h/ln	1664	0	0	1585	0	0	1810	1748	1712	1645	1709	1733
Q Serve(g_s), s	3.9	0.0	0.0	0.0	0.0	0.0	0.7	4.4	4.6	2.4	0.7	0.7
Cycle Q Clear(g_c), s	7.4	0.0	0.0	3.5	0.0	0.0	0.7	4.4	4.6	2.4	0.7	0.7
Prop In Lane	0.34		0.06	0.33		0.27	1.00		0.34	1.00		0.16
Lane Grp Cap(c), veh/h	573	0	0	549	0	0	78	685	671	168	771	782
V/C Ratio(X)	0.48	0.00	0.00	0.26	0.00	0.00	0.30	0.29	0.30	0.48	0.22	0.23
Avail Cap(c_a), veh/h	904	0	0	858	0	0	354	685	671	381	771	782
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	16.6	0.0	0.0	15.3	0.0	0.0	26.1	11.7	11.8	21.0	1.5	1.5
Incr Delay (d2), s/veh	0.2	0.0	0.0	0.1	0.0	0.0	0.8	1.1	1.1	0.8	0.7	0.7
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.6	0.0	0.0	1.7	0.0	0.0	0.4	2.3	2.3	1.1	0.4	0.4
LnGrp Delay(d),s/veh	16.8	0.0	0.0	15.4	0.0	0.0	26.8	12.8	12.9	21.8	2.2	2.2
LnGrp LOS	B			B			C	B	B	C	A	A
Approach Vol, veh/h		272			143			425			432	
Approach Delay, s/veh		16.8			15.4			13.6			5.9	
Approach LOS		B			B			B			A	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	5.9	49.2		19.9	9.2	45.8		19.9				
Change Period (Y+Rc), s	3.5	5.0		3.5	3.5	5.0		3.5				
Max Green Setting (Gmax), s	11.0	24.0		28.0	13.0	22.0		28.0				
Max Q Clear Time (g_c+I1), s	2.7	2.7		5.5	4.4	6.6		9.4				
Green Ext Time (p_c), s	0.0	6.4		1.7	0.1	5.5		1.6				
<b>Intersection Summary</b>												
HCM 2010 Ctrl Delay				11.9								
HCM 2010 LOS				B								



















HCM 2010 Signalized Intersection Summary  
8: Sonoma Blvd & Maritime Academy Dr

Vallejo Marine Terminal  
Year 2040 AM with VMT and Orcem Projects

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	30	20	10	20	90	100	10	226	20	40	198	40
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		1.00	1.00		0.99	1.00		0.97
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1746	1900	1900	1778	1863	1900	1817	1900	1900	1792	1900
Adj Flow Rate, veh/h	33	22	6	22	98	5	11	246	12	43	215	26
Adj No. of Lanes	0	1	0	0	1	1	1	2	0	1	2	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	0	0	0	5	5	2	0	5	5	0	6	6
Cap, veh/h	323	178	36	171	399	401	47	1154	56	162	1245	148
Arrive On Green	0.25	0.25	0.25	0.25	0.25	0.25	0.03	0.34	0.34	0.09	0.41	0.41
Sat Flow, veh/h	589	703	141	149	1577	1583	1810	3349	163	1810	3053	364
Grp Volume(v), veh/h	61	0	0	120	0	5	11	126	132	43	119	122
Grp Sat Flow(s),veh/h/ln	1432	0	0	1726	0	1583	1810	1726	1786	1810	1703	1714
Q Serve(g_s), s	0.0	0.0	0.0	0.0	0.0	0.1	0.2	1.7	1.7	0.7	1.4	1.5
Cycle Q Clear(g_c), s	1.7	0.0	0.0	1.7	0.0	0.1	0.2	1.7	1.7	0.7	1.4	1.5
Prop In Lane	0.54		0.10	0.18		1.00	1.00		0.09	1.00		0.21
Lane Grp Cap(c), veh/h	536	0	0	570	0	401	47	595	615	162	694	699
V/C Ratio(X)	0.11	0.00	0.00	0.21	0.00	0.01	0.23	0.21	0.21	0.27	0.17	0.18
Avail Cap(c_a), veh/h	1486	0	0	1716	0	1487	1360	2161	2237	1360	2133	2146
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	9.2	0.0	0.0	9.6	0.0	8.9	15.2	7.4	7.4	13.6	6.0	6.0
Incr Delay (d2), s/veh	0.0	0.0	0.0	0.1	0.0	0.0	0.9	0.2	0.2	0.3	0.1	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.4	0.0	0.0	0.8	0.0	0.0	0.1	0.8	0.8	0.4	0.7	0.7
LnGrp Delay(d),s/veh	9.3	0.0	0.0	9.6	0.0	8.9	16.2	7.6	7.6	13.9	6.1	6.2
LnGrp LOS	A			A		A	B	A	A	B	A	A
Approach Vol, veh/h		61			125			269			284	
Approach Delay, s/veh		9.3			9.6			7.9			7.3	
Approach LOS		A			A			A			A	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	5.9	15.0		11.1	3.8	17.0		11.1				
Change Period (Y+Rc), s	3.0	4.0		3.0	3.0	4.0		3.0				
Max Green Setting (Gmax), s	24.0	40.0		30.0	24.0	40.0		30.0				
Max Q Clear Time (g_c+I1), s	2.7	3.7		3.7	2.2	3.5		3.7				
Green Ext Time (p_c), s	0.0	3.2		0.7	0.0	3.2		0.7				
<b>Intersection Summary</b>												
HCM 2010 Ctrl Delay			8.1									
HCM 2010 LOS			A									

























HCM 2010 Signalized Intersection Summary  
 16: Lemon St & Carlson St

Vallejo Marine Terminal  
 Year 2040 AM with VMT and Orcem Projects

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	10	186	10	20	197	150	10	10	20	150	10	10
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	0.99		0.98	0.99		0.95	0.98		1.00	0.98		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1771	1900	1743	1827	1900	1900	1597	1900	1881	1886	1900
Adj Flow Rate, veh/h	12	219	11	24	232	154	12	12	0	187	0	0
Adj No. of Lanes	0	1	0	1	1	0	0	1	0	2	1	0
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85
Percent Heavy Veh, %	7	7	7	9	7	7	50	50	50	1	0	0
Cap, veh/h	170	755	37	701	467	310	316	200	0	1125	381	0
Arrive On Green	0.47	0.47	0.47	0.47	0.47	0.47	0.20	0.20	0.00	0.20	0.00	0.00
Sat Flow, veh/h	28	1623	79	1057	1004	667	453	988	0	2774	1886	0
Grp Volume(v), veh/h	242	0	0	24	0	386	24	0	0	187	0	0
Grp Sat Flow(s),veh/h/ln	1730	0	0	1057	0	1671	1441	0	0	1387	1886	0
Q Serve(g_s), s	0.0	0.0	0.0	0.3	0.0	3.9	0.0	0.0	0.0	1.4	0.0	0.0
Cycle Q Clear(g_c), s	2.1	0.0	0.0	2.4	0.0	3.9	0.3	0.0	0.0	1.7	0.0	0.0
Prop In Lane	0.05		0.05	1.00		0.40	0.50		0.00	1.00		0.00
Lane Grp Cap(c), veh/h	962	0	0	701	0	778	516	0	0	1125	381	0
V/C Ratio(X)	0.25	0.00	0.00	0.03	0.00	0.50	0.05	0.00	0.00	0.17	0.00	0.00
Avail Cap(c_a), veh/h	2765	0	0	1835	0	2570	1940	0	0	4025	2352	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	1.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	4.0	0.0	0.0	4.7	0.0	4.5	7.8	0.0	0.0	8.5	0.0	0.0
Incr Delay (d2), s/veh	0.1	0.0	0.0	0.0	0.0	0.5	0.0	0.0	0.0	0.1	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.0	0.0	0.0	0.1	0.0	1.8	0.1	0.0	0.0	0.5	0.0	0.0
LnGrp Delay(d),s/veh	4.1	0.0	0.0	4.8	0.0	5.0	7.8	0.0	0.0	8.5	0.0	0.0
LnGrp LOS	A			A		A	A			A		
Approach Vol, veh/h		242			410			24			187	
Approach Delay, s/veh		4.1			4.9			7.8			8.5	
Approach LOS		A			A			A			A	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		15.2		8.9		15.2		8.9				
Change Period (Y+Rc), s		4.0		4.0		4.0		4.0				
Max Green Setting (Gmax), s		37.0		30.0		37.0		30.0				
Max Q Clear Time (g_c+I1), s		4.1		3.7		5.9		2.3				
Green Ext Time (p_c), s		4.7		0.8		4.6		0.8				
<b>Intersection Summary</b>												
HCM 2010 Ctrl Delay			5.6									
HCM 2010 LOS			A									
<b>Notes</b>												
User approved volume balancing among the lanes for turning movement.												

HCM 2010 Signalized Intersection Summary  
 17: Lemon St & Curtola Pkwy

Vallejo Marine Terminal  
 Year 2040 AM with VMT and Orcem Projects

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	30	80	246	130	100	30	237	920	120	30	520	40
Number	3	8	18	7	4	14	1	6	16	5	2	12
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		0.91	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1696	1851	1810	1827	1827	1900	1827	1849	1900	1827	1845	1900
Adj Flow Rate, veh/h	33	89	17	144	111	16	263	1022	0	33	578	0
Adj No. of Lanes	1	1	1	1	1	1	1	2	0	1	2	0
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	12	0	5	4	4	0	4	3	3	4	3	3
Cap, veh/h	54	206	167	182	334	270	309	1725	0	58	1217	0
Arrive On Green	0.03	0.11	0.11	0.10	0.18	0.18	0.18	0.49	0.00	0.03	0.35	0.00
Sat Flow, veh/h	1616	1851	1501	1740	1827	1478	1740	3605	0	1740	3597	0
Grp Volume(v), veh/h	33	89	17	144	111	16	263	1022	0	33	578	0
Grp Sat Flow(s),veh/h/ln	1616	1851	1501	1740	1827	1478	1740	1756	0	1740	1752	0
Q Serve(g_s), s	1.5	3.3	0.7	5.9	3.9	0.7	10.7	15.2	0.0	1.4	9.4	0.0
Cycle Q Clear(g_c), s	1.5	3.3	0.7	5.9	3.9	0.7	10.7	15.2	0.0	1.4	9.4	0.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.00	1.00		0.00
Lane Grp Cap(c), veh/h	54	206	167	182	334	270	309	1725	0	58	1217	0
V/C Ratio(X)	0.61	0.43	0.10	0.79	0.33	0.06	0.85	0.59	0.00	0.57	0.47	0.00
Avail Cap(c_a), veh/h	554	889	721	597	877	710	597	1725	0	597	1683	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	34.8	30.2	29.1	31.9	25.9	24.6	29.1	13.3	0.0	34.7	18.6	0.0
Incr Delay (d2), s/veh	4.1	1.5	0.3	2.9	0.7	0.1	2.6	0.7	0.0	3.2	0.3	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.7	1.8	0.3	3.0	2.0	0.3	5.3	7.4	0.0	0.7	4.6	0.0
LnGrp Delay(d),s/veh	38.9	31.7	29.4	34.8	26.7	24.7	31.7	14.0	0.0	37.9	18.9	0.0
LnGrp LOS	D	C	C	C	C	C	C	B		D	B	
Approach Vol, veh/h		139			271			1285			611	
Approach Delay, s/veh		33.1			30.9			17.6			20.0	
Approach LOS		C			C			B			B	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	16.9	31.3	6.4	18.2	6.4	41.8	11.6	13.0				
Change Period (Y+Rc), s	4.0	6.0	4.0	4.9	4.0	6.0	4.0	4.9				
Max Green Setting (Gmax), s	25.0	35.0	25.0	35.0	25.0	35.0	25.0	35.0				
Max Q Clear Time (g_c+I1), s	12.7	11.4	3.5	5.9	3.4	17.2	7.9	5.3				
Green Ext Time (p_c), s	0.3	13.9	0.0	1.5	0.0	12.5	0.2	1.5				
<b>Intersection Summary</b>												
HCM 2010 Ctrl Delay			20.7									
HCM 2010 LOS			C									
<b>Notes</b>												
User approved volume balancing among the lanes for turning movement.												

**Intersection**

Int Delay, s/veh 1.7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR
Vol, veh/h	20	10	10	10	10	10	10	516	10
Conflicting Peds, #/hr	0	0	7	7	0	0	11	0	8
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-
Peak Hour Factor	89	89	89	89	89	89	89	89	89
Heavy Vehicles, %	13	0	0	0	0	0	0	3	33
Mvmt Flow	22	11	11	11	11	11	11	580	11

Major/Minor	Minor2			Minor1			Major1		
Conflicting Flow All	796	1091	242	868	1092	314	454	0	0
Stage 1	471	471	-	615	615	-	-	-	-
Stage 2	325	620	-	253	477	-	-	-	-
Critical Hdwy	7.76	6.5	6.9	7.5	6.5	6.9	4.1	-	-
Critical Hdwy Stg 1	6.76	5.5	-	6.5	5.5	-	-	-	-
Critical Hdwy Stg 2	6.76	5.5	-	6.5	5.5	-	-	-	-
Follow-up Hdwy	3.63	4	3.3	3.5	4	3.3	2.2	-	-
Pot Cap-1 Maneuver	259	217	765	250	216	688	1117	-	-
Stage 1	514	563	-	450	485	-	-	-	-
Stage 2	632	483	-	735	559	-	-	-	-
Platoon blocked, %									
Mov Cap-1 Maneuver	235	208	754	227	207	678	1107	-	-
Mov Cap-2 Maneuver	235	208	-	227	207	-	-	-	-
Stage 1	503	551	-	441	475	-	-	-	-
Stage 2	592	473	-	692	547	-	-	-	-

Approach	EB	WB	NB
HCM Control Delay, s	20.8	19.6	0.3
HCM LOS	C	C	

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1107	-	-	273	280	980	-	-
HCM Lane V/C Ratio	0.01	-	-	0.165	0.12	0.011	-	-
HCM Control Delay (s)	8.3	0.1	-	20.8	19.6	8.7	0.1	-
HCM Lane LOS	A	A	-	C	C	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0.6	0.4	0	-	-



**Intersection**

Int Delay, s/veh

Movement	SBL	SBT	SBR
Vol, veh/h	10	388	10
Conflicting Peds, #/hr	8	0	11
Sign Control	Free	Free	Free
RT Channelized	-	-	None
Storage Length	-	-	-
Veh in Median Storage, #	-	0	-
Grade, %	-	0	-
Peak Hour Factor	89	89	89
Heavy Vehicles, %	0	7	20
Mvmt Flow	11	436	11

**Major/Minor Major2**

Conflicting Flow All	598	0	0
Stage 1	-	-	-
Stage 2	-	-	-
Critical Hdwy	4.1	-	-
Critical Hdwy Stg 1	-	-	-
Critical Hdwy Stg 2	-	-	-
Follow-up Hdwy	2.2	-	-
Pot Cap-1 Maneuver	989	-	-
Stage 1	-	-	-
Stage 2	-	-	-
Platoon blocked, %		-	-
Mov Cap-1 Maneuver	980	-	-
Mov Cap-2 Maneuver	-	-	-
Stage 1	-	-	-
Stage 2	-	-	-

**Approach SB**

HCM Control Delay, s 0.3

HCM LOS

**Minor Lane/Major Mvmt**

**Intersection**

Int Delay, s/veh 2.1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR
Vol, veh/h	30	10	10	10	10	20	10	466	10
Conflicting Peds, #/hr	6	0	9	9	0	6	18	0	10
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-
Peak Hour Factor	91	91	91	91	91	91	91	91	91
Heavy Vehicles, %	0	0	0	0	0	15	0	4	0
Mvmt Flow	33	11	11	11	11	22	11	512	11

Major/Minor	Minor2			Minor1			Major1		
Conflicting Flow All	761	1022	240	810	1028	289	435	0	0
Stage 1	468	468	-	549	549	-	-	-	-
Stage 2	293	554	-	261	479	-	-	-	-
Critical Hdwy	7.5	6.5	6.9	7.5	6.5	7.2	4.1	-	-
Critical Hdwy Stg 1	6.5	5.5	-	6.5	5.5	-	-	-	-
Critical Hdwy Stg 2	6.5	5.5	-	6.5	5.5	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	3.5	4	3.45	2.2	-	-
Pot Cap-1 Maneuver	298	238	767	275	236	670	1135	-	-
Stage 1	550	565	-	493	520	-	-	-	-
Stage 2	696	517	-	727	558	-	-	-	-
Platoon blocked, %									
Mov Cap-1 Maneuver	262	224	750	247	222	655	1118	-	-
Mov Cap-2 Maneuver	262	224	-	247	222	-	-	-	-
Stage 1	538	544	-	482	509	-	-	-	-
Stage 2	639	506	-	671	537	-	-	-	-

Approach	EB	WB	NB
HCM Control Delay, s	20.3	17	0.3
HCM LOS	C	C	

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1118	-	-	290	345	963	-	-
HCM Lane V/C Ratio	0.01	-	-	0.189	0.127	0.023	-	-
HCM Control Delay (s)	8.3	0.1	-	20.3	17	8.8	0.1	-
HCM Lane LOS	A	A	-	C	C	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0.7	0.4	0.1	-	-

**Intersection**

Int Delay, s/veh

Movement	SBL	SBT	SBR
Vol, veh/h	20	368	20
Conflicting Peds, #/hr	10	0	18
Sign Control	Free	Free	Free
RT Channelized	-	-	None
Storage Length	-	-	-
Veh in Median Storage, #	-	0	-
Grade, %	-	0	-
Peak Hour Factor	91	91	91
Heavy Vehicles, %	10	7	0
Mvmt Flow	22	404	22

**Major/Minor Major2**

Conflicting Flow All	532	0	0
Stage 1	-	-	-
Stage 2	-	-	-
Critical Hdwy	4.3	-	-
Critical Hdwy Stg 1	-	-	-
Critical Hdwy Stg 2	-	-	-
Follow-up Hdwy	2.3	-	-
Pot Cap-1 Maneuver	978	-	-
Stage 1	-	-	-
Stage 2	-	-	-
Platoon blocked, %		-	-
Mov Cap-1 Maneuver	963	-	-
Mov Cap-2 Maneuver	-	-	-
Stage 1	-	-	-
Stage 2	-	-	-

**Approach SB**

HCM Control Delay, s 0.5

HCM LOS

**Minor Lane/Major Mvmt**

**Intersection**

Int Delay, s/veh 4.7

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Vol, veh/h	100	50	100	266	228	100
Conflicting Peds, #/hr	0	0	13	0	0	13
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	60	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	85	85	85	85	85	85
Heavy Vehicles, %	3	3	3	4	4	3
Mvmt Flow	118	59	118	313	268	118

Major/Minor	Minor2	Major1	Major2
Conflicting Flow All	719	206	386
Stage 1	327	-	-
Stage 2	392	-	-
Critical Hdwy	6.86	6.96	4.16
Critical Hdwy Stg 1	5.86	-	-
Critical Hdwy Stg 2	5.86	-	-
Follow-up Hdwy	3.53	3.33	2.23
Pot Cap-1 Maneuver	361	797	1162
Stage 1	700	-	-
Stage 2	649	-	-
Platoon blocked, %			-
Mov Cap-1 Maneuver	324	788	1149
Mov Cap-2 Maneuver	324	-	-
Stage 1	700	-	-
Stage 2	582	-	-

Approach	EB	NB	SB
HCM Control Delay, s	20.7	2.3	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1149	-	403	-	-
HCM Lane V/C Ratio	0.102	-	0.438	-	-
HCM Control Delay (s)	8.5	-	20.7	-	-
HCM Lane LOS	A	-	C	-	-
HCM 95th %tile Q(veh)	0.3	-	2.2	-	-

**Intersection**

Int Delay, s/veh 1.1

Movement	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBL	NBT	NBR
Vol, veh/h	0	56	0	10	0	76	10	0	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	-	0	-	-	0	-
Grade, %	-	0	-	-	-	0	-	-	0	-
Peak Hour Factor	82	82	82	82	82	82	82	82	82	82
Heavy Vehicles, %	0	11	0	0	0	8	0	0	0	0
Mvmt Flow	0	68	0	12	0	93	12	0	0	0

**Major/Minor**

	Major1	Major2			Minor1					
Conflicting Flow All	105	0	0	68	68	0	0	173	197	80
Stage 1	-	-	-	-	-	-	-	68	68	-
Stage 2	-	-	-	-	-	-	-	105	129	-
Critical Hdwy	4.1	-	-	-	4.1	-	-	7.1	6.5	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	-	6.1	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	-	6.1	5.5	-
Follow-up Hdwy	2.2	-	-	-	2.2	-	-	3.5	4	3.3
Pot Cap-1 Maneuver	1499	-	-	-	1546	-	-	794	702	986
Stage 1	-	-	-	-	-	-	-	947	842	-
Stage 2	-	-	-	-	-	-	-	906	793	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1499	-	-	-	-	-	-	784	702	986
Mov Cap-2 Maneuver	-	-	-	-	-	-	-	784	702	-
Stage 1	-	-	-	-	-	-	-	947	842	-
Stage 2	-	-	-	-	-	-	-	895	793	-

**Approach**

	EB	WB	NB
HCM Control Delay, s	0	0	0
HCM LOS			A

**Minor Lane/Major Mvmt**

	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	-	1499	-	-	-	-	-	875
HCM Lane V/C Ratio	-	-	-	-	-	-	-	0.028
HCM Control Delay (s)	0	0	-	-	-	-	-	9.2
HCM Lane LOS	A	A	-	-	-	-	-	A
HCM 95th %tile Q(veh)	-	0	-	-	-	-	-	0.1

**Intersection**

Int Delay, s/veh

Movement	SBL	SBT	SBR
Vol, veh/h	10	0	10
Conflicting Peds, #/hr	0	0	0
Sign Control	Stop	Stop	Stop
RT Channelized	-	-	None
Storage Length	-	-	-
Veh in Median Storage, #	-	0	-
Grade, %	-	0	-
Peak Hour Factor	82	82	82
Heavy Vehicles, %	0	0	0
Mvmt Flow	12	0	12

**Major/Minor**

**Minor2**

Conflicting Flow All	167	191	99
Stage 1	99	123	-
Stage 2	68	68	-
Critical Hdwy	7.1	6.5	6.2
Critical Hdwy Stg 1	6.1	5.5	-
Critical Hdwy Stg 2	6.1	5.5	-
Follow-up Hdwy	3.5	4	3.3
Pot Cap-1 Maneuver	802	708	962
Stage 1	912	798	-
Stage 2	947	842	-
Platoon blocked, %			
Mov Cap-1 Maneuver	802	708	962
Mov Cap-2 Maneuver	802	708	-
Stage 1	912	798	-
Stage 2	947	842	-

**Approach**

**SB**

HCM Control Delay, s	9.2
HCM LOS	A

**Minor Lane/Major Mvmt**

**Intersection**

Int Delay, s/veh 2.5

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR
Vol, veh/h	10	66	0	10	86	10	10	10	10
Conflicting Peds, #/hr	0	0	0	0	0	0	7	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-
Peak Hour Factor	88	88	88	88	88	88	88	88	88
Heavy Vehicles, %	0	10	0	0	7	0	0	0	0
Mvmt Flow	11	75	0	11	98	11	11	11	11

Major/Minor	Major1	Major2	Minor1						
Conflicting Flow All	116	0	0	82	0	0	238	244	82
Stage 1	-	-	-	-	-	-	105	105	-
Stage 2	-	-	-	-	-	-	133	139	-
Critical Hdwy	4.1	-	-	4.1	-	-	7.1	6.5	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-
Follow-up Hdwy	2.2	-	-	2.2	-	-	3.5	4	3.3
Pot Cap-1 Maneuver	1485	-	-	1528	-	-	721	661	983
Stage 1	-	-	-	-	-	-	906	812	-
Stage 2	-	-	-	-	-	-	875	785	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1485	-	-	1528	-	-	708	643	977
Mov Cap-2 Maneuver	-	-	-	-	-	-	708	643	-
Stage 1	-	-	-	-	-	-	894	801	-
Stage 2	-	-	-	-	-	-	868	774	-

Approach	EB	WB	NB
HCM Control Delay, s	1	0.7	10
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	752	1485	-	-	1528	-	-	679
HCM Lane V/C Ratio	0.045	0.008	-	-	0.007	-	-	0.017
HCM Control Delay (s)	10	7.4	0	-	7.4	0	-	10.4
HCM Lane LOS	B	A	A	-	A	A	-	B
HCM 95th %tile Q(veh)	0.1	0	-	-	0	-	-	0.1

**Intersection**

Int Delay, s/veh

Movement	SBL	SBT	SBR
Vol, veh/h	10	0	0
Conflicting Peds, #/hr	0	0	7
Sign Control	Stop	Stop	Stop
RT Channelized	-	-	None
Storage Length	-	-	-
Veh in Median Storage, #	-	0	-
Grade, %	-	0	-
Peak Hour Factor	88	88	88
Heavy Vehicles, %	0	0	0
Mvmt Flow	11	0	0

**Major/Minor**

**Minor2**

Conflicting Flow All	249	238	110
Stage 1	133	133	-
Stage 2	116	105	-
Critical Hdwy	7.1	6.5	6.2
Critical Hdwy Stg 1	6.1	5.5	-
Critical Hdwy Stg 2	6.1	5.5	-
Follow-up Hdwy	3.5	4	3.3
Pot Cap-1 Maneuver	709	666	949
Stage 1	875	790	-
Stage 2	894	812	-
Platoon blocked, %			
Mov Cap-1 Maneuver	679	648	943
Mov Cap-2 Maneuver	679	648	-
Stage 1	863	779	-
Stage 2	864	801	-

**Approach**

SB

HCM Control Delay, s	10.4
HCM LOS	B

**Minor Lane/Major Mvmt**



Intersection										
Int Delay, s/veh	2.3									

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	
Vol, veh/h	10	126	10	10	137	10	10	10	10	10
Conflicting Peds, #/hr	7	0	7	7	0	7	0	0	0	6
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	
RT Channelized	-	-	None	-	-	None	-	-	None	
Storage Length	-	-	-	-	-	-	-	-	-	
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	
Grade, %	-	0	-	-	0	-	-	0	-	
Peak Hour Factor	85	85	85	85	85	85	85	85	85	85
Heavy Vehicles, %	0	8	0	17	10	0	0	0	0	25
Mvmt Flow	12	148	12	12	161	12	12	12	12	12

Major/Minor	Major1			Major2			Minor1		
Conflicting Flow All	179	0	0	166	0	0	392	386	167
Stage 1	-	-	-	-	-	-	184	184	-
Stage 2	-	-	-	-	-	-	208	202	-
Critical Hdwy	4.1	-	-	4.27	-	-	7.1	6.5	6.45
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-
Follow-up Hdwy	2.2	-	-	2.353	-	-	3.5	4	3.525
Pot Cap-1 Maneuver	1409	-	-	1326	-	-	571	551	821
Stage 1	-	-	-	-	-	-	822	751	-
Stage 2	-	-	-	-	-	-	799	738	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1401	-	-	1318	-	-	540	535	812
Mov Cap-2 Maneuver	-	-	-	-	-	-	540	535	-
Stage 1	-	-	-	-	-	-	811	741	-
Stage 2	-	-	-	-	-	-	763	727	-

Approach	EB	WB	NB
HCM Control Delay, s	0.5	0.5	11.3
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	606	1401	-	-	1318	-	-	614
HCM Lane V/C Ratio	0.058	0.008	-	-	0.009	-	-	0.057
HCM Control Delay (s)	11.3	7.6	0	-	7.8	0	-	11.2
HCM Lane LOS	B	A	A	-	A	A	-	B
HCM 95th %tile Q(veh)	0.2	0	-	-	0	-	-	0.2

**Intersection**

Int Delay, s/veh

Movement	SBL	SBT	SBR
Vol, veh/h	10	10	10
Conflicting Peds, #/hr	6	0	0
Sign Control	Stop	Stop	Stop
RT Channelized	-	-	None
Storage Length	-	-	-
Veh in Median Storage, #	-	0	-
Grade, %	-	0	-
Peak Hour Factor	85	85	85
Heavy Vehicles, %	0	0	0
Mvmt Flow	12	12	12

**Major/Minor**

Minor2

Conflicting Flow All	392	387	180
Stage 1	197	197	-
Stage 2	195	190	-
Critical Hdwy	7.1	6.5	6.2
Critical Hdwy Stg 1	6.1	5.5	-
Critical Hdwy Stg 2	6.1	5.5	-
Follow-up Hdwy	3.5	4	3.3
Pot Cap-1 Maneuver	571	551	868
Stage 1	809	742	-
Stage 2	811	747	-
Platoon blocked, %			
Mov Cap-1 Maneuver	539	535	859
Mov Cap-2 Maneuver	539	535	-
Stage 1	798	731	-
Stage 2	775	737	-

**Approach**

SB

HCM Control Delay, s	11.2
HCM LOS	B

**Minor Lane/Major Mvmt**

Intersection									
Int Delay, s/veh	4.8								

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR
Vol, veh/h	20	116	10	20	127	20	10	40	30
Conflicting Peds, #/hr	6	0	8	8	0	6	6	0	6
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	8	7	0	0	11	6	0	4	0
Mvmt Flow	22	129	11	22	141	22	11	44	33

Major/Minor	Major1			Major2			Minor1		
Conflicting Flow All	169	0	0	146	0	0	421	399	148
Stage 1	-	-	-	-	-	-	185	185	-
Stage 2	-	-	-	-	-	-	236	214	-
Critical Hdwy	4.18	-	-	4.1	-	-	7.1	6.54	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.54	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.54	-
Follow-up Hdwy	2.272	-	-	2.2	-	-	3.5	4.036	3.3
Pot Cap-1 Maneuver	1373	-	-	1448	-	-	546	536	904
Stage 1	-	-	-	-	-	-	821	743	-
Stage 2	-	-	-	-	-	-	772	722	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1364	-	-	1438	-	-	478	512	893
Mov Cap-2 Maneuver	-	-	-	-	-	-	478	512	-
Stage 1	-	-	-	-	-	-	802	726	-
Stage 2	-	-	-	-	-	-	689	706	-

Approach	EB	WB	NB
HCM Control Delay, s	1.1	0.9	12
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	603	1364	-	-	1438	-	-	557
HCM Lane V/C Ratio	0.147	0.016	-	-	0.015	-	-	0.16
HCM Control Delay (s)	12	7.7	0	-	7.5	0	-	12.7
HCM Lane LOS	B	A	A	-	A	A	-	B
HCM 95th %tile Q(veh)	0.5	0.1	-	-	0	-	-	0.6

**Intersection**

Int Delay, s/veh

Movement	SBL	SBT	SBR
Vol, veh/h	20	40	20
Conflicting Peds, #/hr	6	0	6
Sign Control	Stop	Stop	Stop
RT Channelized	-	-	None
Storage Length	-	-	-
Veh in Median Storage, #	-	0	-
Grade, %	-	0	-
Peak Hour Factor	90	90	90
Heavy Vehicles, %	0	4	7
Mvmt Flow	22	44	22

**Major/Minor**

	Minor2		
Conflicting Flow All	427	393	166
Stage 1	203	203	-
Stage 2	224	190	-
Critical Hdwy	7.1	6.54	6.27
Critical Hdwy Stg 1	6.1	5.54	-
Critical Hdwy Stg 2	6.1	5.54	-
Follow-up Hdwy	3.5	4.036	3.363
Pot Cap-1 Maneuver	541	540	865
Stage 1	804	730	-
Stage 2	783	739	-
Platoon blocked, %			
Mov Cap-1 Maneuver	468	516	855
Mov Cap-2 Maneuver	468	516	-
Stage 1	786	714	-
Stage 2	690	722	-

**Approach**

Approach	SB
HCM Control Delay, s	12.7
HCM LOS	B

**Minor Lane/Major Mvmt**

**Intersection**

Int Delay, s/veh 2.4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR
Vol, veh/h	10	156	10	20	147	10	10	0	30
Conflicting Peds, #/hr	9	0	12	12	0	9	9	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-
Peak Hour Factor	81	81	81	81	81	81	81	81	81
Heavy Vehicles, %	0	5	0	0	9	33	0	5	0
Mvmt Flow	12	193	12	25	181	12	12	0	37

Major/Minor	Major1	Major2	Minor1						
Conflicting Flow All	203	0	0	214	0	0	490	484	220
Stage 1	-	-	-	-	-	-	232	232	-
Stage 2	-	-	-	-	-	-	258	252	-
Critical Hdwy	4.1	-	-	4.1	-	-	7.1	6.55	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.55	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.55	-
Follow-up Hdwy	2.2	-	-	2.2	-	-	3.5	4.045	3.3
Pot Cap-1 Maneuver	1381	-	-	1368	-	-	492	478	825
Stage 1	-	-	-	-	-	-	775	707	-
Stage 2	-	-	-	-	-	-	751	693	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1367	-	-	1354	-	-	455	456	811
Mov Cap-2 Maneuver	-	-	-	-	-	-	455	456	-
Stage 1	-	-	-	-	-	-	761	695	-
Stage 2	-	-	-	-	-	-	703	673	-

Approach	EB	WB	NB
HCM Control Delay, s	0.4	0.9	10.7
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	678	1367	-	-	1354	-	-	522
HCM Lane V/C Ratio	0.073	0.009	-	-	0.018	-	-	0.071
HCM Control Delay (s)	10.7	7.7	0	-	7.7	0	-	12.4
HCM Lane LOS	B	A	A	-	A	A	-	B
HCM 95th %tile Q(veh)	0.2	0	-	-	0.1	-	-	0.2

**Intersection**

Int Delay, s/veh

Movement	SBL	SBT	SBR
Vol, veh/h	10	10	10
Conflicting Peds, #/hr	0	0	9
Sign Control	Stop	Stop	Stop
RT Channelized	-	-	None
Storage Length	-	-	-
Veh in Median Storage, #	-	0	-
Grade, %	-	0	-
Peak Hour Factor	81	81	81
Heavy Vehicles, %	0	0	33
Mvmt Flow	12	12	12

**Major/Minor**

	Minor2		
Conflicting Flow All	497	485	209
Stage 1	246	246	-
Stage 2	251	239	-
Critical Hdwy	7.1	6.5	6.53
Critical Hdwy Stg 1	6.1	5.5	-
Critical Hdwy Stg 2	6.1	5.5	-
Follow-up Hdwy	3.5	4	3.597
Pot Cap-1 Maneuver	487	485	759
Stage 1	762	706	-
Stage 2	758	711	-
Platoon blocked, %			
Mov Cap-1 Maneuver	446	463	746
Mov Cap-2 Maneuver	446	463	-
Stage 1	749	686	-
Stage 2	709	699	-

**Approach**

	SB
HCM Control Delay, s	12.4
HCM LOS	B

**Minor Lane/Major Mvmt**

Intersection										
Int Delay, s/veh	0.6									

Movement	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBL	NBT	NBR
Vol, veh/h	0	186	0	10	0	167	10	10	0	0
Conflicting Peds, #/hr	12	0	8	0	8	0	12	8	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	-	0	-	-	0	-
Grade, %	-	0	-	-	-	0	-	-	0	-
Peak Hour Factor	83	83	83	83	83	83	83	83	83	83
Heavy Vehicles, %	0	5	0	0	0	7	0	0	0	0
Mvmt Flow	0	224	0	12	0	201	12	12	0	0

Major/Minor	Major1			Major2				Minor1		
Conflicting Flow All	221	0	0	224	232	0	0	447	477	256
Stage 1	-	-	-	-	-	-	-	232	232	-
Stage 2	-	-	-	-	-	-	-	215	245	-
Critical Hdwy	4.1	-	-	-	4.1	-	-	7.1	6.5	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	-	6.1	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	-	6.1	5.5	-
Follow-up Hdwy	2.2	-	-	-	2.2	-	-	3.5	4	3.3
Pot Cap-1 Maneuver	1360	-	-	-	1348	-	-	525	490	788
Stage 1	-	-	-	-	-	-	-	775	716	-
Stage 2	-	-	-	-	-	-	-	792	707	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1346	-	-	-	-	-	-	516	483	775
Mov Cap-2 Maneuver	-	-	-	-	-	-	-	516	483	-
Stage 1	-	-	-	-	-	-	-	770	711	-
Stage 2	-	-	-	-	-	-	-	784	702	-

Approach	EB			WB				NB		
HCM Control Delay, s	0			0				12.1		
HCM LOS								B		

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	516	1346	-	-	-	-	-	516
HCM Lane V/C Ratio	0.023	-	-	-	-	-	-	0.023
HCM Control Delay (s)	12.1	0	-	-	-	-	-	12.1
HCM Lane LOS	B	A	-	-	-	-	-	B
HCM 95th %tile Q(veh)	0.1	0	-	-	-	-	-	0.1

**Intersection**

Int Delay, s/veh

Movement	SBL	SBT	SBR
Vol, veh/h	10	0	0
Conflicting Peds, #/hr	0	0	8
Sign Control	Stop	Stop	Stop
RT Channelized	-	-	None
Storage Length	-	-	-
Veh in Median Storage, #	-	0	-
Grade, %	-	0	-
Peak Hour Factor	83	83	83
Heavy Vehicles, %	0	0	0
Mvmt Flow	12	0	0

**Major/Minor**

	Minor2		
Conflicting Flow All	447	471	227
Stage 1	215	239	-
Stage 2	232	232	-
Critical Hdwy	7.1	6.5	6.2
Critical Hdwy Stg 1	6.1	5.5	-
Critical Hdwy Stg 2	6.1	5.5	-
Follow-up Hdwy	3.5	4	3.3
Pot Cap-1 Maneuver	525	494	817
Stage 1	792	711	-
Stage 2	775	716	-
Platoon blocked, %			
Mov Cap-1 Maneuver	516	487	803
Mov Cap-2 Maneuver	516	487	-
Stage 1	787	706	-
Stage 2	767	711	-

**Approach**

	SB
HCM Control Delay, s	12.1
HCM LOS	B

**Minor Lane/Major Mvmt**



Intersection	
Int Delay, s/veh	0.8

Movement	EBT	EBR	WBU	WBL	WBT	NBL	NBR
Vol, veh/h	176	10	10	20	177	10	20
Conflicting Peds, #/hr	0	9	0	9	0	0	6
Sign Control	Free	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	-	None	-	None
Storage Length	-	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	-	0	0	-
Grade, %	0	-	-	-	0	0	-
Peak Hour Factor	88	88	88	88	88	88	88
Heavy Vehicles, %	5	0	0	13	6	40	0
Mvmt Flow	200	11	11	23	201	11	23

Major/Minor	Major1	Major2	Minor1
Conflicting Flow All	0	0 234	217 0 459 232
Stage 1	-	-	- - 212 -
Stage 2	-	-	- - 247 -
Critical Hdwy	-	-	- 4.23 - 6.8 6.2
Critical Hdwy Stg 1	-	-	- - - 5.8 -
Critical Hdwy Stg 2	-	-	- - - 5.8 -
Follow-up Hdwy	-	-	- 2.317 - 3.86 3.3
Pot Cap-1 Maneuver	-	-	- 1290 - 496 812
Stage 1	-	-	- - - 741 -
Stage 2	-	-	- - - 713 -
Platoon blocked, %	-	-	- - -
Mov Cap-1 Maneuver	-	-	- ~ -3 ~ -3 - 490 802
Mov Cap-2 Maneuver	-	-	- - - 490 -
Stage 1	-	-	- - - 737 -
Stage 2	-	-	- - - 708 -

Approach	EB	WB	NB
HCM Control Delay, s	0	0	10.7
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	662	-	-	+	-
HCM Lane V/C Ratio	0.051	-	-	-	-
HCM Control Delay (s)	10.7	-	-	-	-
HCM Lane LOS	B	-	-	-	-
HCM 95th %tile Q(veh)	0.2	-	-	-	-

Notes  
 -: Volume exceeds capacity    \$: Delay exceeds 300s    +: Computation Not Defined    \*: All major volume in platoon

HCM Signalized Intersection Capacity Analysis  
 1: Sonoma Blvd & Curtola Pkwy

Vallejo Marine Terminal  
 Year 2040 with VMT and Orcem Projects



Movement	EBT	EBR	EBR2	WBT	WBR	NBL2	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↑↑	←		↑↑	↑		↑	↑↑			↑↑	
Volume (vph)	630	220	10	370	250	20	210	313	10	240	221	10
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	4.5		4.5	4.5		4.5	4.5			4.5	
Lane Util. Factor	0.91	0.91		0.95	1.00		1.00	0.95			0.95	
Frbp, ped/bikes	1.00	1.00		1.00	0.98		1.00	1.00			1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00			1.00	
Frt	0.99	0.85		1.00	0.85		1.00	1.00			0.99	
Flt Protected	1.00	1.00		1.00	1.00		0.95	1.00			0.98	
Satd. Flow (prot)	3374	1456		3539	1576		1757	3556			3429	
Flt Permitted	1.00	1.00		1.00	1.00		0.95	1.00			0.98	
Satd. Flow (perm)	3374	1456		3539	1576		1757	3556			3429	
Peak-hour factor, PHF	0.91	0.91	0.91	0.91	0.91	0.92	0.91	0.91	0.91	0.91	0.91	0.91
Adj. Flow (vph)	692	242	11	407	275	22	231	344	11	264	243	11
RTOR Reduction (vph)	0	48	0	0	187	0	0	2	0	0	3	0
Lane Group Flow (vph)	716	181	0	407	88	0	253	353	0	0	548	0
Confl. Peds. (#/hr)					9		6		9	9		6
Confl. Bikes (#/hr)									6			6
Heavy Vehicles (%)	2%	1%	0%	2%	0%	0%	3%	1%	0%	1%	1%	0%
Turn Type	NA	Perm		NA	Perm	Split	Split	NA		Split	NA	
Protected Phases	2			2		3	3	3		4	4	
Permitted Phases		2			2							
Actuated Green, G (s)	32.2	32.2		32.2	32.2		21.0	21.0			22.5	
Effective Green, g (s)	32.2	32.2		32.2	32.2		21.0	21.0			22.5	
Actuated g/C Ratio	0.32	0.32		0.32	0.32		0.21	0.21			0.22	
Clearance Time (s)	4.5	4.5		4.5	4.5		4.5	4.5			4.5	
Vehicle Extension (s)	2.0	2.0		2.0	2.0		2.0	2.0			2.0	
Lane Grp Cap (vph)	1078	465		1131	503		366	741			766	
v/s Ratio Prot	c0.21			0.11			c0.14	0.10			c0.16	
v/s Ratio Perm		0.12			0.06							
v/c Ratio	0.66	0.39		0.36	0.17		0.69	0.48			0.72	
Uniform Delay, d1	29.6	26.6		26.3	24.7		36.9	35.0			36.1	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00			1.00	
Incremental Delay, d2	1.2	0.2		0.1	0.1		4.5	0.2			2.7	
Delay (s)	30.8	26.8		26.4	24.7		41.4	35.2			38.8	
Level of Service	C	C		C	C		D	D			D	
Approach Delay (s)	29.8			25.7				37.8			38.8	
Approach LOS	C			C				D			D	

Intersection Summary			
HCM 2000 Control Delay	32.5	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.62		
Actuated Cycle Length (s)	100.7	Sum of lost time (s)	17.0
Intersection Capacity Utilization	73.8%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis  
 1: Sonoma Blvd & Curtola Pkwy

Vallejo Marine Terminal  
 Year 2040 with VMT and Orcem Projects
























Movement	SBR2	NEL2	NEL	NER	NER2
Lane Configurations					
Volume (vph)	30	10	10	10	10
Ideal Flow (vphpl)	1900	1900	1900	1900	1900
Total Lost time (s)			3.5		
Lane Util. Factor			1.00		
Frbp, ped/bikes			1.00		
Flpb, ped/bikes			1.00		
Frt			0.93		
Flt Protected			0.98		
Satd. Flow (prot)			1729		
Flt Permitted			0.98		
Satd. Flow (perm)			1729		
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	33	11	11	11	11
RTOR Reduction (vph)	0	0	41	0	0
Lane Group Flow (vph)	0	0	3	0	0
Confl. Peds. (#/hr)					
Confl. Bikes (#/hr)					
Heavy Vehicles (%)	5%	0%	0%	0%	0%
Turn Type		Prot	Prot		
Protected Phases		1	1		
Permitted Phases					
Actuated Green, G (s)			8.0		
Effective Green, g (s)			8.0		
Actuated g/C Ratio			0.08		
Clearance Time (s)			3.5		
Vehicle Extension (s)			2.0		
Lane Grp Cap (vph)			137		
v/s Ratio Prot			c0.00		
v/s Ratio Perm					
v/c Ratio			0.03		
Uniform Delay, d1			42.8		
Progression Factor			1.00		
Incremental Delay, d2			0.0		
Delay (s)			42.8		
Level of Service			D		
Approach Delay (s)			42.8		
Approach LOS			D		
<b>Intersection Summary</b>					

# HCM 2010 Signalized Intersection Summary

## 2: Solano Blvd & Sonoma Blvd



















Vallejo Marine Terminal  
Year 2040 with VMT and Orcem Projects

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	20	60	10	40	20	60	10	473	50	20	411	10
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		0.98	1.00		0.98	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1868	1900	1845	1836	1900	1900	1858	1900	1900	1882	1900
Adj Flow Rate, veh/h	23	69	4	46	23	3	11	544	51	23	472	10
Adj No. of Lanes	1	1	0	1	2	0	1	2	0	1	2	0
Peak Hour Factor	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87
Percent Heavy Veh, %	0	2	2	3	8	8	0	2	2	0	1	1
Cap, veh/h	68	208	12	111	449	57	46	1690	158	87	1939	41
Arrive On Green	0.04	0.12	0.12	0.06	0.14	0.14	0.03	0.52	0.52	0.05	0.54	0.54
Sat Flow, veh/h	1810	1749	101	1757	3104	396	1810	3257	305	1810	3578	76
Grp Volume(v), veh/h	23	0	73	46	13	13	11	294	301	23	236	246
Grp Sat Flow(s),veh/h/ln	1810	0	1850	1757	1744	1756	1810	1765	1797	1810	1788	1866
Q Serve(g_s), s	0.7	0.0	2.1	1.5	0.4	0.4	0.3	5.6	5.6	0.7	4.0	4.0
Cycle Q Clear(g_c), s	0.7	0.0	2.1	1.5	0.4	0.4	0.3	5.6	5.6	0.7	4.0	4.0
Prop In Lane	1.00		0.05	1.00		0.23	1.00		0.17	1.00		0.04
Lane Grp Cap(c), veh/h	68	0	220	111	252	254	46	916	933	87	969	1011
V/C Ratio(X)	0.34	0.00	0.33	0.41	0.05	0.05	0.24	0.32	0.32	0.26	0.24	0.24
Avail Cap(c_a), veh/h	470	0	768	532	724	729	595	916	933	563	969	1011
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	27.1	0.0	23.4	26.0	21.3	21.3	27.6	8.0	8.0	26.5	7.0	7.0
Incr Delay (d2), s/veh	1.1	0.0	0.3	0.9	0.0	0.0	1.0	0.9	0.9	0.6	0.6	0.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.4	0.0	1.1	0.7	0.2	0.2	0.2	2.9	3.0	0.4	2.1	2.2
LnGrp Delay(d),s/veh	28.2	0.0	23.7	27.0	21.3	21.3	28.6	9.0	9.0	27.1	7.6	7.6
LnGrp LOS	C		C	C	C	C	C	A	A	C	A	A
Approach Vol, veh/h		96			72			606			505	
Approach Delay, s/veh		24.8			24.9			9.3			8.5	
Approach LOS		C			C			A			A	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	5.8	34.5	6.7	10.9	4.5	35.8	5.2	12.4				
Change Period (Y+Rc), s	3.0	4.5	3.0	4.0	3.0	4.5	3.0	4.0				
Max Green Setting (Gmax), s	18.0	30.0	17.5	24.0	19.0	30.0	15.0	24.0				
Max Q Clear Time (g_c+I1), s	2.7	7.6	3.5	4.1	2.3	6.0	2.7	2.4				
Green Ext Time (p_c), s	0.0	4.5	0.0	0.3	0.0	4.5	0.0	0.3				
<b>Intersection Summary</b>												
HCM 2010 Ctrl Delay			11.0									
HCM 2010 LOS			B									
<b>Notes</b>												
User approved pedestrian interval to be less than phase max green.												

# HCM 2010 Signalized Intersection Summary



















## 3: Sonoma Blvd & Lemon St

Vallejo Marine Terminal  
Year 2040 with VMT and Orcem Projects

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	13	55	34	50	42	40	18	430	130	60	410	21
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	0.98		0.97	0.98		0.97	1.00		0.97	1.00		0.96
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1825	1900	1900	1854	1900	1696	1877	1900	1900	1882	1900
Adj Flow Rate, veh/h	14	57	26	52	44	11	19	448	113	62	427	19
Adj No. of Lanes	0	1	0	0	1	0	1	2	0	1	2	0
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	4	4	4	5	5	5	12	1	1	0	1	1
Cap, veh/h	97	243	97	228	172	35	52	1348	337	141	1831	81
Arrive On Green	0.22	0.22	0.22	0.22	0.22	0.22	0.06	0.96	0.96	0.08	0.53	0.53
Sat Flow, veh/h	106	1129	452	606	797	161	1616	2807	701	1810	3481	154
Grp Volume(v), veh/h	97	0	0	107	0	0	19	283	278	62	219	227
Grp Sat Flow(s),veh/h/ln	1687	0	0	1564	0	0	1616	1783	1725	1810	1788	1847
Q Serve(g_s), s	0.0	0.0	0.0	0.2	0.0	0.0	0.6	0.5	0.5	1.8	3.6	3.7
Cycle Q Clear(g_c), s	2.6	0.0	0.0	2.7	0.0	0.0	0.6	0.5	0.5	1.8	3.6	3.7
Prop In Lane	0.14		0.27	0.49		0.10	1.00		0.41	1.00		0.08
Lane Grp Cap(c), veh/h	438	0	0	434	0	0	52	856	829	141	940	972
V/C Ratio(X)	0.22	0.00	0.00	0.25	0.00	0.00	0.37	0.33	0.34	0.44	0.23	0.23
Avail Cap(c_a), veh/h	768	0	0	735	0	0	322	856	829	426	940	972
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	1.00	1.00	1.00	0.94	0.94	0.94
Uniform Delay (d), s/veh	18.0	0.0	0.0	18.0	0.0	0.0	25.3	0.6	0.6	24.3	7.1	7.1
Incr Delay (d2), s/veh	0.1	0.0	0.0	0.1	0.0	0.0	1.6	1.0	1.1	0.8	0.5	0.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.2	0.0	0.0	1.4	0.0	0.0	0.3	0.5	0.5	0.9	1.9	2.0
LnGrp Delay(d),s/veh	18.1	0.0	0.0	18.2	0.0	0.0	26.9	1.6	1.7	25.1	7.6	7.6
LnGrp LOS	B			B			C	A	A	C	A	A
Approach Vol, veh/h		97			107			580			508	
Approach Delay, s/veh		18.1			18.2			2.5			9.7	
Approach LOS		B			B			A			A	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	8.3	50.8		15.9	5.8	53.3		15.9				
Change Period (Y+Rc), s	4.0	4.5		4.0	4.0	4.5		4.0				
Max Green Setting (Gmax), s	13.0	26.5		23.0	11.0	28.5		23.0				
Max Q Clear Time (g_c+I1), s	3.8	2.5		4.6	2.6	5.7		4.7				
Green Ext Time (p_c), s	0.0	9.3		0.7	0.0	9.1		0.7				
<b>Intersection Summary</b>												
HCM 2010 Ctrl Delay				7.8								
HCM 2010 LOS				A								




















HCM 2010 Signalized Intersection Summary  
6: Sonoma Blvd & Magazine St

Vallejo Marine Terminal  
Year 2040 with VMT and Orcem Projects

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	30	60	10	30	60	90	20	408	130	90	314	30
Number	3	8	18	7	4	14	1	6	16	5	2	12
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	0.98		0.95	0.97		0.97	1.00		0.96	1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1900	1900	1900	1891	1900	1900	1872	1900	1900	1866	1900
Adj Flow Rate, veh/h	32	65	3	32	65	29	22	439	112	97	338	26
Adj No. of Lanes	0	1	0	0	1	0	1	2	0	1	2	0
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Percent Heavy Veh, %	0	0	0	0	0	0	0	2	2	0	2	2
Cap, veh/h	192	348	14	156	283	107	75	1107	280	203	1559	119
Arrive On Green	0.27	0.27	0.27	0.27	0.27	0.27	0.04	0.40	0.40	0.22	0.93	0.93
Sat Flow, veh/h	386	1268	51	271	1029	389	1810	2789	705	1810	3336	255
Grp Volume(v), veh/h	100	0	0	126	0	0	22	278	273	97	179	185
Grp Sat Flow(s),veh/h/ln	1706	0	0	1688	0	0	1810	1778	1716	1810	1773	1819
Q Serve(g_s), s	0.0	0.0	0.0	0.0	0.0	0.0	0.7	6.2	6.3	2.6	0.5	0.5
Cycle Q Clear(g_c), s	2.3	0.0	0.0	3.0	0.0	0.0	0.7	6.2	6.3	2.6	0.5	0.5
Prop In Lane	0.32		0.03	0.25		0.23	1.00		0.41	1.00		0.14
Lane Grp Cap(c), veh/h	554	0	0	545	0	0	75	706	681	203	828	850
V/C Ratio(X)	0.18	0.00	0.00	0.23	0.00	0.00	0.29	0.39	0.40	0.48	0.22	0.22
Avail Cap(c_a), veh/h	932	0	0	920	0	0	359	706	681	424	828	850
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	15.4	0.0	0.0	15.7	0.0	0.0	25.8	12.0	12.0	20.1	1.0	1.0
Incr Delay (d2), s/veh	0.1	0.0	0.0	0.1	0.0	0.0	0.8	1.7	1.8	0.7	0.6	0.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.2	0.0	0.0	1.5	0.0	0.0	0.3	3.3	3.3	1.3	0.3	0.3
LnGrp Delay(d),s/veh	15.5	0.0	0.0	15.8	0.0	0.0	26.6	13.6	13.7	20.8	1.6	1.6
LnGrp LOS	B			B			C	B	B	C	A	A
Approach Vol, veh/h		100			126			573			461	
Approach Delay, s/veh		15.5			15.8			14.2			5.6	
Approach LOS		B			B			B			A	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	5.8	50.5		18.7	9.7	46.6		18.7				
Change Period (Y+Rc), s	3.5	5.0		3.5	3.5	5.0		3.5				
Max Green Setting (Gmax), s	11.0	24.0		28.0	13.0	22.0		28.0				
Max Q Clear Time (g_c+I1), s	2.7	2.5		5.0	4.6	8.3		4.3				
Green Ext Time (p_c), s	0.0	8.0		0.8	0.1	6.2		0.8				
<b>Intersection Summary</b>												
HCM 2010 Ctrl Delay				11.3								
HCM 2010 LOS				B								



















HCM 2010 Signalized Intersection Summary  
8: Sonoma Blvd & Maritime Academy Dr

Vallejo Marine Terminal  
Year 2040 with VMT and Orcem Projects

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	120	20	20	20	50	130	20	368	50	30	254	50
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	0.99		0.97	0.99		0.97	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1900	1900	1900	1785	1900	1900	1863	1900	1810	1869	1900
Adj Flow Rate, veh/h	125	21	16	21	52	34	21	383	43	31	265	35
Adj No. of Lanes	0	1	0	0	1	1	1	2	0	1	2	0
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	0	0	0	5	5	0	0	2	2	5	2	2
Cap, veh/h	521	85	46	235	465	527	86	963	107	116	1009	132
Arrive On Green	0.34	0.34	0.34	0.34	0.34	0.34	0.05	0.30	0.30	0.07	0.32	0.32
Sat Flow, veh/h	988	254	136	290	1387	1574	1810	3211	358	1723	3158	413
Grp Volume(v), veh/h	162	0	0	73	0	34	21	210	216	31	148	152
Grp Sat Flow(s),veh/h/ln	1378	0	0	1676	0	1574	1810	1770	1800	1723	1775	1796
Q Serve(g_s), s	2.2	0.0	0.0	0.0	0.0	0.5	0.4	3.2	3.2	0.6	2.1	2.1
Cycle Q Clear(g_c), s	3.1	0.0	0.0	1.0	0.0	0.5	0.4	3.2	3.2	0.6	2.1	2.1
Prop In Lane	0.77		0.10	0.29		1.00	1.00		0.20	1.00		0.23
Lane Grp Cap(c), veh/h	652	0	0	700	0	527	86	531	540	116	567	574
V/C Ratio(X)	0.25	0.00	0.00	0.10	0.00	0.06	0.24	0.40	0.40	0.27	0.26	0.27
Avail Cap(c_a), veh/h	1432	0	0	1599	0	1406	1293	2108	2143	1232	2114	2139
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	8.5	0.0	0.0	7.7	0.0	7.6	15.4	9.3	9.4	14.9	8.5	8.5
Incr Delay (d2), s/veh	0.1	0.0	0.0	0.0	0.0	0.0	0.5	0.5	0.5	0.5	0.2	0.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.1	0.0	0.0	0.5	0.0	0.2	0.2	1.6	1.6	0.3	1.0	1.1
LnGrp Delay(d),s/veh	8.5	0.0	0.0	7.8	0.0	7.6	15.9	9.8	9.8	15.3	8.7	8.7
LnGrp LOS	A			A		A	B	A	A	B	A	A
Approach Vol, veh/h		162			107			447			331	
Approach Delay, s/veh		8.5			7.7			10.1			9.4	
Approach LOS		A			A			B			A	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	5.3	14.1		14.3	4.6	14.7		14.3				
Change Period (Y+Rc), s	3.0	4.0		3.0	3.0	4.0		3.0				
Max Green Setting (Gmax), s	24.0	40.0		30.0	24.0	40.0		30.0				
Max Q Clear Time (g_c+I1), s	2.6	5.2		5.1	2.4	4.1		3.0				
Green Ext Time (p_c), s	0.0	4.9		1.0	0.0	4.9		1.0				
<b>Intersection Summary</b>												
HCM 2010 Ctrl Delay			9.4									
HCM 2010 LOS			A									

HCM 2010 Signalized Intersection Summary  
 16: Lemon St & Carlson St

























Vallejo Marine Terminal  
 Year 2040 with VMT and Orcem Projects

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	10	355	10	40	202	70	0	0	40	210	0	20
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	0.97		0.95	0.98		0.95	1.00		0.94	0.93		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1865	1900	1900	1771	1900	1900	1900	1900	1863	1869	1900
Adj Flow Rate, veh/h	11	382	9	43	217	52	0	0	13	232	0	0
Adj No. of Lanes	0	1	0	1	1	0	0	1	0	2	1	0
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Percent Heavy Veh, %	2	2	2	0	7	7	0	0	0	2	0	0
Cap, veh/h	129	802	19	529	613	147	0	0	436	1201	537	0
Arrive On Green	0.45	0.45	0.45	0.45	0.45	0.45	0.00	0.00	0.29	0.29	0.00	0.00
Sat Flow, veh/h	16	1786	41	985	1366	327	0	0	1516	2583	1869	0
Grp Volume(v), veh/h	402	0	0	43	0	269	0	0	13	232	0	0
Grp Sat Flow(s),veh/h/ln	1843	0	0	985	0	1693	0	0	1516	1292	1869	0
Q Serve(g_s), s	0.0	0.0	0.0	1.0	0.0	3.2	0.0	0.0	0.2	2.2	0.0	0.0
Cycle Q Clear(g_c), s	4.6	0.0	0.0	5.6	0.0	3.2	0.0	0.0	0.2	2.3	0.0	0.0
Prop In Lane	0.03		0.02	1.00		0.19	0.00		1.00	1.00		0.00
Lane Grp Cap(c), veh/h	949	0	0	529	0	760	0	0	436	1201	537	0
V/C Ratio(X)	0.42	0.00	0.00	0.08	0.00	0.35	0.00	0.00	0.03	0.19	0.00	0.00
Avail Cap(c_a), veh/h	2350	0	0	1288	0	2065	0	0	1499	3012	1848	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	1.00	0.00	0.00	1.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	5.9	0.0	0.0	7.9	0.0	5.5	0.0	0.0	7.8	8.6	0.0	0.0
Incr Delay (d2), s/veh	0.3	0.0	0.0	0.1	0.0	0.3	0.0	0.0	0.0	0.1	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.4	0.0	0.0	0.3	0.0	1.5	0.0	0.0	0.1	0.8	0.0	0.0
LnGrp Delay(d),s/veh	6.2	0.0	0.0	7.9	0.0	5.8	0.0	0.0	7.8	8.7	0.0	0.0
LnGrp LOS	A			A		A			A	A		
Approach Vol, veh/h		402			312			13			232	
Approach Delay, s/veh		6.2			6.1			7.8			8.7	
Approach LOS		A			A			A			A	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		17.6		12.7		17.6		12.7				
Change Period (Y+Rc), s		4.0		4.0		4.0		4.0				
Max Green Setting (Gmax), s		37.0		30.0		37.0		30.0				
Max Q Clear Time (g_c+I1), s		6.6		4.3		7.6		2.2				
Green Ext Time (p_c), s		4.9		0.9		4.9		1.0				
<b>Intersection Summary</b>												
HCM 2010 Ctrl Delay			6.8									
HCM 2010 LOS			A									
<b>Notes</b>												
User approved volume balancing among the lanes for turning movement.												



HCM 2010 Signalized Intersection Summary  
 17: Lemon St & Curtola Pkwy

Vallejo Marine Terminal  
 Year 2040 with VMT and Orcem Projects

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	60	160	465	110	100	30	212	720	170	50	990	30
Number	3	8	18	7	4	14	1	6	16	5	2	12
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		0.92	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1759	1881	1881	1881	1863	1900	1759	1881	1900	1900	1846	1900
Adj Flow Rate, veh/h	62	215	198	113	103	8	219	742	0	52	1021	0
Adj No. of Lanes	1	1	1	1	1	1	1	2	0	1	2	0
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %	8	1	1	1	2	0	8	1	1	0	3	3
Cap, veh/h	78	333	278	145	394	314	257	1686	0	76	1264	0
Arrive On Green	0.05	0.18	0.18	0.08	0.21	0.21	0.15	0.47	0.00	0.04	0.36	0.00
Sat Flow, veh/h	1675	1881	1568	1792	1863	1484	1675	3668	0	1810	3600	0
Grp Volume(v), veh/h	62	215	198	113	103	8	219	742	0	52	1021	0
Grp Sat Flow(s),veh/h/ln	1675	1881	1568	1792	1863	1484	1675	1787	0	1810	1754	0
Q Serve(g_s), s	3.0	8.8	9.9	5.1	3.8	0.4	10.5	11.5	0.0	2.3	21.8	0.0
Cycle Q Clear(g_c), s	3.0	8.8	9.9	5.1	3.8	0.4	10.5	11.5	0.0	2.3	21.8	0.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.00	1.00		0.00
Lane Grp Cap(c), veh/h	78	333	278	145	394	314	257	1686	0	76	1264	0
V/C Ratio(X)	0.79	0.64	0.71	0.78	0.26	0.03	0.85	0.44	0.00	0.68	0.81	0.00
Avail Cap(c_a), veh/h	505	794	662	540	787	627	505	1686	0	546	1481	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	39.1	31.7	32.1	37.4	27.3	25.9	34.2	14.6	0.0	39.1	23.9	0.0
Incr Delay (d2), s/veh	6.6	2.2	3.5	3.4	0.4	0.0	3.1	0.3	0.0	4.0	3.1	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.5	4.7	4.5	2.7	2.0	0.1	5.1	5.7	0.0	1.3	11.0	0.0
LnGrp Delay(d),s/veh	45.7	33.8	35.6	40.7	27.7	25.9	37.2	14.9	0.0	43.1	27.0	0.0
LnGrp LOS	D	C	D	D	C	C	D	B		D	C	
Approach Vol, veh/h		475			224			961			1073	
Approach Delay, s/veh		36.1			34.2			20.0			27.8	
Approach LOS		D			C			B			C	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	16.7	35.9	7.9	22.4	7.5	45.1	10.7	19.6				
Change Period (Y+Rc), s	4.0	6.0	4.0	4.9	4.0	6.0	4.0	4.9				
Max Green Setting (Gmax), s	25.0	35.0	25.0	35.0	25.0	35.0	25.0	35.0				
Max Q Clear Time (g_c+I1), s	12.5	23.8	5.0	5.8	4.3	13.5	7.1	11.9				
Green Ext Time (p_c), s	0.3	6.1	0.1	3.0	0.0	15.2	0.1	2.8				
<b>Intersection Summary</b>												
HCM 2010 Ctrl Delay			27.0									
HCM 2010 LOS			C									
<b>Notes</b>												
User approved volume balancing among the lanes for turning movement.												

**Intersection**

Int Delay, s/veh 1.5

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR
Vol, veh/h	20	10	10	10	10	10	10	578	10
Conflicting Peds, #/hr	0	0	0	0	0	0	7	0	10
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-
Peak Hour Factor	97	97	97	97	97	97	97	97	97
Heavy Vehicles, %	15	0	0	0	0	0	0	2	0
Mvmt Flow	21	10	10	10	10	10	10	596	10

Major/Minor	Minor2			Minor1			Major1		
Conflicting Flow All	844	1147	265	892	1152	313	509	0	0
Stage 1	520	520	-	622	622	-	-	-	-
Stage 2	324	627	-	270	530	-	-	-	-
Critical Hdwy	7.8	6.5	6.9	7.5	6.5	6.9	4.1	-	-
Critical Hdwy Stg 1	6.8	5.5	-	6.5	5.5	-	-	-	-
Critical Hdwy Stg 2	6.8	5.5	-	6.5	5.5	-	-	-	-
Follow-up Hdwy	3.65	4	3.3	3.5	4	3.3	2.2	-	-
Pot Cap-1 Maneuver	236	201	739	240	199	689	1066	-	-
Stage 1	475	535	-	446	482	-	-	-	-
Stage 2	627	479	-	718	530	-	-	-	-
Platoon blocked, %									
Mov Cap-1 Maneuver	216	195	733	220	193	683	1057	-	-
Mov Cap-2 Maneuver	216	195	-	220	193	-	-	-	-
Stage 1	468	528	-	440	475	-	-	-	-
Stage 2	591	472	-	679	523	-	-	-	-

Approach	EB	WB	NB
HCM Control Delay, s	21.9	20.2	0.2
HCM LOS	C	C	

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1057	-	-	254	268	974	-	-
HCM Lane V/C Ratio	0.01	-	-	0.162	0.115	0.011	-	-
HCM Control Delay (s)	8.4	0.1	-	21.9	20.2	8.7	0.1	-
HCM Lane LOS	A	A	-	C	C	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0.6	0.4	0	-	-

**Intersection**

Int Delay, s/veh

Movement	SBL	SBT	SBR
Vol, veh/h	10	474	20
Conflicting Peds, #/hr	10	0	7
Sign Control	Free	Free	Free
RT Channelized	-	-	None
Storage Length	-	-	-
Veh in Median Storage, #	-	0	-
Grade, %	-	0	-
Peak Hour Factor	97	97	97
Heavy Vehicles, %	0	2	0
Mvmt Flow	10	489	21

**Major/Minor Major2**

Conflicting Flow All	606	0	0
Stage 1	-	-	-
Stage 2	-	-	-
Critical Hdwy	4.1	-	-
Critical Hdwy Stg 1	-	-	-
Critical Hdwy Stg 2	-	-	-
Follow-up Hdwy	2.2	-	-
Pot Cap-1 Maneuver	982	-	-
Stage 1	-	-	-
Stage 2	-	-	-
Platoon blocked, %		-	-
Mov Cap-1 Maneuver	974	-	-
Mov Cap-2 Maneuver	-	-	-
Stage 1	-	-	-
Stage 2	-	-	-

**Approach SB**

HCM Control Delay, s 0.3

HCM LOS

**Minor Lane/Major Mvmt**

Intersection									
Int Delay, s/veh	2								

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR
Vol, veh/h	40	10	10	10	0	20	20	518	10
Conflicting Peds, #/hr	0	0	6	6	0	0	6	0	7
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-
Peak Hour Factor	97	97	97	97	97	97	97	97	97
Heavy Vehicles, %	3	0	0	0	0	0	0	2	0
Mvmt Flow	41	10	10	10	0	21	21	534	10

Major/Minor	Minor2			Minor1			Major1		
Conflicting Flow All	824	1102	252	862	1112	285	484	0	0
Stage 1	510	510	-	586	586	-	-	-	-
Stage 2	314	592	-	276	526	-	-	-	-
Critical Hdwy	7.56	6.5	6.9	7.5	6.5	6.9	4.1	-	-
Critical Hdwy Stg 1	6.56	5.5	-	6.5	5.5	-	-	-	-
Critical Hdwy Stg 2	6.56	5.5	-	6.5	5.5	-	-	-	-
Follow-up Hdwy	3.53	4	3.3	3.5	4	3.3	2.2	-	-
Pot Cap-1 Maneuver	263	213	754	252	211	718	1089	-	-
Stage 1	512	541	-	468	500	-	-	-	-
Stage 2	669	497	-	712	532	-	-	-	-
Platoon blocked, %	-								
Mov Cap-1 Maneuver	242	199	746	226	197	710	1083	-	-
Mov Cap-2 Maneuver	242	199	-	226	197	-	-	-	-
Stage 1	495	523	-	453	484	-	-	-	-
Stage 2	628	481	-	665	515	-	-	-	-

Approach	EB	WB	NB
HCM Control Delay, s	22.9	14.4	0.4
HCM LOS	C	B	

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1083	-	-	262	414	1024	-	-
HCM Lane V/C Ratio	0.019	-	-	0.236	0.075	0.02	-	-
HCM Control Delay (s)	8.4	0.1	-	22.9	14.4	8.6	0.1	-
HCM Lane LOS	A	A	-	C	B	A	A	-
HCM 95th %tile Q(veh)	0.1	-	-	0.9	0.2	0.1	-	-

**Intersection**

Int Delay, s/veh

Movement	SBL	SBT	SBR
Vol, veh/h	20	434	30
Conflicting Peds, #/hr	7	0	6
Sign Control	Free	Free	Free
RT Channelized	-	-	None
Storage Length	-	-	-
Veh in Median Storage, #	-	0	-
Grade, %	-	0	-
Peak Hour Factor	97	97	97
Heavy Vehicles, %	0	2	0
Mvmt Flow	21	447	31

**Major/Minor Major2**

Conflicting Flow All	550	0	0
Stage 1	-	-	-
Stage 2	-	-	-
Critical Hdwy	4.1	-	-
Critical Hdwy Stg 1	-	-	-
Critical Hdwy Stg 2	-	-	-
Follow-up Hdwy	2.2	-	-
Pot Cap-1 Maneuver	1030	-	-
Stage 1	-	-	-
Stage 2	-	-	-
Platoon blocked, %		-	-
Mov Cap-1 Maneuver	1024	-	-
Mov Cap-2 Maneuver	-	-	-
Stage 1	-	-	-
Stage 2	-	-	-

**Approach SB**

HCM Control Delay, s 0.4

HCM LOS

**Minor Lane/Major Mvmt**

**Intersection**

Int Delay, s/veh 2.2

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Vol, veh/h	50	30	110	528	304	40
Conflicting Peds, #/hr	0	0	7	0	0	7
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	60	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	0	0	0	2	2	0
Mvmt Flow	53	32	116	556	320	42

Major/Minor	Minor2	Major1	Major2
Conflicting Flow All	850	188	362
Stage 1	341	-	-
Stage 2	509	-	-
Critical Hdwy	6.8	6.9	4.1
Critical Hdwy Stg 1	5.8	-	-
Critical Hdwy Stg 2	5.8	-	-
Follow-up Hdwy	3.5	3.3	2.2
Pot Cap-1 Maneuver	303	828	1208
Stage 1	698	-	-
Stage 2	574	-	-
Platoon blocked, %			-
Mov Cap-1 Maneuver	274	823	1201
Mov Cap-2 Maneuver	274	-	-
Stage 1	698	-	-
Stage 2	519	-	-

Approach	EB	NB	SB
HCM Control Delay, s	17.8	1.4	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1201	-	365	-	-
HCM Lane V/C Ratio	0.096	-	0.231	-	-
HCM Control Delay (s)	8.3	-	17.8	-	-
HCM Lane LOS	A	-	C	-	-
HCM 95th %tile Q(veh)	0.3	-	0.9	-	-

**Intersection**

Int Delay, s/veh 1.7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR
Vol, veh/h	0	72	0	10	31	20	0	0	10
Conflicting Peds, #/hr	6	0	0	0	0	6	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-
Peak Hour Factor	80	80	80	80	80	80	80	80	80
Heavy Vehicles, %	0	6	0	0	13	0	0	0	0
Mvmt Flow	0	90	0	12	39	25	0	0	12

Major/Minor	Major1	Major2	Minor1						
Conflicting Flow All	64	0	0	90	0	0	166	179	96
Stage 1	-	-	-	-	-	-	90	90	-
Stage 2	-	-	-	-	-	-	76	89	-
Critical Hdwy	4.1	-	-	4.1	-	-	7.1	6.5	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-
Follow-up Hdwy	2.2	-	-	2.2	-	-	3.5	4	3.3
Pot Cap-1 Maneuver	1551	-	-	1518	-	-	803	718	966
Stage 1	-	-	-	-	-	-	922	824	-
Stage 2	-	-	-	-	-	-	938	825	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1543	-	-	1510	-	-	794	712	961
Mov Cap-2 Maneuver	-	-	-	-	-	-	794	712	-
Stage 1	-	-	-	-	-	-	922	824	-
Stage 2	-	-	-	-	-	-	925	818	-

Approach	EB	WB	NB
HCM Control Delay, s	0	1.2	8.8
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	961	1543	-	-	1510	-	-	776
HCM Lane V/C Ratio	0.013	-	-	-	0.008	-	-	0.016
HCM Control Delay (s)	8.8	0	-	-	7.4	0	-	9.7
HCM Lane LOS	A	A	-	-	A	A	-	A
HCM 95th %tile Q(veh)	0	0	-	-	0	-	-	0

**Intersection**

Int Delay, s/veh

Movement	SBL	SBT	SBR
Vol, veh/h	10	0	0
Conflicting Peds, #/hr	0	0	0
Sign Control	Stop	Stop	Stop
RT Channelized	-	-	None
Storage Length	-	-	-
Veh in Median Storage, #	-	0	-
Grade, %	-	0	-
Peak Hour Factor	80	80	80
Heavy Vehicles, %	0	0	0
Mvmt Flow	12	0	0

**Major/Minor**

	Minor2		
Conflicting Flow All	172	166	57
Stage 1	76	76	-
Stage 2	96	90	-
Critical Hdwy	7.1	6.5	6.2
Critical Hdwy Stg 1	6.1	5.5	-
Critical Hdwy Stg 2	6.1	5.5	-
Follow-up Hdwy	3.5	4	3.3
Pot Cap-1 Maneuver	796	730	1015
Stage 1	938	836	-
Stage 2	916	824	-
Platoon blocked, %			
Mov Cap-1 Maneuver	776	723	1010
Mov Cap-2 Maneuver	776	723	-
Stage 1	938	828	-
Stage 2	900	824	-

**Approach**

	SB
HCM Control Delay, s	9.7
HCM LOS	A

**Minor Lane/Major Mvmt**



**Intersection**

Int Delay, s/veh 2.4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR
Vol, veh/h	0	82	0	10	51	10	10	0	20
Conflicting Peds, #/hr	0	0	6	6	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-
Peak Hour Factor	80	80	80	80	80	80	80	80	80
Heavy Vehicles, %	0	5	0	0	8	0	0	0	0
Mvmt Flow	0	102	0	12	64	12	12	0	25

Major/Minor	Major1	Major2	Minor1						
Conflicting Flow All	76	0	0	103	0	0	204	204	109
Stage 1	-	-	-	-	-	-	103	103	-
Stage 2	-	-	-	-	-	-	101	101	-
Critical Hdwy	4.1	-	-	4.1	-	-	7.1	6.5	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-
Follow-up Hdwy	2.2	-	-	2.2	-	-	3.5	4	3.3
Pot Cap-1 Maneuver	1536	-	-	1502	-	-	758	696	950
Stage 1	-	-	-	-	-	-	908	814	-
Stage 2	-	-	-	-	-	-	910	815	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1528	-	-	1494	-	-	739	690	945
Mov Cap-2 Maneuver	-	-	-	-	-	-	739	690	-
Stage 1	-	-	-	-	-	-	908	814	-
Stage 2	-	-	-	-	-	-	884	808	-

Approach	EB	WB	NB
HCM Control Delay, s	0	1	9.4
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	865	1528	-	-	1494	-	-	695
HCM Lane V/C Ratio	0.043	-	-	-	0.008	-	-	0.018
HCM Control Delay (s)	9.4	0	-	-	7.4	0	-	10.3
HCM Lane LOS	A	A	-	-	A	A	-	B
HCM 95th %tile Q(veh)	0.1	0	-	-	0	-	-	0.1

**Intersection**

Int Delay, s/veh

Movement	SBL	SBT	SBR
Vol, veh/h	0	10	0
Conflicting Peds, #/hr	0	0	0
Sign Control	Stop	Stop	Stop
RT Channelized	-	-	None
Storage Length	-	-	-
Veh in Median Storage, #	-	0	-
Grade, %	-	0	-
Peak Hour Factor	80	80	80
Heavy Vehicles, %	0	0	0
Mvmt Flow	0	12	0

**Major/Minor**

**Minor2**

Conflicting Flow All	210	198	76
Stage 1	95	95	-
Stage 2	115	103	-
Critical Hdwy	7.1	6.5	6.2
Critical Hdwy Stg 1	6.1	5.5	-
Critical Hdwy Stg 2	6.1	5.5	-
Follow-up Hdwy	3.5	4	3.3
Pot Cap-1 Maneuver	752	701	991
Stage 1	917	820	-
Stage 2	895	814	-
Platoon blocked, %			
Mov Cap-1 Maneuver	723	695	986
Mov Cap-2 Maneuver	723	695	-
Stage 1	917	813	-
Stage 2	867	814	-

**Approach**

SB

HCM Control Delay, s	10.3
HCM LOS	B

**Minor Lane/Major Mvmt**

**Intersection**

Int Delay, s/veh 2.1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR
Vol, veh/h	10	225	10	20	112	10	10	10	10
Conflicting Peds, #/hr	10	0	9	9	0	10	8	0	9
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-
Peak Hour Factor	88	88	88	88	88	88	88	88	88
Heavy Vehicles, %	0	2	0	0	3	14	0	0	0
Mvmt Flow	11	256	11	23	127	11	11	11	11

Major/Minor	Major1	Major2	Minor1						
Conflicting Flow All	148	0	0	276	0	0	492	486	280
Stage 1	-	-	-	-	-	-	293	293	-
Stage 2	-	-	-	-	-	-	199	193	-
Critical Hdwy	4.1	-	-	4.1	-	-	7.1	6.5	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-
Follow-up Hdwy	2.2	-	-	2.2	-	-	3.5	4	3.3
Pot Cap-1 Maneuver	1446	-	-	1299	-	-	490	484	764
Stage 1	-	-	-	-	-	-	719	674	-
Stage 2	-	-	-	-	-	-	807	745	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1434	-	-	1288	-	-	457	463	752
Mov Cap-2 Maneuver	-	-	-	-	-	-	457	463	-
Stage 1	-	-	-	-	-	-	707	663	-
Stage 2	-	-	-	-	-	-	763	725	-

Approach	EB	WB	NB
HCM Control Delay, s	0.3	1.1	12.3
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	528	1434	-	-	1288	-	-	548
HCM Lane V/C Ratio	0.065	0.008	-	-	0.018	-	-	0.062
HCM Control Delay (s)	12.3	7.5	0	-	7.8	0	-	12
HCM Lane LOS	B	A	A	-	A	A	-	B
HCM 95th %tile Q(veh)	0.2	0	-	-	0.1	-	-	0.2

**Intersection**

Int Delay, s/veh

Movement	SBL	SBT	SBR
Vol, veh/h	10	10	10
Conflicting Peds, #/hr	9	0	8
Sign Control	Stop	Stop	Stop
RT Channelized	-	-	None
Storage Length	-	-	-
Veh in Median Storage, #	-	0	-
Grade, %	-	0	-
Peak Hour Factor	88	88	88
Heavy Vehicles, %	0	0	0
Mvmt Flow	11	11	11

**Major/Minor**

Minor2

Conflicting Flow All	491	486	152
Stage 1	187	187	-
Stage 2	304	299	-
Critical Hdwy	7.1	6.5	6.2
Critical Hdwy Stg 1	6.1	5.5	-
Critical Hdwy Stg 2	6.1	5.5	-
Follow-up Hdwy	3.5	4	3.3
Pot Cap-1 Maneuver	491	484	900
Stage 1	819	749	-
Stage 2	710	670	-
Platoon blocked, %			
Mov Cap-1 Maneuver	457	463	886
Mov Cap-2 Maneuver	457	463	-
Stage 1	806	729	-
Stage 2	675	659	-

**Approach**

SB

HCM Control Delay, s	12
HCM LOS	B

**Minor Lane/Major Mvmt**

**Intersection**

Int Delay, s/veh 5.8

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR
Vol, veh/h	10	215	10	30	122	40	10	60	20
Conflicting Peds, #/hr	8	0	0	0	0	8	6	0	9
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-
Peak Hour Factor	94	94	94	94	94	94	94	94	94
Heavy Vehicles, %	0	2	0	5	4	6	0	0	0
Mvmt Flow	11	229	11	32	130	43	11	64	21

Major/Minor	Major1	Major2	Minor1						
Conflicting Flow All	181	0	0	248	0	0	525	509	251
Stage 1	-	-	-	-	-	-	264	264	-
Stage 2	-	-	-	-	-	-	261	245	-
Critical Hdwy	4.1	-	-	4.15	-	-	7.1	6.5	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-
Follow-up Hdwy	2.2	-	-	2.245	-	-	3.5	4	3.3
Pot Cap-1 Maneuver	1407	-	-	1300	-	-	466	470	793
Stage 1	-	-	-	-	-	-	746	694	-
Stage 2	-	-	-	-	-	-	748	707	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1398	-	-	1291	-	-	397	446	782
Mov Cap-2 Maneuver	-	-	-	-	-	-	397	446	-
Stage 1	-	-	-	-	-	-	734	683	-
Stage 2	-	-	-	-	-	-	651	682	-

Approach	EB	WB	NB
HCM Control Delay, s	0.3	1.2	14.2
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	486	1398	-	-	1291	-	-	448
HCM Lane V/C Ratio	0.197	0.008	-	-	0.025	-	-	0.309
HCM Control Delay (s)	14.2	7.6	0	-	7.9	0	-	16.6
HCM Lane LOS	B	A	A	-	A	A	-	C
HCM 95th %tile Q(veh)	0.7	0	-	-	0.1	-	-	1.3

**Intersection**

Int Delay, s/veh

Movement	SBL	SBT	SBR
Vol, veh/h	60	50	20
Conflicting Peds, #/hr	9	0	6
Sign Control	Stop	Stop	Stop
RT Channelized	-	-	None
Storage Length	-	-	-
Veh in Median Storage, #	-	0	-
Grade, %	-	0	-
Peak Hour Factor	94	94	94
Heavy Vehicles, %	2	0	0
Mvmt Flow	64	53	21

**Major/Minor**

	Minor2		
Conflicting Flow All	531	494	168
Stage 1	224	224	-
Stage 2	307	270	-
Critical Hdwy	7.12	6.5	6.2
Critical Hdwy Stg 1	6.12	5.5	-
Critical Hdwy Stg 2	6.12	5.5	-
Follow-up Hdwy	3.518	4	3.3
Pot Cap-1 Maneuver	459	479	881
Stage 1	779	722	-
Stage 2	703	690	-
Platoon blocked, %			
Mov Cap-1 Maneuver	381	455	869
Mov Cap-2 Maneuver	381	455	-
Stage 1	766	697	-
Stage 2	610	679	-

**Approach**

	SB
HCM Control Delay, s	16.6
HCM LOS	C

**Minor Lane/Major Mvmt**

**Intersection**

Int Delay, s/veh 1.3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR
Vol, veh/h	10	275	10	20	162	0	10	0	20
Conflicting Peds, #/hr	6	0	6	6	0	6	9	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	0	2	0	0	5	0	0	0	0
Mvmt Flow	11	306	11	22	180	0	11	0	22

Major/Minor	Major1	Major2	Minor1						
Conflicting Flow All	189	0	0	326	0	0	581	575	326
Stage 1	-	-	-	-	-	-	342	342	-
Stage 2	-	-	-	-	-	-	239	233	-
Critical Hdwy	4.1	-	-	4.1	-	-	7.1	6.5	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-
Follow-up Hdwy	2.2	-	-	2.2	-	-	3.5	4	3.3
Pot Cap-1 Maneuver	1397	-	-	1245	-	-	428	431	720
Stage 1	-	-	-	-	-	-	677	642	-
Stage 2	-	-	-	-	-	-	769	716	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1390	-	-	1239	-	-	408	412	711
Mov Cap-2 Maneuver	-	-	-	-	-	-	408	412	-
Stage 1	-	-	-	-	-	-	665	631	-
Stage 2	-	-	-	-	-	-	740	696	-

Approach	EB	WB	NB
HCM Control Delay, s	0.3	0.9	11.7
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	570	1390	-	-	1239	-	-	840
HCM Lane V/C Ratio	0.058	0.008	-	-	0.018	-	-	0.013
HCM Control Delay (s)	11.7	7.6	0	-	8	0	-	9.3
HCM Lane LOS	B	A	A	-	A	A	-	A
HCM 95th %tile Q(veh)	0.2	0	-	-	0.1	-	-	0

**Intersection**

Int Delay, s/veh

Movement	SBL	SBT	SBR
Vol, veh/h	0	0	10
Conflicting Peds, #/hr	0	0	9
Sign Control	Stop	Stop	Stop
RT Channelized	-	-	None
Storage Length	-	-	-
Veh in Median Storage, #	-	0	-
Grade, %	-	0	-
Peak Hour Factor	90	90	90
Heavy Vehicles, %	0	0	0
Mvmt Flow	0	0	11

**Major/Minor**

**Minor2**

Conflicting Flow All	586	581	195
Stage 1	233	233	-
Stage 2	353	348	-
Critical Hdwy	7.1	6.5	6.2
Critical Hdwy Stg 1	6.1	5.5	-
Critical Hdwy Stg 2	6.1	5.5	-
Follow-up Hdwy	3.5	4	3.3
Pot Cap-1 Maneuver	425	428	851
Stage 1	775	716	-
Stage 2	668	638	-
Platoon blocked, %			
Mov Cap-1 Maneuver	397	409	840
Mov Cap-2 Maneuver	397	409	-
Stage 1	761	696	-
Stage 2	637	627	-

**Approach**

SB

HCM Control Delay, s	9.3
HCM LOS	A

**Minor Lane/Major Mvmt**



Intersection	
Int Delay, s/veh	0.4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR
Vol, veh/h	0	295	10	0	182	10	0	0	0
Conflicting Peds, #/hr	6	0	7	7	0	6	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-
Peak Hour Factor	87	87	87	87	87	87	87	87	87
Heavy Vehicles, %	0	2	0	0	5	0	0	0	0
Mvmt Flow	0	339	11	0	209	11	0	0	0

Major/Minor	Major1	Major2	Minor1						
Conflicting Flow All	221	0	0	351	0	0	566	566	352
Stage 1	-	-	-	-	-	-	345	345	-
Stage 2	-	-	-	-	-	-	221	221	-
Critical Hdwy	4.1	-	-	4.1	-	-	7.1	6.5	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-
Follow-up Hdwy	2.2	-	-	2.2	-	-	3.5	4	3.3
Pot Cap-1 Maneuver	1360	-	-	1219	-	-	438	436	696
Stage 1	-	-	-	-	-	-	675	640	-
Stage 2	-	-	-	-	-	-	786	724	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1352	-	-	1212	-	-	429	436	692
Mov Cap-2 Maneuver	-	-	-	-	-	-	429	436	-
Stage 1	-	-	-	-	-	-	675	640	-
Stage 2	-	-	-	-	-	-	770	724	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0	0
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	-	1352	-	-	1212	-	-	571
HCM Lane V/C Ratio	-	-	-	-	-	-	-	0.04
HCM Control Delay (s)	0	0	-	-	0	-	-	11.6
HCM Lane LOS	A	A	-	-	A	-	-	B
HCM 95th %tile Q(veh)	-	0	-	-	0	-	-	0.1

**Intersection**

Int Delay, s/veh

Movement	SBL	SBT	SBR
Vol, veh/h	10	0	10
Conflicting Peds, #/hr	0	0	0
Sign Control	Stop	Stop	Stop
RT Channelized	-	-	None
Storage Length	-	-	-
Veh in Median Storage, #	-	0	-
Grade, %	-	0	-
Peak Hour Factor	87	87	87
Heavy Vehicles, %	0	0	0
Mvmt Flow	11	0	11

**Major/Minor**

	Minor2		
Conflicting Flow All	560	566	222
Stage 1	215	215	-
Stage 2	345	351	-
Critical Hdwy	7.1	6.5	6.2
Critical Hdwy Stg 1	6.1	5.5	-
Critical Hdwy Stg 2	6.1	5.5	-
Follow-up Hdwy	3.5	4	3.3
Pot Cap-1 Maneuver	442	436	823
Stage 1	792	729	-
Stage 2	675	636	-
Platoon blocked, %			
Mov Cap-1 Maneuver	439	436	818
Mov Cap-2 Maneuver	439	436	-
Stage 1	792	729	-
Stage 2	671	636	-

**Approach**

Approach	SB
HCM Control Delay, s	11.6
HCM LOS	B

**Minor Lane/Major Mvmt**

**Intersection**

Int Delay, s/veh 1.3

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Vol, veh/h	305	10	20	192	10	40
Conflicting Peds, #/hr	0	10	10	0	0	7
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	84	84	84	84	84	84
Heavy Vehicles, %	1	17	36	5	0	0
Mvmt Flow	363	12	24	229	12	48

Major/Minor	Major1	Major2	Minor1
Conflicting Flow All	0	382	652
Stage 1	-	-	376
Stage 2	-	-	276
Critical Hdwy	-	4.46	6.4
Critical Hdwy Stg 1	-	-	5.4
Critical Hdwy Stg 2	-	-	5.4
Follow-up Hdwy	-	2.524	3.5
Pot Cap-1 Maneuver	-	1013	436
Stage 1	-	-	699
Stage 2	-	-	775
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	-	1005	418
Mov Cap-2 Maneuver	-	-	418
Stage 1	-	-	695
Stage 2	-	-	748

Approach	EB	WB	NB
HCM Control Delay, s	0	0.8	11.8
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	590	-	-	1005	-
HCM Lane V/C Ratio	0.101	-	-	0.024	-
HCM Control Delay (s)	11.8	-	-	8.7	0
HCM Lane LOS	B	-	-	A	A
HCM 95th %tile Q(veh)	0.3	-	-	0.1	-



## **APPENDIX L.5: FREEWAY ANALYSIS RESULTS**

- L.5.1 Volumes for All Scenarios
- L.5.2 Existing Conditions
- L.5.3 Existing Plus VMT Project
- L.5.4 Existing Plus Orcem Project
- L.5.5 Existing Plus Combined Projects
- L.5.6 Cumulative (2040) No Project
- L.5.7 Cumulative Plus VMT Project
- L.5.8 Cumulative Plus Orcem Project
- L.5.9 Cumulative Plus Combined Projects



**APPENDIX L.5.1 — VOLUMES FOR ALL SCENARIOS**



# Vallejo Marine Terminal Volumes

80 North of 780 Merge/Diverge Volumes			
Direction	Time	Mainline	Ramp
WB	7:00 - 8:00		9
(Diverge)	17:00 - 18:00		5
EB	6:00 - 7:00		9
(Merge)	17:00 - 18:00		9

80 North of 780 Basic Segment Volumes		
Direction	Time	Mainline
EB	6:00 - 7:00	9
	16:00 - 17:00	9
WB	6:00 - 7:00	9
	16:00 - 17:00	5

80 South of SR 29 Basic Segment Volumes		
Direction	Time	Mainline
EB	6:00 - 7:00	9
	16:00 - 17:00	9
WB	6:00 - 7:00	9
	16:00 - 17:00	4

780 at I-80 Weave Volumes				
Direction	Time	V	W1	W2
EB	7:00 - 8:00	13	9	
	17:00 - 18:00	13	9	
WB	7:00 - 8:00	13		9
	17:00 - 18:00	6		5

780 East of Laurel Basic Segment Volumes		
Direction	Time	Mainline
EB	6:00 - 7:00	5
	16:00 - 17:00	5
WB	6:00 - 7:00	5
	16:00 - 17:00	2



## Orcem Volumes

80 North of 780 Merge/Diverge Volumes			
Direction	Time	Mainline	Ramp
WB (Diverge)	7:00 - 8:00		26
	17:00 - 18:00		12
EB (Merge)	6:00 - 7:00		18
	17:00 - 18:00		23

81 North of 780 Basic Segment Volumes		
Direction	Time	Mainline
EB	6:00 - 7:00	18
	16:00 - 17:00	23
WB	6:00 - 7:00	16
	16:00 - 17:00	12

81 South of SR 29 Basic Segment Volumes		
Direction	Time	Mainline
EB	6:00 - 7:00	17
	16:00 - 17:00	25
WB	6:00 - 7:00	25
	16:00 - 17:00	14

780 at I-80 Weave Volumes				
Direction	Time	V	W1	W2
EB	7:00 - 8:00	26	18	
	17:00 - 18:00	34	23	
WB	7:00 - 8:00	38		26
	17:00 - 18:00	18		12

781 East of Laurel Basic Segment Volumes		
Direction	Time	Mainline
EB	6:00 - 7:00	8
	16:00 - 17:00	11
WB	6:00 - 7:00	12
	16:00 - 17:00	6

## Existing

80 North of 780 Merge/Diverge Volumes				
Direction	Time	Mainline	Ramp	Adjacent
WB (Diverge)	7:00 - 8:00	4139	1417	145
	17:00 - 18:00	4794	1665	184
EB (Merge)	6:00 - 7:00	2598	1684	116
	17:00 - 18:00	2283	1714	173

82 North of 780 Basic Segment Volumes		
Direction	Time	Mainline
EB	6:00 - 7:00	4282
	16:00 - 17:00	3997
WB	6:00 - 7:00	4139
	16:00 - 17:00	4794

82 South of SR 29 Basic Segment Volumes		
Direction	Time	Mainline
EB	6:00 - 7:00	2325
	16:00 - 17:00	4248
WB	6:00 - 7:00	5036
	16:00 - 17:00	2826

780 at I-80 Weave Volumes				
Direction	Time	V	W1	W2
EB	7:00 - 8:00	984	580	67
	17:00 - 18:00	1504	394	202
WB	7:00 - 8:00	1772	1278	140
	17:00 - 18:00	2701	1549	381

782 East of Laurel Basic Segment Volumes		
Direction	Time	Mainline
EB	6:00 - 7:00	2379
	16:00 - 17:00	2199
WB	6:00 - 7:00	1894
	16:00 - 17:00	2776



## Existing + Vallejo Marine Terminal

80 North of 780 Merge/Diverge Volumes				
Direction	Time	Mainline	Ramp	Adjacent
WB (Diverge)	7:00 - 8:00	4139	1426	145
	17:00 - 18:00	4794	1670	184
EB (Merge)	6:00 - 7:00	2598	1693	116
	17:00 - 18:00	2283	1723	173

83 North of 780 Basic Segment Volumes		
Direction	Time	Mainline
EB	6:00 - 7:00	4291
	16:00 - 17:00	4006
WB	6:00 - 7:00	4148
	16:00 - 17:00	4799

83 South of SR 29 Basic Segment Volumes		
Direction	Time	Mainline
EB	6:00 - 7:00	2334
	16:00 - 17:00	4257
WB	6:00 - 7:00	5045
	16:00 - 17:00	2830

780 at I-80 Weave Volumes				
Direction	Time	V	W1	W2
EB	7:00 - 8:00	997	589	67
	17:00 - 18:00	1517	403	202
WB	7:00 - 8:00	1785	1278	149
	17:00 - 18:00	2707	1549	386

783 East of Laurel Basic Segment Volumes		
Direction	Time	Mainline
EB	6:00 - 7:00	2384
	16:00 - 17:00	2204
WB	6:00 - 7:00	1899
	16:00 - 17:00	2778

## Existing + ORCEM

80 North of 780 Merge/Diverge Volumes				
Direction	Time	Mainline	Ramp	Adjacent
WB (Diverge)	7:00 - 8:00	4139	1443	145
	17:00 - 18:00	4794	1677	184
EB (Merge)	6:00 - 7:00	2598	1702	116
	17:00 - 18:00	2283	1737	173

84 North of 780 Basic Segment Volumes		
Direction	Time	Mainline
EB	6:00 - 7:00	4300
	16:00 - 17:00	4020
WB	6:00 - 7:00	4155
	16:00 - 17:00	4806

84 South of SR 29 Basic Segment Volumes		
Direction	Time	Mainline
EB	6:00 - 7:00	2342
	16:00 - 17:00	4273
WB	6:00 - 7:00	5061
	16:00 - 17:00	2840

780 at I-80 Weave Volumes				
Direction	Time	V	W1	W2
EB	7:00 - 8:00	1010	598	67
	17:00 - 18:00	1538	417	202
WB	7:00 - 8:00	1810	1278	166
	17:00 - 18:00	2719	1549	393

784 East of Laurel Basic Segment Volumes		
Direction	Time	Mainline
EB	6:00 - 7:00	2387
	16:00 - 17:00	2210
WB	6:00 - 7:00	1906
	16:00 - 17:00	2782

## Existing + Both Projects

80 North of 780 Merge/Diverge Volumes				
Direction	Time	Mainline	Ramp	Adjacent
WB (Diverge)	7:00 - 8:00	4139	1452	145
	17:00 - 18:00	4794	1682	184
EB (Merge)	6:00 - 7:00	2598	1711	116
	17:00 - 18:00	2283	1746	173

85 North of 780 Basic Segment Volumes		
Direction	Time	Mainline
EB	6:00 - 7:00	4309
	16:00 - 17:00	4029
WB	6:00 - 7:00	4164
	16:00 - 17:00	4811

85 South of SR 29 Basic Segment Volumes		
Direction	Time	Mainline
EB	6:00 - 7:00	2351
	16:00 - 17:00	4282
WB	6:00 - 7:00	5070
	16:00 - 17:00	2844

780 at I-80 Weave Volumes				
Direction	Time	V	W1	W2
EB	7:00 - 8:00	1023	607	67
	17:00 - 18:00	1551	426	202
WB	7:00 - 8:00	1823	1278	175
	17:00 - 18:00	2725	1549	398

785 East of Laurel Basic Segment Volumes		
Direction	Time	Mainline
EB	6:00 - 7:00	2392
	16:00 - 17:00	2215
WB	6:00 - 7:00	1911
	16:00 - 17:00	2784

## 2040

80 North of 780 Merge/Diverge Volumes				
Direction	Time	Mainline	Ramp	Adjacent
WB (Diverge)	7:00 - 8:00	5215	1786	183
	17:00 - 18:00	6040	2098	231
EB (Merge)	6:00 - 7:00	3274	2121	146
	17:00 - 18:00	2877	2160	217

86 North of 780 Basic Segment Volumes		
Direction	Time	Mainline
EB	6:00 - 7:00	5395
	16:00 - 17:00	5036
WB	6:00 - 7:00	5215
	16:00 - 17:00	6040

86 South of SR 29 Basic Segment Volumes		
Direction	Time	Mainline
EB	6:00 - 7:00	2930
	16:00 - 17:00	5352
WB	6:00 - 7:00	6346
	16:00 - 17:00	3560

780 at I-80 Weave Volumes				
Direction	Time	V	W1	W2
EB	7:00 - 8:00	1240	731	84
	17:00 - 18:00	1894	496	255
WB	7:00 - 8:00	2233	1610	176
	17:00 - 18:00	3404	1952	480

786 East of Laurel Basic Segment Volumes		
Direction	Time	Mainline
EB	6:00 - 7:00	2998
	16:00 - 17:00	2771
WB	6:00 - 7:00	2386
	16:00 - 17:00	3498

## 2040 + Vallejo Marine Terminal

80 North of 780 Merge/Diverge Volumes				
Direction	Time	Mainline	Ramp	Adjacent
WB (Diverge)	7:00 - 8:00	5215	1795	183
	17:00 - 18:00	6040	2103	231
EB (Merge)	6:00 - 7:00	3274	2130	146
	17:00 - 18:00	2877	2169	217

87 North of 780 Basic Segment Volumes		
Direction	Time	Mainline
EB	6:00 - 7:00	5404
	16:00 - 17:00	5045
WB	6:00 - 7:00	5224
	16:00 - 17:00	6045

87 South of SR 29 Basic Segment Volumes		
Direction	Time	Mainline
EB	6:00 - 7:00	2939
	16:00 - 17:00	5361
WB	6:00 - 7:00	6355
	16:00 - 17:00	3564

780 at I-80 Weave Volumes				
Direction	Time	V	W1	W2
EB	7:00 - 8:00	1253	740	84
	17:00 - 18:00	1907	505	255
WB	7:00 - 8:00	2246	1610	185
	17:00 - 18:00	3410	1952	485

787 East of Laurel Basic Segment Volumes		
Direction	Time	Mainline
EB	6:00 - 7:00	3003
	16:00 - 17:00	2776
WB	6:00 - 7:00	2391
	16:00 - 17:00	3500

## 2040 + ORCEM

80 North of 780 Merge/Diverge Volumes				
Direction	Time	Mainline	Ramp	Adjacent
WB (Diverge)	7:00 - 8:00	5215	1812	183
	17:00 - 18:00	6040	2110	231
EB (Merge)	6:00 - 7:00	3274	2139	146
	17:00 - 18:00	2877	2183	217

88 North of 780 Basic Segment Volumes		
Direction	Time	Mainline
EB	6:00 - 7:00	5413
	16:00 - 17:00	5059
WB	6:00 - 7:00	5231
	16:00 - 17:00	6052

88 South of SR 29 Basic Segment Volumes		
Direction	Time	Mainline
EB	6:00 - 7:00	2947
	16:00 - 17:00	5377
WB	6:00 - 7:00	6371
	16:00 - 17:00	3574

780 at I-80 Weave Volumes				
Direction	Time	V	W1	W2
EB	7:00 - 8:00	1266	749	84
	17:00 - 18:00	1928	519	255
WB	7:00 - 8:00	2271	1610	202
	17:00 - 18:00	3422	1952	492

788 East of Laurel Basic Segment Volumes		
Direction	Time	Mainline
EB	6:00 - 7:00	3006
	16:00 - 17:00	2782
WB	6:00 - 7:00	2398
	16:00 - 17:00	3504

## 2040 + Both Projects

80 North of 780 Merge/Diverge Volumes				
Direction	Time	Mainline	Ramp	Adjacent
WB (Diverge)	7:00 - 8:00	5215	1821	183
	17:00 - 18:00	6040	2115	231
EB (Merge)	6:00 - 7:00	3274	2148	146
	17:00 - 18:00	2877	2192	217

89 North of 780 Basic Segment Volumes		
Direction	Time	Mainline
EB	6:00 - 7:00	5422
	16:00 - 17:00	5068
WB	6:00 - 7:00	5241
	16:00 - 17:00	6057

89 South of SR 29 Basic Segment Volumes		
Direction	Time	Mainline
EB	6:00 - 7:00	2956
	16:00 - 17:00	5386
WB	6:00 - 7:00	6380
	16:00 - 17:00	3578

780 at I-80 Weave Volumes				
Direction	Time	V	W1	W2
EB	7:00 - 8:00	1279	758	84
	17:00 - 18:00	1941	528	255
WB	7:00 - 8:00	2284	1610	211
	17:00 - 18:00	3428	1952	497

789 East of Laurel Basic Segment Volumes		
Direction	Time	Mainline
EB	6:00 - 7:00	3011
	16:00 - 17:00	2787
WB	6:00 - 7:00	2404
	16:00 - 17:00	3505

**APPENDIX L.5.2 — EXISTING CONDITIONS**





RAMPS AND RAMP JUNCTIONS WORKSHEET											
<b>General Information</b>					<b>Site Information</b>						
Analyst	RB		Freeway/Dir of Travel	I 80 WB		Agency or Company	Fehr & Peers		Junction	I-780 Collector	
Date Performed	10/31/2014		Jurisdiction	Sonoma County		Analysis Time Period	PM Peak		Analysis Year	Existing	
Project Description Vallejo Marine Terminal											
<b>Inputs</b>											
Upstream Adj Ramp		Number of Lanes, N			3			Downstream Adj Ramp			
<input checked="" type="checkbox"/> Yes <input checked="" type="checkbox"/> On		Acceleration Lane Length, L <sub>A</sub>						<input type="checkbox"/> Yes <input type="checkbox"/> On			
<input type="checkbox"/> No <input type="checkbox"/> Off		Deceleration Lane Length L <sub>D</sub>			125			<input checked="" type="checkbox"/> No <input type="checkbox"/> Off			
L <sub>up</sub> = 1500 ft		Freeway Volume, V <sub>F</sub>			4794			L <sub>down</sub> = ft			
V <sub>u</sub> = 184 veh/h		Ramp Volume, V <sub>R</sub>			1665			V <sub>D</sub> = veh/h			
			Freeway Free-Flow Speed, S <sub>FF</sub>			65.0					
			Ramp Free-Flow Speed, S <sub>FR</sub>			65.0					
<b>Conversion to pc/h Under Base Conditions</b>											
(pc/h)	V (Veh/hr)	PHF	Terrain	%Truck	%Rv	f <sub>HV</sub>	f <sub>p</sub>	v = V/PHF x f <sub>HV</sub> x f <sub>p</sub>			
Freeway	4794	0.92	Level	5	0	0.976	1.00	5341			
Ramp	1665	0.92	Level	5	0	0.976	1.00	1855			
UpStream	184	0.90	Level	5	0	0.976	1.00	210			
DownStream											
<b>Merge Areas</b>					<b>Diverge Areas</b>						
<b>Estimation of v<sub>12</sub></b>					<b>Estimation of v<sub>12</sub></b>						
$V_{12} = V_F (P_{FM})$ L <sub>EQ</sub> = (Equation 13-6 or 13-7) P <sub>FM</sub> = using Equation (Exhibit 13-6) V <sub>12</sub> = pc/h V <sub>3</sub> or V <sub>av34</sub> pc/h (Equation 13-14 or 13-17) Is V <sub>3</sub> or V <sub>av34</sub> > 2,700 pc/h? <input type="checkbox"/> Yes <input type="checkbox"/> No Is V <sub>3</sub> or V <sub>av34</sub> > 1.5 * V <sub>12</sub> /2 <input type="checkbox"/> Yes <input type="checkbox"/> No If Yes, V <sub>12a</sub> = pc/h (Equation 13-16, 13-18, or 13-19)					$V_{12} = V_R + (V_F - V_R)P_{FD}$ L <sub>EQ</sub> = 3972.53 (Equation 13-12 or 13-13) P <sub>FD</sub> = 0.593 using Equation (Exhibit 13-7) V <sub>12</sub> = 3923 pc/h V <sub>3</sub> or V <sub>av34</sub> 1418 pc/h (Equation 13-14 or 13-17) Is V <sub>3</sub> or V <sub>av34</sub> > 2,700 pc/h? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Is V <sub>3</sub> or V <sub>av34</sub> > 1.5 * V <sub>12</sub> /2 <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No If Yes, V <sub>12a</sub> = pc/h (Equation 13-16, 13-18, or 13-19)						
<b>Capacity Checks</b>					<b>Capacity Checks</b>						
	Actual	Capacity		LOS F?		Actual	Capacity		LOS F?		
V <sub>FO</sub>		Exhibit 13-8			V <sub>F</sub>	5341	Exhibit 13-8	7050	No		
					V <sub>FO</sub> = V <sub>F</sub> - V <sub>R</sub>	3486	Exhibit 13-8	7050	No		
					V <sub>R</sub>	1855	Exhibit 13-10	2200	No		
<b>Flow Entering Merge Influence Area</b>					<b>Flow Entering Diverge Influence Area</b>						
	Actual	Max Desirable		Violation?		Actual	Max Desirable		Violation?		
V <sub>R12</sub>		Exhibit 13-8			V <sub>12</sub>	3923	Exhibit 13-8	4400:All	No		
<b>Level of Service Determination (if not F)</b>					<b>Level of Service Determination (if not F)</b>						
$D_R = 5.475 + 0.00734 v_R + 0.0078 V_{12} - 0.00627 L_A$ D <sub>R</sub> = (pc/mi/ln) LOS = (Exhibit 13-2)					$D_R = 4.252 + 0.0086 V_{12} - 0.009 L_D$ D <sub>R</sub> = 36.9 (pc/mi/ln) LOS = E (Exhibit 13-2)						
<b>Speed Determination</b>					<b>Speed Determination</b>						
M <sub>S</sub> = (Exhibit 13-11)					D <sub>S</sub> = 0.205 (Exhibit 13-12)						
S <sub>R</sub> = mph (Exhibit 13-11)					S <sub>R</sub> = 60.3 mph (Exhibit 13-12)						
S <sub>0</sub> = mph (Exhibit 13-11)					S <sub>0</sub> = 69.7 mph (Exhibit 13-12)						
S = mph (Exhibit 13-13)					S = 62.5 mph (Exhibit 13-13)						

RAMPS AND RAMP JUNCTIONS WORKSHEET										
<b>General Information</b>					<b>Site Information</b>					
Analyst	RB		Freeway/Dir of Travel	I 80 WB		Agency or Company	Fehr & Peers		Junction	I-780 Collector
Date Performed	10/31/2014		Jurisdiction	Sonoma County		Analysis Time Period	AM Peak		Analysis Year	Existing
Project Description Vallejo Marine Terminal										
<b>Inputs</b>										
Upstream Adj Ramp		Number of Lanes, N			3			Downstream Adj Ramp		
<input checked="" type="checkbox"/> Yes <input checked="" type="checkbox"/> On		Acceleration Lane Length, L <sub>A</sub>						<input type="checkbox"/> Yes <input type="checkbox"/> On		
<input type="checkbox"/> No <input type="checkbox"/> Off		Deceleration Lane Length L <sub>D</sub>			125			<input checked="" type="checkbox"/> No <input type="checkbox"/> Off		
L <sub>up</sub> = 1500 ft		Freeway Volume, V <sub>F</sub>			4139			L <sub>down</sub> = ft		
V <sub>u</sub> = 145 veh/h		Ramp Volume, V <sub>R</sub>			1417			V <sub>D</sub> = veh/h		
		Freeway Free-Flow Speed, S <sub>FF</sub>			65.0					
		Ramp Free-Flow Speed, S <sub>FR</sub>			65.0					
<b>Conversion to pc/h Under Base Conditions</b>										
(pc/h)	V (Veh/hr)	PHF	Terrain	%Truck	%Rv	f <sub>HV</sub>	f <sub>p</sub>	v = V/PHF x f <sub>HV</sub> x f <sub>p</sub>		
Freeway	4139	0.92	Level	5	0	0.976	1.00	4611		
Ramp	1417	0.92	Level	5	0	0.976	1.00	1579		
UpStream	145	0.90	Level	5	0	0.976	1.00	165		
DownStream										
<b>Merge Areas</b>					<b>Diverge Areas</b>					
<b>Estimation of v<sub>12</sub></b>					<b>Estimation of v<sub>12</sub></b>					
$V_{12} = V_F (P_{FM})$ L <sub>EQ</sub> = (Equation 13-6 or 13-7) P <sub>FM</sub> = using Equation (Exhibit 13-6) V <sub>12</sub> = pc/h V <sub>3</sub> or V <sub>av34</sub> pc/h (Equation 13-14 or 13-17) Is V <sub>3</sub> or V <sub>av34</sub> > 2,700 pc/h? <input type="checkbox"/> Yes <input type="checkbox"/> No Is V <sub>3</sub> or V <sub>av34</sub> > 1.5 * V <sub>12</sub> /2 <input type="checkbox"/> Yes <input type="checkbox"/> No If Yes, V <sub>12a</sub> = pc/h (Equation 13-16, 13-18, or 13-19)					$V_{12} = V_R + (V_F - V_R)P_{FD}$ L <sub>EQ</sub> = 2892.25 (Equation 13-12 or 13-13) P <sub>FD</sub> = 0.604 using Equation (Exhibit 13-7) V <sub>12</sub> = 3409 pc/h V <sub>3</sub> or V <sub>av34</sub> 1202 pc/h (Equation 13-14 or 13-17) Is V <sub>3</sub> or V <sub>av34</sub> > 2,700 pc/h? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Is V <sub>3</sub> or V <sub>av34</sub> > 1.5 * V <sub>12</sub> /2 <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No If Yes, V <sub>12a</sub> = pc/h (Equation 13-16, 13-18, or 13-19)					
<b>Capacity Checks</b>					<b>Capacity Checks</b>					
	Actual	Capacity		LOS F?		Actual	Capacity		LOS F?	
V <sub>FO</sub>		Exhibit 13-8			V <sub>F</sub>	4611	Exhibit 13-8	7050	No	
					V <sub>FO</sub> = V <sub>F</sub> - V <sub>R</sub>	3032	Exhibit 13-8	7050	No	
					V <sub>R</sub>	1579	Exhibit 13-10	2200	No	
<b>Flow Entering Merge Influence Area</b>					<b>Flow Entering Diverge Influence Area</b>					
	Actual	Max Desirable		Violation?		Actual	Max Desirable		Violation?	
V <sub>R12</sub>		Exhibit 13-8			V <sub>12</sub>	3409	Exhibit 13-8	4400:All	No	
<b>Level of Service Determination (if not F)</b>					<b>Level of Service Determination (if not F)</b>					
$D_R = 5.475 + 0.00734 v_R + 0.0078 V_{12} - 0.00627 L_A$ D <sub>R</sub> = (pc/mi/ln) LOS = (Exhibit 13-2)					$D_R = 4.252 + 0.0086 V_{12} - 0.009 L_D$ D <sub>R</sub> = 32.4 (pc/mi/ln) LOS = D (Exhibit 13-2)					
<b>Speed Determination</b>					<b>Speed Determination</b>					
M <sub>S</sub> = (Exhibit 13-11) S <sub>R</sub> = mph (Exhibit 13-11) S <sub>0</sub> = mph (Exhibit 13-11) S = mph (Exhibit 13-13)					D <sub>s</sub> = 0.180 (Exhibit 13-12) S <sub>R</sub> = 60.9 mph (Exhibit 13-12) S <sub>0</sub> = 70.5 mph (Exhibit 13-12) S = 63.1 mph (Exhibit 13-13)					

<b>BASIC FREEWAY SEGMENTS WORKSHEET</b>			
<b>General Information</b>		<b>Site Information</b>	
Analyst	RB	Highway/Direction of Travel	80 WB
Agency or Company	Fehr & Peers	From/To	I-780 Collectors - Georgia St
Date Performed	10/23/2014	Jurisdiction	Sonoma County
Analysis Time Period	PM Peak Hour	Analysis Year	Existing
Project Description <i>Vallejo Marine Terminal</i>			
<input checked="" type="checkbox"/> Oper.(LOS) <input type="checkbox"/> Des.(N) <input type="checkbox"/> Planning Data			
<b>Flow Inputs</b>			
Volume, V	4794	veh/h	Peak-Hour Factor, PHF
AADT		veh/day	0.92
Peak-Hr Prop. of AADT, K			%Trucks and Buses, P <sub>T</sub>
Peak-Hr Direction Prop, D			5
DDHV = AADT x K x D		veh/h	%RVs, P <sub>R</sub>
			0
			General Terrain: <i>Level</i>
			Grade % Length <i>mi</i>
			Up/Down %
<b>Calculate Flow Adjustments</b>			
f <sub>p</sub>	1.00	E <sub>R</sub>	1.2
E <sub>T</sub>	1.5	f <sub>HV</sub> = 1/[1+P <sub>T</sub> (E <sub>T</sub> - 1) + P <sub>R</sub> (E <sub>R</sub> - 1)]	0.976
<b>Speed Inputs</b>		<b>Calc Speed Adj and FFS</b>	
Lane Width	ft	f <sub>LW</sub>	mph
Rt-Side Lat. Clearance	ft	f <sub>LC</sub>	mph
Number of Lanes, N	3	TRD Adjustment	mph
Total Ramp Density, TRD	ramps/mi	FFS	65.0
FFS (measured)	65.0	mph	mph
Base free-flow Speed, BFFS	mph		
<b>LOS and Performance Measures</b>		<b>Design (N)</b>	
<u>Operational (LOS)</u>		<u>Design (N)</u>	
v <sub>p</sub> = (V or DDHV) / (PHF x N x f <sub>HV</sub> )	1780	Design LOS	
x f <sub>p</sub> )		v <sub>p</sub> = (V or DDHV) / (PHF x N x f <sub>HV</sub> )	pc/h/ln
S	63.0	x f <sub>p</sub> )	
D = v <sub>p</sub> / S	28.3	S	mph
LOS	D	D = v <sub>p</sub> / S	pc/mi/ln
		Required Number of Lanes, N	
<b>Glossary</b>		<b>Factor Location</b>	
N - Number of lanes	S - Speed	E <sub>R</sub> - Exhibits 11-10, 11-12	f <sub>LW</sub> - Exhibit 11-8
V - Hourly volume	D - Density	E <sub>T</sub> - Exhibits 11-10, 11-11, 11-13	f <sub>LC</sub> - Exhibit 11-9
v <sub>p</sub> - Flow rate	FFS - Free-flow speed	f <sub>p</sub> - Page 11-18	TRD - Page 11-11
LOS - Level of service	BFFS - Base free-flow speed	LOS, S, FFS, v <sub>p</sub> - Exhibits 11-2, 11-3	
DDHV - Directional design hour volume			

<b>BASIC FREEWAY SEGMENTS WORKSHEET</b>			
<b>General Information</b>		<b>Site Information</b>	
Analyst	RB	Highway/Direction of Travel	80 WB
Agency or Company	Fehr & Peers	From/To	I-780 Collectors - Georgia St
Date Performed	10/23/2014	Jurisdiction	Sonoma County
Analysis Time Period	AM Peak Hour	Analysis Year	Existing
Project Description <i>Vallejo Marine Terminal</i>			
<input checked="" type="checkbox"/> Oper.(LOS) <input type="checkbox"/> Des.(N) <input type="checkbox"/> Planning Data			
<b>Flow Inputs</b>			
Volume, V	4139	veh/h	Peak-Hour Factor, PHF
AADT		veh/day	0.92
Peak-Hr Prop. of AADT, K			%Trucks and Buses, P <sub>T</sub>
Peak-Hr Direction Prop, D			5
DDHV = AADT x K x D		veh/h	%RVs, P <sub>R</sub>
			0
			General Terrain:
			Level
			Grade % Length
			mi
			Up/Down %
<b>Calculate Flow Adjustments</b>			
f <sub>p</sub>	1.00	E <sub>R</sub>	1.2
E <sub>T</sub>	1.5	f <sub>HV</sub> = 1/[1+P <sub>T</sub> (E <sub>T</sub> - 1) + P <sub>R</sub> (E <sub>R</sub> - 1)]	0.976
<b>Speed Inputs</b>		<b>Calc Speed Adj and FFS</b>	
Lane Width	ft	f <sub>LW</sub>	mph
Rt-Side Lat. Clearance	ft	f <sub>LC</sub>	mph
Number of Lanes, N	3	TRD Adjustment	mph
Total Ramp Density, TRD	ramps/mi	FFS	65.0
FFS (measured)	65.0	mph	mph
Base free-flow Speed, BFFS	mph		
<b>LOS and Performance Measures</b>		<b>Design (N)</b>	
<u>Operational (LOS)</u>		<u>Design (N)</u>	
v <sub>p</sub> = (V or DDHV) / (PHF x N x f <sub>HV</sub> )	1537	Design LOS	
x f <sub>p</sub> )		v <sub>p</sub> = (V or DDHV) / (PHF x N x f <sub>HV</sub> )	pc/h/ln
S	64.7	x f <sub>p</sub> )	
D = v <sub>p</sub> / S	23.7	S	mph
LOS	C	D = v <sub>p</sub> / S	pc/mi/ln
		Required Number of Lanes, N	
<b>Glossary</b>		<b>Factor Location</b>	
N - Number of lanes	S - Speed	E <sub>R</sub> - Exhibits 11-10, 11-12	f <sub>LW</sub> - Exhibit 11-8
V - Hourly volume	D - Density	E <sub>T</sub> - Exhibits 11-10, 11-11, 11-13	f <sub>LC</sub> - Exhibit 11-9
v <sub>p</sub> - Flow rate	FFS - Free-flow speed	f <sub>p</sub> - Page 11-18	TRD - Page 11-11
LOS - Level of service	BFFS - Base free-flow speed	LOS, S, FFS, v <sub>p</sub> - Exhibits 11-2, 11-3	
DDHV - Directional design hour volume			

<b>BASIC FREEWAY SEGMENTS WORKSHEET</b>			
<b>General Information</b>		<b>Site Information</b>	
Analyst	RB	Highway/Direction of Travel	80 EB
Agency or Company	Fehr & Peers	From/To	I-780 Collectors - Georgia St
Date Performed	10/23/2014	Jurisdiction	Sonoma County
Analysis Time Period	PM Peak Hour	Analysis Year	Existing
Project Description <i>Vallejo Marine Terminal</i>			
<input checked="" type="checkbox"/> Oper.(LOS)		<input type="checkbox"/> Des.(N)	<input type="checkbox"/> Planning Data
<b>Flow Inputs</b>			
Volume, V	3997	veh/h	Peak-Hour Factor, PHF
AADT		veh/day	0.92
Peak-Hr Prop. of AADT, K			%Trucks and Buses, P <sub>T</sub>
Peak-Hr Direction Prop, D			5
DDHV = AADT x K x D		veh/h	%RVs, P <sub>R</sub>
			0
			General Terrain: Level
			Grade % Length mi
			Up/Down %
<b>Calculate Flow Adjustments</b>			
f <sub>p</sub>	1.00	E <sub>R</sub>	1.2
E <sub>T</sub>	1.5	f <sub>HV</sub> = 1/[1+P <sub>T</sub> (E <sub>T</sub> - 1) + P <sub>R</sub> (E <sub>R</sub> - 1)]	0.976
<b>Speed Inputs</b>		<b>Calc Speed Adj and FFS</b>	
Lane Width	ft	f <sub>LW</sub>	mph
Rt-Side Lat. Clearance	ft	f <sub>LC</sub>	mph
Number of Lanes, N	3	TRD Adjustment	mph
Total Ramp Density, TRD	ramps/mi	FFS	65.0
FFS (measured)	65.0	mph	mph
Base free-flow Speed, BFFS	mph		
<b>LOS and Performance Measures</b>		<b>Design (N)</b>	
<u>Operational (LOS)</u>		<u>Design (N)</u>	
v <sub>p</sub> = (V or DDHV) / (PHF x N x f <sub>HV</sub> )	1484	Design LOS	
x f <sub>p</sub> )		v <sub>p</sub> = (V or DDHV) / (PHF x N x f <sub>HV</sub> )	pc/h/ln
S	64.9	x f <sub>p</sub> )	
D = v <sub>p</sub> / S	22.9	S	mph
LOS	C	D = v <sub>p</sub> / S	pc/mi/ln
		Required Number of Lanes, N	
<b>Glossary</b>		<b>Factor Location</b>	
N - Number of lanes	S - Speed	E <sub>R</sub> - Exhibits 11-10, 11-12	f <sub>LW</sub> - Exhibit 11-8
V - Hourly volume	D - Density	E <sub>T</sub> - Exhibits 11-10, 11-11, 11-13	f <sub>LC</sub> - Exhibit 11-9
v <sub>p</sub> - Flow rate	FFS - Free-flow speed	f <sub>p</sub> - Page 11-18	TRD - Page 11-11
LOS - Level of service	BFFS - Base free-flow speed	LOS, S, FFS, v <sub>p</sub> - Exhibits 11-2, 11-3	
DDHV - Directional design hour volume			

BASIC FREEWAY SEGMENTS WORKSHEET			
<b>General Information</b>		<b>Site Information</b>	
Analyst	RB	Highway/Direction of Travel	80 EB
Agency or Company	Fehr & Peers	From/To	I-780 Collectors - Georgia St
Date Performed	10/23/2014	Jurisdiction	Sonoma County
Analysis Time Period	AM Peak Hour	Analysis Year	Existing
Project Description <i>Vallejo Marine Terminal</i>			
<input checked="" type="checkbox"/> Oper.(LOS)		<input type="checkbox"/> Des.(N)	<input type="checkbox"/> Planning Data
<b>Flow Inputs</b>			
Volume, V	4282	veh/h	Peak-Hour Factor, PHF
AADT		veh/day	%Trucks and Buses, P <sub>T</sub>
Peak-Hr Prop. of AADT, K			%RVs, P <sub>R</sub>
Peak-Hr Direction Prop, D			General Terrain:
DDHV = AADT x K x D		veh/h	Grade % Length
			Up/Down %
			0.92
			5
			0
			Level
			mi
<b>Calculate Flow Adjustments</b>			
f <sub>p</sub>	1.00	E <sub>R</sub>	1.2
E <sub>T</sub>	1.5	f <sub>HV</sub> = 1/[1+P <sub>T</sub> (E <sub>T</sub> - 1) + P <sub>R</sub> (E <sub>R</sub> - 1)]	0.976
<b>Speed Inputs</b>		<b>Calc Speed Adj and FFS</b>	
Lane Width		ft	
Rt-Side Lat. Clearance		ft	f <sub>LW</sub>
Number of Lanes, N	3		f <sub>LC</sub>
Total Ramp Density, TRD		ramps/mi	TRD Adjustment
FFS (measured)	65.0	mph	FFS
Base free-flow Speed, BFFS		mph	65.0
			mph
<b>LOS and Performance Measures</b>		<b>Design (N)</b>	
<u>Operational (LOS)</u>		<u>Design (N)</u>	
v <sub>p</sub> = (V or DDHV) / (PHF x N x f <sub>HV</sub> )	1590	pc/h/ln	Design LOS
x f <sub>p</sub> )			v <sub>p</sub> = (V or DDHV) / (PHF x N x f <sub>HV</sub> )
S	64.5	mph	x f <sub>p</sub> )
D = v <sub>p</sub> / S	24.7	pc/mi/ln	S
LOS	C		D = v <sub>p</sub> / S
			pc/mi/ln
			Required Number of Lanes, N
<b>Glossary</b>		<b>Factor Location</b>	
N - Number of lanes	S - Speed	E <sub>R</sub> - Exhibits 11-10, 11-12	f <sub>LW</sub> - Exhibit 11-8
V - Hourly volume	D - Density	E <sub>T</sub> - Exhibits 11-10, 11-11, 11-13	f <sub>LC</sub> - Exhibit 11-9
v <sub>p</sub> - Flow rate	FFS - Free-flow speed	f <sub>p</sub> - Page 11-18	TRD - Page 11-11
LOS - Level of service	BFFS - Base free-flow speed	LOS, S, FFS, v <sub>p</sub> - Exhibits 11-2, 11-3	
DDHV - Directional design hour volume			

RAMPS AND RAMP JUNCTIONS WORKSHEET									
General Information					Site Information				
Analyst	RB	Freeway/Dir of Travel	I 80 EB						
Agency or Company	Fehr & Peers	Junction	I-780 Collector						
Date Performed	10/31/2014	Jurisdiction	Sonoma County						
Analysis Time Period	PM Peak	Analysis Year	Existing						
Project Description Vallejo Marine Terminal									
Inputs									
Upstream Adj Ramp <input type="checkbox"/> Yes <input type="checkbox"/> On <input checked="" type="checkbox"/> No <input type="checkbox"/> Off	Number of Lanes, N Acceleration Lane Length, L <sub>A</sub> Deceleration Lane Length L <sub>D</sub>	3 150	Downstream Adj Ramp <input checked="" type="checkbox"/> Yes <input type="checkbox"/> On <input type="checkbox"/> No <input checked="" type="checkbox"/> Off	L <sub>down</sub> = 2100 ft					
L <sub>up</sub> = ft	Freeway Volume, V <sub>F</sub>	2283	Ramp Volume, V <sub>R</sub>	1714					
V <sub>u</sub> = veh/h	Freeway Free-Flow Speed, S <sub>FF</sub>	65.0	Ramp Free-Flow Speed, S <sub>FR</sub>	65.0					
			V <sub>D</sub> = 173 veh/h						
Conversion to pc/h Under Base Conditions									
(pc/h)	V (Veh/hr)	PHF	Terrain	%Truck	%Rv	f <sub>HV</sub>	f <sub>p</sub>	v = V/PHF x f <sub>HV</sub> x f <sub>p</sub>	
Freeway	2283	0.92	Level	5	0	0.976	1.00	2544	
Ramp	1714	0.92	Level	5	0	0.976	1.00	1910	
UpStream									
DownStream	173	0.90	Level	5	0	0.976	1.00	197	
Merge Areas					Diverge Areas				
Estimation of v <sub>12</sub>					Estimation of v <sub>12</sub>				
$V_{12} = V_F (P_{FM})$ L <sub>EQ</sub> = 1567.85 (Equation 13-6 or 13-7) P <sub>FM</sub> = 0.582 using Equation (Exhibit 13-6) V <sub>12</sub> = 1480 pc/h V <sub>3</sub> or V <sub>av34</sub> = 1064 pc/h (Equation 13-14 or 13-17) Is V <sub>3</sub> or V <sub>av34</sub> > 2,700 pc/h? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Is V <sub>3</sub> or V <sub>av34</sub> > 1.5 * V <sub>12</sub> /2 <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No If Yes, V <sub>12a</sub> = pc/h (Equation 13-16, 13-18, or 13-19)					$V_{12} = V_R + (V_F - V_R)P_{FD}$ L <sub>EQ</sub> = (Equation 13-12 or 13-13) P <sub>FD</sub> = using Equation (Exhibit 13-7) V <sub>12</sub> = pc/h V <sub>3</sub> or V <sub>av34</sub> = pc/h (Equation 13-14 or 13-17) Is V <sub>3</sub> or V <sub>av34</sub> > 2,700 pc/h? <input type="checkbox"/> Yes <input type="checkbox"/> No Is V <sub>3</sub> or V <sub>av34</sub> > 1.5 * V <sub>12</sub> /2 <input type="checkbox"/> Yes <input type="checkbox"/> No If Yes, V <sub>12a</sub> = pc/h (Equation 13-16, 13-18, or 13-19)				
Capacity Checks					Capacity Checks				
	Actual	Capacity		LOS F?		Actual	Capacity		LOS F?
V <sub>FO</sub>	4454	Exhibit 13-8		No	V <sub>F</sub>		Exhibit 13-8		
					V <sub>FO</sub> = V <sub>F</sub> - V <sub>R</sub>		Exhibit 13-8		
					V <sub>R</sub>		Exhibit 13-10		
Flow Entering Merge Influence Area					Flow Entering Diverge Influence Area				
	Actual	Max Desirable		Violation?		Actual	Max Desirable		Violation?
V <sub>R12</sub>	3390	Exhibit 13-8		4600:All	No	V <sub>12</sub>		Exhibit 13-8	
Level of Service Determination (if not F)					Level of Service Determination (if not F)				
$D_R = 5.475 + 0.00734 v_R + 0.0078 V_{12} - 0.00627 L_A$ D <sub>R</sub> = 30.1 (pc/mi/ln) LOS = D (Exhibit 13-2)					$D_R = 4.252 + 0.0086 V_{12} - 0.009 L_D$ D <sub>R</sub> = (pc/mi/ln) LOS = (Exhibit 13-2)				
Speed Determination					Speed Determination				
M <sub>S</sub> =	0.417 (Exhibit 13-11)				D <sub>S</sub> =	(Exhibit 13-12)			
S <sub>R</sub> =	55.4 mph (Exhibit 13-11)				S <sub>R</sub> =	mph (Exhibit 13-12)			
S <sub>0</sub> =	63.0 mph (Exhibit 13-11)				S <sub>0</sub> =	mph (Exhibit 13-12)			
S =	57.0 mph (Exhibit 13-13)				S =	mph (Exhibit 13-13)			

RAMPS AND RAMP JUNCTIONS WORKSHEET									
General Information					Site Information				
Analyst	RB	Freeway/Dir of Travel	I 80 EB						
Agency or Company	Fehr & Peers	Junction	I-780 Collector						
Date Performed	10/31/2014	Jurisdiction	Sonoma County						
Analysis Time Period	AM Peak	Analysis Year	Existing						
Project Description Vallejo Marine Terminal									
Inputs									
Upstream Adj Ramp	Number of Lanes, N		3		Downstream Adj Ramp				
<input type="checkbox"/> Yes <input type="checkbox"/> On	Acceleration Lane Length, L <sub>A</sub>		150		<input checked="" type="checkbox"/> Yes <input type="checkbox"/> On				
<input checked="" type="checkbox"/> No <input type="checkbox"/> Off	Deceleration Lane Length L <sub>D</sub>				<input type="checkbox"/> No <input checked="" type="checkbox"/> Off				
L <sub>up</sub> = ft	Freeway Volume, V <sub>F</sub>		2598		L <sub>down</sub> = 2100 ft				
V <sub>u</sub> = veh/h	Ramp Volume, V <sub>R</sub>		1684		V <sub>D</sub> = 116 veh/h				
		Freeway Free-Flow Speed, S <sub>FF</sub>		65.0					
		Ramp Free-Flow Speed, S <sub>FR</sub>		65.0					
Conversion to pc/h Under Base Conditions									
(pc/h)	V (Veh/hr)	PHF	Terrain	%Truck	%Rv	f <sub>HV</sub>	f <sub>p</sub>	v = V/PHF x f <sub>HV</sub> x f <sub>p</sub>	
Freeway	2598	0.92	Level	5	0	0.976	1.00	2895	
Ramp	1684	0.92	Level	5	0	0.976	1.00	1876	
UpStream									
DownStream	116	0.90	Level	5	0	0.976	1.00	132	
Merge Areas					Diverge Areas				
Estimation of v <sub>12</sub>					Estimation of v <sub>12</sub>				
$V_{12} = V_F (P_{FM})$ L <sub>EQ</sub> = 1050.54 (Equation 13-6 or 13-7) P <sub>FM</sub> = 0.582 using Equation (Exhibit 13-6) V <sub>12</sub> = 1684 pc/h V <sub>3</sub> or V <sub>av34</sub> = 1211 pc/h (Equation 13-14 or 13-17) Is V <sub>3</sub> or V <sub>av34</sub> > 2,700 pc/h? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Is V <sub>3</sub> or V <sub>av34</sub> > 1.5 * V <sub>12</sub> /2 <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No If Yes, V <sub>12a</sub> = pc/h (Equation 13-16, 13-18, or 13-19)					$V_{12} = V_R + (V_F - V_R)P_{FD}$ L <sub>EQ</sub> = (Equation 13-12 or 13-13) P <sub>FD</sub> = using Equation (Exhibit 13-7) V <sub>12</sub> = pc/h V <sub>3</sub> or V <sub>av34</sub> = pc/h (Equation 13-14 or 13-17) Is V <sub>3</sub> or V <sub>av34</sub> > 2,700 pc/h? <input type="checkbox"/> Yes <input type="checkbox"/> No Is V <sub>3</sub> or V <sub>av34</sub> > 1.5 * V <sub>12</sub> /2 <input type="checkbox"/> Yes <input type="checkbox"/> No If Yes, V <sub>12a</sub> = pc/h (Equation 13-16, 13-18, or 13-19)				
Capacity Checks					Capacity Checks				
	Actual	Capacity		LOS F?		Actual	Capacity		LOS F?
V <sub>FO</sub>	4771	Exhibit 13-8		No	V <sub>F</sub>		Exhibit 13-8		
					V <sub>FO</sub> = V <sub>F</sub> - V <sub>R</sub>		Exhibit 13-8		
					V <sub>R</sub>		Exhibit 13-10		
Flow Entering Merge Influence Area					Flow Entering Diverge Influence Area				
	Actual	Max Desirable		Violation?		Actual	Max Desirable		Violation?
V <sub>R12</sub>	3560	Exhibit 13-8		4600:All	No	V <sub>12</sub>		Exhibit 13-8	
Level of Service Determination (if not F)					Level of Service Determination (if not F)				
$D_R = 5.475 + 0.00734 v_R + 0.0078 V_{12} - 0.00627 L_A$ D <sub>R</sub> = 31.4 (pc/mi/ln) LOS = D (Exhibit 13-2)					$D_R = 4.252 + 0.0086 V_{12} - 0.009 L_D$ D <sub>R</sub> = (pc/mi/ln) LOS = (Exhibit 13-2)				
Speed Determination					Speed Determination				
M <sub>S</sub> =	0.439 (Exhibit 13-11)				D <sub>S</sub> =	(Exhibit 13-12)			
S <sub>R</sub> =	54.9 mph (Exhibit 13-11)				S <sub>R</sub> =	mph (Exhibit 13-12)			
S <sub>0</sub> =	62.4 mph (Exhibit 13-11)				S <sub>0</sub> =	mph (Exhibit 13-12)			
S =	56.6 mph (Exhibit 13-13)				S =	mph (Exhibit 13-13)			



<b>BASIC FREEWAY SEGMENTS WORKSHEET</b>			
<b>General Information</b>		<b>Site Information</b>	
Analyst	<i>RB</i>	Highway/Direction of Travel <i>I-80 WB</i>	
Agency or Company	<i>Fehr &amp; Peers</i>	From/To	<i>South of Sonoma Blvd</i>
Date Performed	<i>10/23/2014</i>	Jurisdiction	<i>Sonoma County</i>
Analysis Time Period	<i>PM Peak Hour</i>	Analysis Year	<i>Existing</i>
Project Description <i>Vallejo Marine Terminal</i>			
<input checked="" type="checkbox"/> Oper.(LOS)		<input type="checkbox"/> Des.(N)	
<input type="checkbox"/> Planning Data			
<b>Flow Inputs</b>			
Volume, V	<i>2826</i>	veh/h	Peak-Hour Factor, PHF <i>0.92</i>
AADT		veh/day	%Trucks and Buses, P <sub>T</sub> <i>5</i>
Peak-Hr Prop. of AADT, K			%RVs, P <sub>R</sub> <i>0</i>
Peak-Hr Direction Prop, D			General Terrain: <i>Level</i>
DDHV = AADT x K x D		veh/h	Grade % Length <i>mi</i>
			Up/Down %
<b>Calculate Flow Adjustments</b>			
f <sub>p</sub>	<i>1.00</i>	E <sub>R</sub>	<i>1.2</i>
E <sub>T</sub>	<i>1.5</i>	f <sub>HV</sub> = 1/[1+P <sub>T</sub> (E <sub>T</sub> - 1) + P <sub>R</sub> (E <sub>R</sub> - 1)] <i>0.976</i>	
<b>Speed Inputs</b>		<b>Calc Speed Adj and FFS</b>	
Lane Width	ft		
Rt-Side Lat. Clearance	ft	f <sub>LW</sub>	mph
Number of Lanes, N	<i>4</i>	f <sub>LC</sub>	mph
Total Ramp Density, TRD	ramps/mi	TRD Adjustment	mph
FFS (measured)	<i>65.0</i>	FFS	<i>65.0</i>
Base free-flow Speed, BFFS	mph		
<b>LOS and Performance Measures</b>		<b>Design (N)</b>	
<u>Operational (LOS)</u>		<u>Design (N)</u>	
v <sub>p</sub> = (V or DDHV) / (PHF x N x f <sub>HV</sub> ) <i>787</i>		Design LOS	
x f <sub>p</sub> )	pc/h/ln	v <sub>p</sub> = (V or DDHV) / (PHF x N x f <sub>HV</sub> )	
S	<i>65.0</i>	x f <sub>p</sub> )	pc/h/ln
D = v <sub>p</sub> / S	<i>12.1</i>	S	mph
LOS	<i>B</i>	D = v <sub>p</sub> / S	pc/mi/ln
		Required Number of Lanes, N	
<b>Glossary</b>		<b>Factor Location</b>	
N - Number of lanes	S - Speed	E <sub>R</sub> - Exhibits 11-10, 11-12	f <sub>LW</sub> - Exhibit 11-8
V - Hourly volume	D - Density	E <sub>T</sub> - Exhibits 11-10, 11-11, 11-13	f <sub>LC</sub> - Exhibit 11-9
v <sub>p</sub> - Flow rate	FFS - Free-flow speed	f <sub>p</sub> - Page 11-18	TRD - Page 11-11
LOS - Level of service	BFFS - Base free-flow speed	LOS, S, FFS, v <sub>p</sub> - Exhibits 11-2, 11-3	
DDHV - Directional design hour volume			

<b>BASIC FREEWAY SEGMENTS WORKSHEET</b>			
<b>General Information</b>		<b>Site Information</b>	
Analyst	<i>RB</i>	Highway/Direction of Travel <i>I-80 WB</i>	
Agency or Company	<i>Fehr &amp; Peers</i>	From/To	<i>South of Sonoma Blvd</i>
Date Performed	<i>10/23/2014</i>	Jurisdiction	<i>Sonoma County</i>
Analysis Time Period	<i>AM Peak Hour</i>	Analysis Year	<i>Existing</i>
Project Description <i>Vallejo Marine Terminal</i>			
<input checked="" type="checkbox"/> Oper.(LOS) <input type="checkbox"/> Des.(N) <input type="checkbox"/> Planning Data			
<b>Flow Inputs</b>			
Volume, V	<i>5036</i>	veh/h	Peak-Hour Factor, PHF <i>0.92</i>
AADT		veh/day	%Trucks and Buses, P <sub>T</sub> <i>5</i>
Peak-Hr Prop. of AADT, K			%RVs, P <sub>R</sub> <i>0</i>
Peak-Hr Direction Prop, D			General Terrain: <i>Level</i>
DDHV = AADT x K x D		veh/h	Grade % Length <i>mi</i> Up/Down %
<b>Calculate Flow Adjustments</b>			
f <sub>p</sub>	<i>1.00</i>	E <sub>R</sub>	<i>1.2</i>
E <sub>T</sub>	<i>1.5</i>	f <sub>HV</sub> = 1/[1+P <sub>T</sub> (E <sub>T</sub> - 1) + P <sub>R</sub> (E <sub>R</sub> - 1)] <i>0.976</i>	
<b>Speed Inputs</b>		<b>Calc Speed Adj and FFS</b>	
Lane Width		ft	
Rt-Side Lat. Clearance		ft	
Number of Lanes, N	<i>4</i>		f <sub>LW</sub> mph
Total Ramp Density, TRD		ramps/mi	f <sub>LC</sub> mph
FFS (measured)	<i>65.0</i>	mph	TRD Adjustment mph
Base free-flow Speed, BFFS		mph	FFS <i>65.0</i> mph
<b>LOS and Performance Measures</b>		<b>Design (N)</b>	
<u>Operational (LOS)</u>		<u>Design (N)</u>	
v <sub>p</sub> = (V or DDHV) / (PHF x N x f <sub>HV</sub> x f <sub>p</sub> )	<i>1403</i>	pc/h/ln	Design LOS
S	<i>65.0</i>	mph	v <sub>p</sub> = (V or DDHV) / (PHF x N x f <sub>HV</sub> x f <sub>p</sub> )
D = v <sub>p</sub> / S	<i>21.6</i>	pc/mi/ln	S
LOS	<i>C</i>		D = v <sub>p</sub> / S
			Required Number of Lanes, N
<b>Glossary</b>		<b>Factor Location</b>	
N - Number of lanes	S - Speed	E <sub>R</sub> - Exhibits 11-10, 11-12	f <sub>LW</sub> - Exhibit 11-8
V - Hourly volume	D - Density	E <sub>T</sub> - Exhibits 11-10, 11-11, 11-13	f <sub>LC</sub> - Exhibit 11-9
v <sub>p</sub> - Flow rate	FFS - Free-flow speed	f <sub>p</sub> - Page 11-18	TRD - Page 11-11
LOS - Level of service	BFFS - Base free-flow speed	LOS, S, FFS, v <sub>p</sub> - Exhibits 11-2, 11-3	
DDHV - Directional design hour volume			

<b>BASIC FREEWAY SEGMENTS WORKSHEET</b>			
<b>General Information</b>		<b>Site Information</b>	
Analyst	<i>RB</i>	Highway/Direction of Travel	<i>I-80 EB</i>
Agency or Company	<i>Fehr &amp; Peers</i>	From/To	<i>South of Sonoma Blvd</i>
Date Performed	<i>10/23/2014</i>	Jurisdiction	<i>Sonoma County</i>
Analysis Time Period	<i>PM Peak Hour</i>	Analysis Year	<i>Existing</i>
Project Description <i>Vallejo Marine Terminal</i>			
<input checked="" type="checkbox"/> Oper.(LOS)		<input type="checkbox"/> Des.(N)	
<input type="checkbox"/> Planning Data			
<b>Flow Inputs</b>			
Volume, V	<i>4248</i>	veh/h	Peak-Hour Factor, PHF
AADT		veh/day	<i>0.92</i>
Peak-Hr Prop. of AADT, K			%Trucks and Buses, P <sub>T</sub>
Peak-Hr Direction Prop, D			<i>5</i>
DDHV = AADT x K x D		veh/h	%RVs, P <sub>R</sub>
			<i>0</i>
			General Terrain:
			<i>Level</i>
			Grade % Length
			<i>mi</i>
			Up/Down %
<b>Calculate Flow Adjustments</b>			
f <sub>p</sub>	<i>1.00</i>	E <sub>R</sub>	<i>1.2</i>
E <sub>T</sub>	<i>1.5</i>	f <sub>HV</sub> = 1/[1+P <sub>T</sub> (E <sub>T</sub> - 1) + P <sub>R</sub> (E <sub>R</sub> - 1)]	<i>0.976</i>
<b>Speed Inputs</b>		<b>Calc Speed Adj and FFS</b>	
Lane Width	ft		
Rt-Side Lat. Clearance	ft	f <sub>LW</sub>	mph
Number of Lanes, N	<i>4</i>	f <sub>LC</sub>	mph
Total Ramp Density, TRD	ramps/mi	TRD Adjustment	mph
FFS (measured)	<i>65.0</i>	FFS	<i>65.0</i>
Base free-flow Speed, BFFS	mph		
<b>LOS and Performance Measures</b>		<b>Design (N)</b>	
<u>Operational (LOS)</u>		<u>Design (N)</u>	
v <sub>p</sub> = (V or DDHV) / (PHF x N x f <sub>HV</sub> )		Design LOS	
<i>1183</i>	pc/h/ln	v <sub>p</sub> = (V or DDHV) / (PHF x N x f <sub>HV</sub> )	pc/h/ln
x f <sub>p</sub> )		x f <sub>p</sub> )	
S	<i>65.0</i>	S	mph
D = v <sub>p</sub> / S	<i>18.2</i>	D = v <sub>p</sub> / S	pc/mi/ln
LOS	<i>C</i>	Required Number of Lanes, N	
<b>Glossary</b>		<b>Factor Location</b>	
N - Number of lanes	S - Speed	E <sub>R</sub> - Exhibits 11-10, 11-12	f <sub>LW</sub> - Exhibit 11-8
V - Hourly volume	D - Density	E <sub>T</sub> - Exhibits 11-10, 11-11, 11-13	f <sub>LC</sub> - Exhibit 11-9
v <sub>p</sub> - Flow rate	FFS - Free-flow speed	f <sub>p</sub> - Page 11-18	TRD - Page 11-11
LOS - Level of service	BFFS - Base free-flow speed	LOS, S, FFS, v <sub>p</sub> - Exhibits 11-2, 11-3	
DDHV - Directional design hour volume			

BASIC FREEWAY SEGMENTS WORKSHEET			
<b>General Information</b>		<b>Site Information</b>	
Analyst	<i>RB</i>	Highway/Direction of Travel	<i>I-80 EB</i>
Agency or Company	<i>Fehr &amp; Peers</i>	From/To	<i>South of Sonoma Blvd</i>
Date Performed	<i>10/23/2014</i>	Jurisdiction	<i>Sonoma County</i>
Analysis Time Period	<i>AM Peak Hour</i>	Analysis Year	<i>Existing</i>
Project Description <i>Vallejo Marine Terminal</i>			
<input checked="" type="checkbox"/> Oper.(LOS)		<input type="checkbox"/> Des.(N)	
		<input type="checkbox"/> Planning Data	
<b>Flow Inputs</b>			
Volume, V	<i>2325</i>	veh/h	Peak-Hour Factor, PHF <i>0.92</i>
AADT		veh/day	%Trucks and Buses, P <sub>T</sub> <i>5</i>
Peak-Hr Prop. of AADT, K			%RVs, P <sub>R</sub> <i>0</i>
Peak-Hr Direction Prop, D			General Terrain: <i>Level</i>
DDHV = AADT x K x D		veh/h	Grade % Length <i>mi</i>
			Up/Down %
<b>Calculate Flow Adjustments</b>			
f <sub>p</sub>	<i>1.00</i>	E <sub>R</sub>	<i>1.2</i>
E <sub>T</sub>	<i>1.5</i>	f <sub>HV</sub> = 1/[1+P <sub>T</sub> (E <sub>T</sub> - 1) + P <sub>R</sub> (E <sub>R</sub> - 1)]	<i>0.976</i>
<b>Speed Inputs</b>		<b>Calc Speed Adj and FFS</b>	
Lane Width		ft	
Rt-Side Lat. Clearance		ft	
Number of Lanes, N	<i>4</i>		f <sub>LW</sub> mph
Total Ramp Density, TRD		ramps/mi	f <sub>LC</sub> mph
FFS (measured)	<i>65.0</i>	mph	TRD Adjustment mph
Base free-flow Speed, BFFS		mph	FFS <i>65.0</i> mph
<b>LOS and Performance Measures</b>		<b>Design (N)</b>	
<u>Operational (LOS)</u>		<u>Design (N)</u>	
v <sub>p</sub> = (V or DDHV) / (PHF x N x f <sub>HV</sub> x f <sub>p</sub> )	<i>648</i>	pc/h/ln	Design LOS
S	<i>65.0</i>	mph	v <sub>p</sub> = (V or DDHV) / (PHF x N x f <sub>HV</sub> x f <sub>p</sub> )
D = v <sub>p</sub> / S	<i>10.0</i>	pc/mi/ln	S
LOS	<i>A</i>		D = v <sub>p</sub> / S
			pc/mi/ln
			Required Number of Lanes, N
<b>Glossary</b>		<b>Factor Location</b>	
N - Number of lanes	S - Speed	E <sub>R</sub> - Exhibits 11-10, 11-12	f <sub>LW</sub> - Exhibit 11-8
V - Hourly volume	D - Density	E <sub>T</sub> - Exhibits 11-10, 11-11, 11-13	f <sub>LC</sub> - Exhibit 11-9
v <sub>p</sub> - Flow rate	FFS - Free-flow speed	f <sub>p</sub> - Page 11-18	TRD - Page 11-11
LOS - Level of service	BFFS - Base free-flow speed	LOS, S, FFS, v <sub>p</sub> - Exhibits 11-2, 11-3	
DDHV - Directional design hour volume			

<b>BASIC FREEWAY SEGMENTS WORKSHEET</b>			
<b>General Information</b>		<b>Site Information</b>	
Analyst	<i>RB</i>	Highway/Direction of Travel <i>I-780 EB</i>	
Agency or Company	<i>Fehr &amp; Peers</i>	From/To	<i>Laurel to Glen Cove</i>
Date Performed	<i>10/23/2014</i>	Jurisdiction	<i>Sonoma County</i>
Analysis Time Period	<i>PM Peak Hour</i>	Analysis Year	<i>Existing</i>
Project Description <i>Vallejo Marine Terminal</i>			
<input checked="" type="checkbox"/> Oper.(LOS)		<input type="checkbox"/> Des.(N)	
<input type="checkbox"/> Planning Data			
<b>Flow Inputs</b>			
Volume, V	<i>2199</i>	veh/h	Peak-Hour Factor, PHF <i>0.92</i>
AADT		veh/day	%Trucks and Buses, P <sub>T</sub> <i>5</i>
Peak-Hr Prop. of AADT, K			%RVs, P <sub>R</sub> <i>0</i>
Peak-Hr Direction Prop, D			General Terrain: <i>Level</i>
DDHV = AADT x K x D		veh/h	Grade % Length <i>mi</i>
			Up/Down %
<b>Calculate Flow Adjustments</b>			
f <sub>p</sub>	<i>1.00</i>	E <sub>R</sub>	<i>1.2</i>
E <sub>T</sub>	<i>1.5</i>	f <sub>HV</sub> = 1/[1+P <sub>T</sub> (E <sub>T</sub> - 1) + P <sub>R</sub> (E <sub>R</sub> - 1)] <i>0.976</i>	
<b>Speed Inputs</b>		<b>Calc Speed Adj and FFS</b>	
Lane Width	ft		
Rt-Side Lat. Clearance	ft	f <sub>LW</sub>	mph
Number of Lanes, N	<i>2</i>	f <sub>LC</sub>	mph
Total Ramp Density, TRD	ramps/mi	TRD Adjustment	mph
FFS (measured)	<i>65.0</i>	FFS	<i>65.0</i>
Base free-flow Speed, BFFS	mph		
<b>LOS and Performance Measures</b>		<b>Design (N)</b>	
<u>Operational (LOS)</u>		<u>Design (N)</u>	
v <sub>p</sub> = (V or DDHV) / (PHF x N x f <sub>HV</sub> x f <sub>p</sub> )		Design LOS	
<i>1225</i>	pc/h/ln	v <sub>p</sub> = (V or DDHV) / (PHF x N x f <sub>HV</sub> x f <sub>p</sub> )	
S	<i>65.0</i>	S	mph
D = v <sub>p</sub> / S	<i>18.8</i>	D = v <sub>p</sub> / S	pc/mi/ln
LOS	<i>C</i>	Required Number of Lanes, N	
<b>Glossary</b>		<b>Factor Location</b>	
N - Number of lanes	S - Speed	E <sub>R</sub> - Exhibits 11-10, 11-12	f <sub>LW</sub> - Exhibit 11-8
V - Hourly volume	D - Density	E <sub>T</sub> - Exhibits 11-10, 11-11, 11-13	f <sub>LC</sub> - Exhibit 11-9
v <sub>p</sub> - Flow rate	FFS - Free-flow speed	f <sub>p</sub> - Page 11-18	TRD - Page 11-11
LOS - Level of service	BFFS - Base free-flow speed	LOS, S, FFS, v <sub>p</sub> - Exhibits 11-2, 11-3	
DDHV - Directional design hour volume			

BASIC FREEWAY SEGMENTS WORKSHEET			
<b>General Information</b>		<b>Site Information</b>	
Analyst	<i>RB</i>	Highway/Direction of Travel	<i>I-780 EB</i>
Agency or Company	<i>Fehr &amp; Peers</i>	From/To	<i>Laurel to Glen Cove</i>
Date Performed	<i>10/23/2014</i>	Jurisdiction	<i>Sonoma County</i>
Analysis Time Period	<i>AM Peak Hour</i>	Analysis Year	<i>Existing</i>
Project Description <i>Vallejo Marine Terminal</i>			
<input checked="" type="checkbox"/> Oper.(LOS)		<input type="checkbox"/> Des.(N)	
		<input type="checkbox"/> Planning Data	
<b>Flow Inputs</b>			
Volume, V	<i>2379</i>	veh/h	Peak-Hour Factor, PHF <i>0.92</i>
AADT		veh/day	%Trucks and Buses, P <sub>T</sub> <i>5</i>
Peak-Hr Prop. of AADT, K			%RVs, P <sub>R</sub> <i>0</i>
Peak-Hr Direction Prop, D			General Terrain: <i>Level</i>
DDHV = AADT x K x D		veh/h	Grade % Length <i>mi</i>
			Up/Down %
<b>Calculate Flow Adjustments</b>			
f <sub>p</sub>	<i>1.00</i>	E <sub>R</sub>	<i>1.2</i>
E <sub>T</sub>	<i>1.5</i>	f <sub>HV</sub> = 1/[1+P <sub>T</sub> (E <sub>T</sub> - 1) + P <sub>R</sub> (E <sub>R</sub> - 1)]	<i>0.976</i>
<b>Speed Inputs</b>		<b>Calc Speed Adj and FFS</b>	
Lane Width		ft	
Rt-Side Lat. Clearance		ft	
Number of Lanes, N	<i>2</i>		f <sub>LW</sub> mph
Total Ramp Density, TRD		ramps/mi	f <sub>LC</sub> mph
FFS (measured)	<i>65.0</i>	mph	TRD Adjustment mph
Base free-flow Speed, BFFS		mph	FFS <i>65.0</i> mph
<b>LOS and Performance Measures</b>		<b>Design (N)</b>	
<u>Operational (LOS)</u>		<u>Design (N)</u>	
v <sub>p</sub> = (V or DDHV) / (PHF x N x f <sub>HV</sub> )	<i>1325</i>	pc/h/ln	Design LOS
x f <sub>p</sub> )			v <sub>p</sub> = (V or DDHV) / (PHF x N x f <sub>HV</sub> )
S	<i>65.0</i>	mph	x f <sub>p</sub> )
D = v <sub>p</sub> / S	<i>20.4</i>	pc/mi/ln	S
LOS	<i>C</i>		D = v <sub>p</sub> / S
			pc/mi/ln
			Required Number of Lanes, N
<b>Glossary</b>		<b>Factor Location</b>	
N - Number of lanes	S - Speed	E <sub>R</sub> - Exhibits 11-10, 11-12	f <sub>LW</sub> - Exhibit 11-8
V - Hourly volume	D - Density	E <sub>T</sub> - Exhibits 11-10, 11-11, 11-13	f <sub>LC</sub> - Exhibit 11-9
v <sub>p</sub> - Flow rate	FFS - Free-flow speed	f <sub>p</sub> - Page 11-18	TRD - Page 11-11
LOS - Level of service	BFFS - Base free-flow speed	LOS, S, FFS, v <sub>p</sub> - Exhibits 11-2, 11-3	
DDHV - Directional design hour volume			

<b>BASIC FREEWAY SEGMENTS WORKSHEET</b>			
<b>General Information</b>		<b>Site Information</b>	
Analyst	<i>RB</i>	Highway/Direction of Travel <i>I-780 WB</i>	
Agency or Company	<i>Fehr &amp; Peers</i>	From/To	<i>Glen Cove to Laurel</i>
Date Performed	<i>10/23/2014</i>	Jurisdiction	<i>Sonoma County</i>
Analysis Time Period	<i>PM Peak Hour</i>	Analysis Year	<i>Existing</i>
Project Description <i>Vallejo Marine Terminal</i>			
<input checked="" type="checkbox"/> Oper.(LOS) <input type="checkbox"/> Des.(N) <input type="checkbox"/> Planning Data			
<b>Flow Inputs</b>			
Volume, V	<i>2776</i>	veh/h	Peak-Hour Factor, PHF <i>0.92</i>
AADT		veh/day	%Trucks and Buses, P <sub>T</sub> <i>5</i>
Peak-Hr Prop. of AADT, K			%RVs, P <sub>R</sub> <i>0</i>
Peak-Hr Direction Prop, D			General Terrain: <i>Level</i>
DDHV = AADT x K x D		veh/h	Grade % Length <i>mi</i> Up/Down %
<b>Calculate Flow Adjustments</b>			
f <sub>p</sub>	<i>1.00</i>	E <sub>R</sub>	<i>1.2</i>
E <sub>T</sub>	<i>1.5</i>	f <sub>HV</sub> = 1/[1+P <sub>T</sub> (E <sub>T</sub> - 1) + P <sub>R</sub> (E <sub>R</sub> - 1)] <i>0.976</i>	
<b>Speed Inputs</b>		<b>Calc Speed Adj and FFS</b>	
Lane Width	ft		
Rt-Side Lat. Clearance	ft	f <sub>LW</sub>	mph
Number of Lanes, N	<i>2</i>	f <sub>LC</sub>	mph
Total Ramp Density, TRD	ramps/mi	TRD Adjustment	mph
FFS (measured)	<i>65.0</i>	FFS	<i>65.0</i> mph
Base free-flow Speed, BFFS	mph		
<b>LOS and Performance Measures</b>		<b>Design (N)</b>	
<u>Operational (LOS)</u>		<u>Design (N)</u>	
v <sub>p</sub> = (V or DDHV) / (PHF x N x f <sub>HV</sub> )	<i>1546</i> pc/h/ln	Design LOS	
x f <sub>p</sub> )		v <sub>p</sub> = (V or DDHV) / (PHF x N x f <sub>HV</sub> )	pc/h/ln
S	<i>64.7</i> mph	x f <sub>p</sub> )	
D = v <sub>p</sub> / S	<i>23.9</i> pc/mi/ln	S	mph
LOS	<i>C</i>	D = v <sub>p</sub> / S	pc/mi/ln
		Required Number of Lanes, N	
<b>Glossary</b>		<b>Factor Location</b>	
N - Number of lanes	S - Speed	E <sub>R</sub> - Exhibits 11-10, 11-12	f <sub>LW</sub> - Exhibit 11-8
V - Hourly volume	D - Density	E <sub>T</sub> - Exhibits 11-10, 11-11, 11-13	f <sub>LC</sub> - Exhibit 11-9
v <sub>p</sub> - Flow rate	FFS - Free-flow speed	f <sub>p</sub> - Page 11-18	TRD - Page 11-11
LOS - Level of service	BFFS - Base free-flow speed	LOS, S, FFS, v <sub>p</sub> - Exhibits 11-2, 11-3	
DDHV - Directional design hour volume			

BASIC FREEWAY SEGMENTS WORKSHEET			
<b>General Information</b>		<b>Site Information</b>	
Analyst	<i>RB</i>	Highway/Direction of Travel	<i>I-780 WB</i>
Agency or Company	<i>Fehr &amp; Peers</i>	From/To	<i>Glen Cove to Laurel</i>
Date Performed	<i>10/23/2014</i>	Jurisdiction	<i>Sonoma County</i>
Analysis Time Period	<i>AM Peak Hour</i>	Analysis Year	<i>Existing</i>
Project Description <i>Vallejo Marine Terminal</i>			
<input checked="" type="checkbox"/> Oper.(LOS)		<input type="checkbox"/> Des.(N)	<input type="checkbox"/> Planning Data
<b>Flow Inputs</b>			
Volume, V	<i>1894</i>	veh/h	Peak-Hour Factor, PHF <i>0.92</i>
AADT		veh/day	%Trucks and Buses, P <sub>T</sub> <i>5</i>
Peak-Hr Prop. of AADT, K			%RVs, P <sub>R</sub> <i>0</i>
Peak-Hr Direction Prop, D			General Terrain: <i>Level</i>
DDHV = AADT x K x D		veh/h	Grade % Length <i>mi</i> Up/Down %
<b>Calculate Flow Adjustments</b>			
f <sub>p</sub>	<i>1.00</i>	E <sub>R</sub>	<i>1.2</i>
E <sub>T</sub>	<i>1.5</i>	f <sub>HV</sub> = 1/[1+P <sub>T</sub> (E <sub>T</sub> - 1) + P <sub>R</sub> (E <sub>R</sub> - 1)]	<i>0.976</i>
<b>Speed Inputs</b>		<b>Calc Speed Adj and FFS</b>	
Lane Width		ft	
Rt-Side Lat. Clearance		ft	f <sub>LW</sub>
Number of Lanes, N	<i>2</i>		mph
Total Ramp Density, TRD		ramps/mi	f <sub>LC</sub>
FFS (measured)	<i>65.0</i>	mph	TRD Adjustment
Base free-flow Speed, BFFS		mph	FFS
			<i>65.0</i>
			mph
<b>LOS and Performance Measures</b>		<b>Design (N)</b>	
<u>Operational (LOS)</u>		<u>Design (N)</u>	
v <sub>p</sub> = (V or DDHV) / (PHF x N x f <sub>HV</sub> x f <sub>p</sub> )	<i>1055</i>	pc/h/ln	Design LOS
S	<i>65.0</i>	mph	v <sub>p</sub> = (V or DDHV) / (PHF x N x f <sub>HV</sub> x f <sub>p</sub> )
D = v <sub>p</sub> / S	<i>16.2</i>	pc/mi/ln	S
LOS	<i>B</i>		mph
			D = v <sub>p</sub> / S
			pc/mi/ln
			Required Number of Lanes, N
<b>Glossary</b>		<b>Factor Location</b>	
N - Number of lanes	S - Speed	E <sub>R</sub> - Exhibits 11-10, 11-12	f <sub>LW</sub> - Exhibit 11-8
V - Hourly volume	D - Density	E <sub>T</sub> - Exhibits 11-10, 11-11, 11-13	f <sub>LC</sub> - Exhibit 11-9
v <sub>p</sub> - Flow rate	FFS - Free-flow speed	f <sub>p</sub> - Page 11-18	TRD - Page 11-11
LOS - Level of service	BFFS - Base free-flow speed	LOS, S, FFS, v <sub>p</sub> - Exhibits 11-2, 11-3	
DDHV - Directional design hour volume			



# Leisch Method for Weaving Analysis

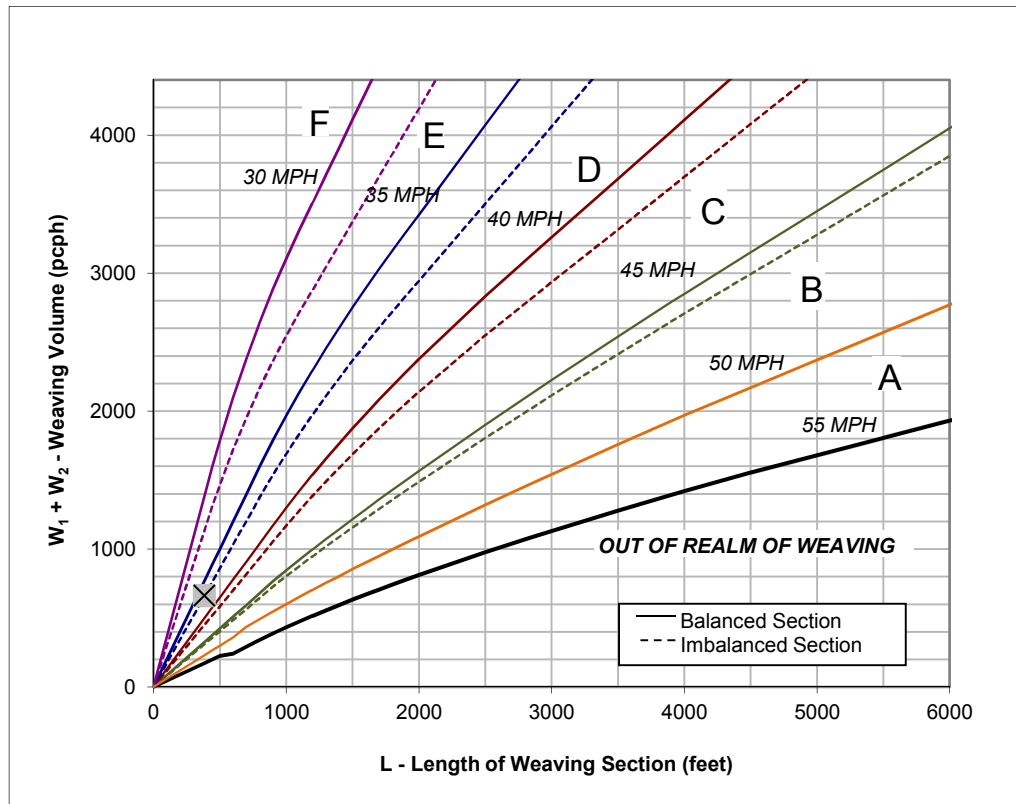
## Data Input

Number of Entering Mainline Lanes	$N_b$	2
Number of Lanes in Weaving Section	$N$	3
Length of Weaving Section (feet)	$L$	385

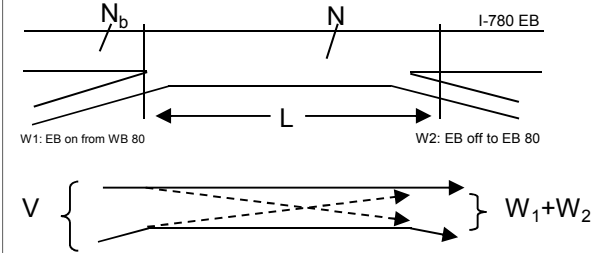
## Project Information

Project	Vallejo Marine Terminal
Scenario	AM + No Project
Freeway	I-780 EB
On-ramp	W1: EB on from WB 80
Off-ramp	W2: EB off to EB 80

Total Weaving Section (V)		On-ramp to Mainline ( $W_1$ )		Mainline to Off-ramp ( $W_2$ )	
Volume (vph)*	984	Volume (vph)*	580	Volume (vph)*	67
Truck Percentage	5%	Truck Percentage	5%	Truck Percentage	5%
PCE for Trucks	1.5	PCE for Trucks	1.5	PCE for Trucks	1.5
Volume (pcph)	1,009	Volume (pcph)	595	Volume (pcph)	69



## Figure



## Capacity Analysis

- Is the weaving section balanced ( $Y / N$ )? N  
[If optional exit lane, then "Y". Otherwise "N".]
- In the Weaving Speed Chart to the left, which two speed curves is the black "x" between? 35 MPH and 40 MPH

If below the 55 MPH curve, out of the realm of weaving.  
If left of the 30 MPH curve, LOS is F.

- Interpolated Weaving Speed ( $S_w$ , mph) 35.0
- Weaving Intensity Factor ( $k$ ) 3.00
- Service Volume (SV, pcph)  
 $SV = (1/N) * [V + (k - 1) * \min(W_1, W_2)]$  382
- Level of Service (LOS) A

The LOS in the chart above refers to the capacity of weaving traffic only; through and ramp to ramp traffic is not included.

\* Note: **Do not adjust by a Peak Hour Factor (PHF)**. The methodology incorporates the PHF in the Service Volume tables.

Sources: *Completion of Procedures for Analysis and Design of Traffic Weaving Sections*, Jack E. Leisch & Associates, September 1983 and *Highway Design Manual*, California Department of Transportation, July 24, 2009

# Leisch Method for Weaving Analysis

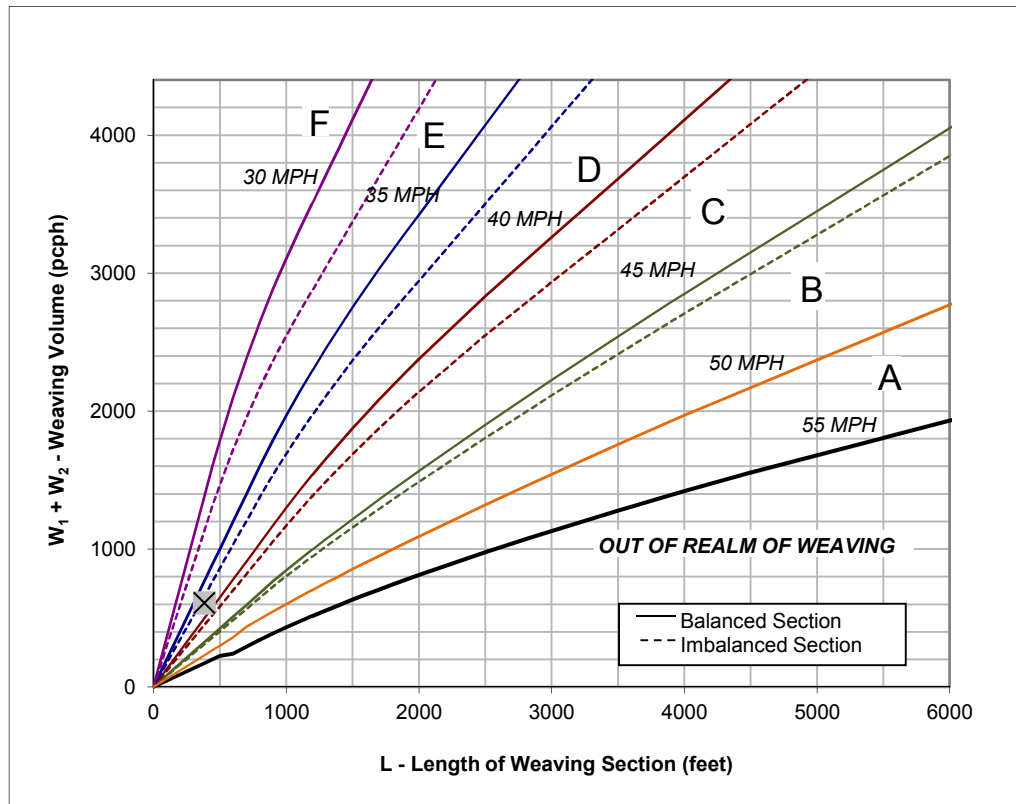
## Data Input

Number of Entering Mainline Lanes	$N_b$	2
Number of Lanes in Weaving Section	$N$	3
Length of Weaving Section (feet)	$L$	385

## Project Information

Project	Vallejo Marine Terminal
Scenario	PM + No Project
Freeway	I-780 EB
On-ramp	W1: EB on from WB 80
Off-ramp	W2: EB off to EB 80

Total Weaving Section (V)		On-ramp to Mainline ( $W_1$ )		Mainline to Off-ramp ( $W_2$ )	
Volume (vph)*	1,504	Volume (vph)*	394	Volume (vph)*	202
Truck Percentage	5%	Truck Percentage	5%	Truck Percentage	5%
PCE for Trucks	1.5	PCE for Trucks	1.5	PCE for Trucks	1.5
Volume (pcph)	1,541	Volume (pcph)	403	Volume (pcph)	207

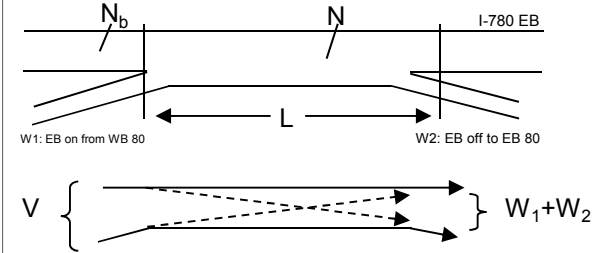


The LOS in the chart above refers to the capacity of weaving traffic only; through and ramp to ramp traffic is not included.

\* Note: **Do not adjust by a Peak Hour Factor (PHF)**. The methodology incorporates the PHF in the Service Volume tables.

Sources: *Completion of Procedures for Analysis and Design of Traffic Weaving Sections*, Jack E. Leisch & Associates, September 1983 and *Highway Design Manual*, California Department of Transportation, July 24, 2009

## Figure



## Capacity Analysis

- Is the weaving section balanced ( $Y / N$ )? N  
[If optional exit lane, then "Y". Otherwise "N".]
- In the Weaving Speed Chart to the left, which two speed curves is the black "x" between?

**35 MPH** and **40 MPH**

If below the 55 MPH curve, out of the realm of weaving.  
If left of the 30 MPH curve, LOS is F.

- Interpolated Weaving Speed ( $S_w$ , mph) 36.2
- Weaving Intensity Factor ( $k$ ) 2.83
- Service Volume (SV, pcph)  
 $SV = (1/N) * [V + (k - 1) * \min(W_1, W_2)]$  640
- Level of Service (LOS) A

# Leisch Method for Weaving Analysis

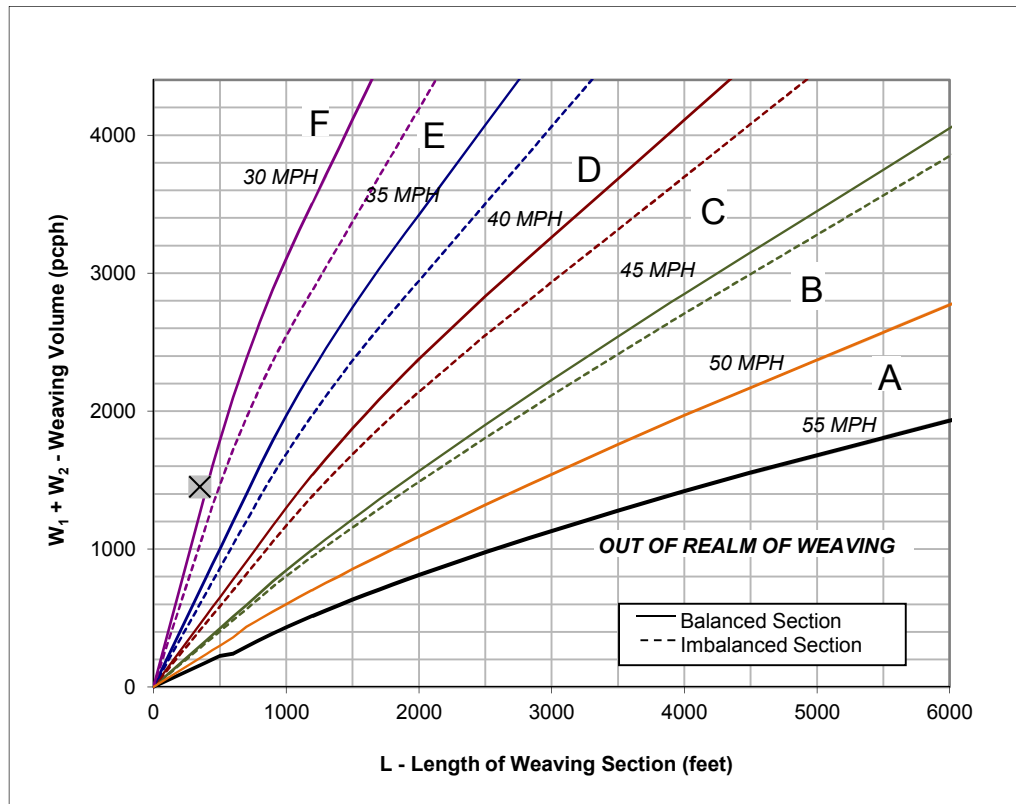
## Data Input

Number of Entering Mainline Lanes	$N_b$	2
Number of Lanes in Weaving Section	N	3
Length of Weaving Section (feet)	L	350

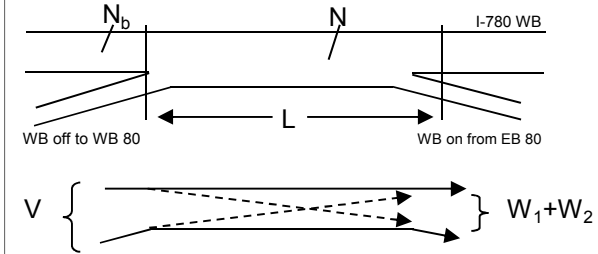
## Project Information

Project	Vallejo Marine Terminal
Scenario	AM + No Project
Freeway	I-780 WB
On-ramp	WB off to WB 80
Off-ramp	WB on from EB 80

Total Weaving Section (V)		On-ramp to Mainline ( $W_1$ )		Mainline to Off-ramp ( $W_2$ )	
Volume (vph)*	1,772	Volume (vph)*	1,278	Volume (vph)*	140
Truck Percentage	5%	Truck Percentage	5%	Truck Percentage	5%
PCE for Trucks	1.5	PCE for Trucks	1.5	PCE for Trucks	1.5
Volume (pcph)	1,817	Volume (pcph)	1,310	Volume (pcph)	143



## Figure



## Capacity Analysis

1. Is the weaving section balanced ( $Y / N$ )? **N**  
[If optional exit lane, then "Y". Otherwise "N".]
2. In the Weaving Speed Chart to the left, which two speed curves is the black "x" between?

**0 MPH** and **30 MPH**

If below the 55 MPH curve, out of the realm of weaving.  
If left of the 30 MPH curve, LOS is F.

3. Interpolated Weaving Speed ( $S_w$ , mph) -
4. Weaving Intensity Factor ( $k$ ) -
5. Service Volume (SV, pcph)  
 $SV = (1/N) * [V + (k - 1) * \min(W_1, W_2)]$  -
6. Level of Service (LOS) **F**

The LOS in the chart above refers to the capacity of weaving traffic only; through and ramp to ramp traffic is not included.

\* Note: **Do not adjust by a Peak Hour Factor (PHF)**. The methodology incorporates the PHF in the Service Volume tables.

Sources: *Completion of Procedures for Analysis and Design of Traffic Weaving Sections*, Jack E. Leisch & Associates, September 1983 and *Highway Design Manual*, California Department of Transportation, July 24, 2009

# Leisch Method for Weaving Analysis

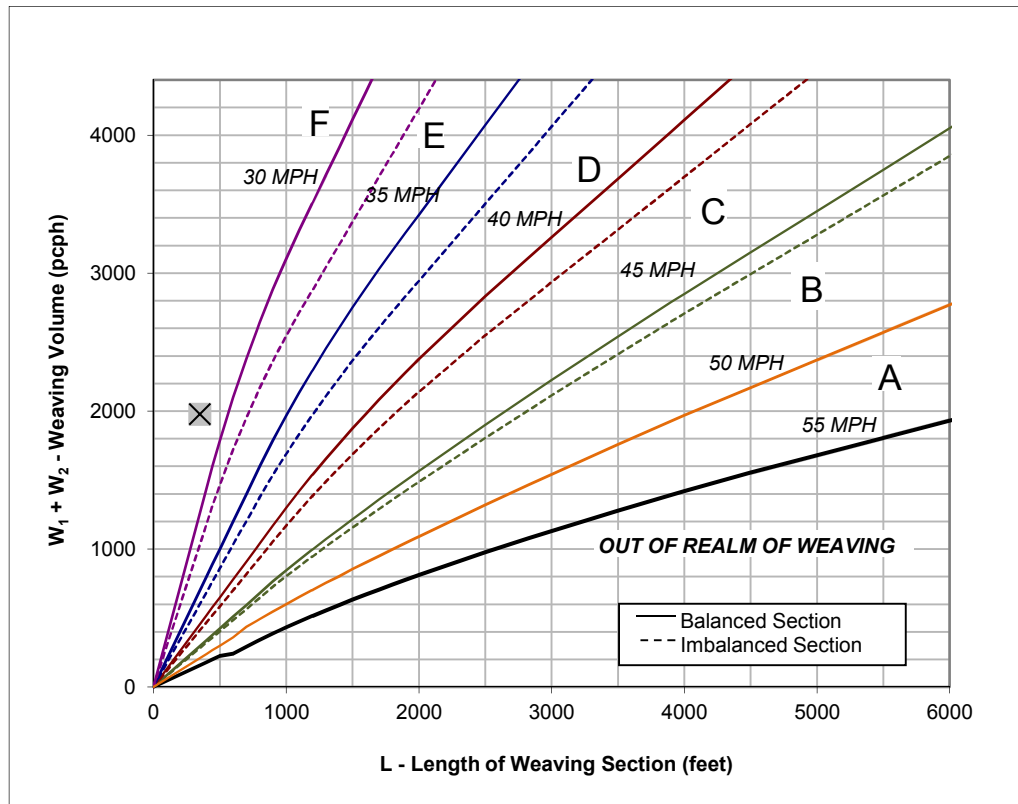
## Data Input

Number of Entering Mainline Lanes	$N_b$	2
Number of Lanes in Weaving Section	N	3
Length of Weaving Section (feet)	L	350

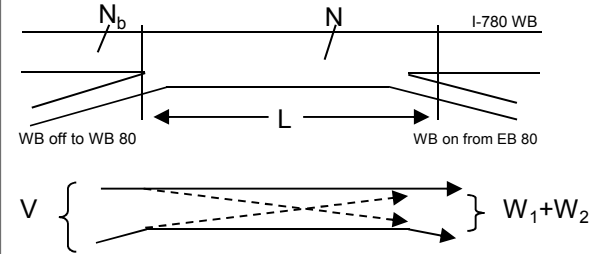
## Project Information

Project	Vallejo Marine Terminal
Scenario	PM + No Project
Freeway	I-780 WB
On-ramp	WB off to WB 80
Off-ramp	WB on from EB 80

Total Weaving Section (V)		On-ramp to Mainline ( $W_1$ )		Mainline to Off-ramp ( $W_2$ )	
Volume (vph)*	2,701	Volume (vph)*	1,549	Volume (vph)*	381
Truck Percentage	5%	Truck Percentage	5%	Truck Percentage	5%
PCE for Trucks	1.5	PCE for Trucks	1.5	PCE for Trucks	1.5
Volume (pcph)	2,769	Volume (pcph)	1,588	Volume (pcph)	391



## Figure



## Capacity Analysis

1. Is the weaving section balanced ( $Y / N$ )? **N**  
[If optional exit lane, then "Y". Otherwise "N".]
2. In the Weaving Speed Chart to the left, which two speed curves is the black "x" between?

**0 MPH** and **30 MPH**

If below the 55 MPH curve, out of the realm of weaving.  
If left of the 30 MPH curve, LOS is F.

3. Interpolated Weaving Speed ( $S_w$ , mph) -
4. Weaving Intensity Factor ( $k$ ) -
5. Service Volume (SV, pcph)  
 $SV = (1/N) * [V + (k - 1) * \min(W_1, W_2)]$  -
6. Level of Service (LOS) **F**

The LOS in the chart above refers to the capacity of weaving traffic only; through and ramp to ramp traffic is not included.

\* Note: **Do not adjust by a Peak Hour Factor (PHF)**. The methodology incorporates the PHF in the Service Volume tables.

Sources: *Completion of Procedures for Analysis and Design of Traffic Weaving Sections*, Jack E. Leisch & Associates, September 1983 and *Highway Design Manual*, California Department of Transportation, July 24, 2009

**APPENDIX L.5.3 — EXISTING PLUS VMT PROJECT**



RAMPS AND RAMP JUNCTIONS WORKSHEET									
General Information					Site Information				
Analyst	RB	Freeway/Dir of Travel	I 80 EB						
Agency or Company	Fehr & Peers	Junction	I-780 Collector						
Date Performed	10/31/2014	Jurisdiction	Sonoma County						
Analysis Time Period	AM Peak	Analysis Year	Existing + VMT						
Project Description Vallejo Marine Terminal									
Inputs									
Upstream Adj Ramp <input type="checkbox"/> Yes <input type="checkbox"/> On <input checked="" type="checkbox"/> No <input type="checkbox"/> Off	Number of Lanes, N Acceleration Lane Length, L <sub>A</sub> Deceleration Lane Length L <sub>D</sub>	3 150	Downstream Adj Ramp <input checked="" type="checkbox"/> Yes <input type="checkbox"/> On <input type="checkbox"/> No <input checked="" type="checkbox"/> Off	L <sub>down</sub> = 2100 ft					
L <sub>up</sub> = ft	Freeway Volume, V <sub>F</sub>	2598	Ramp Volume, V <sub>R</sub>	1693					
V <sub>u</sub> = veh/h	Freeway Free-Flow Speed, S <sub>FF</sub>	65.0	Ramp Free-Flow Speed, S <sub>FR</sub>	65.0					
<b>Conversion to pc/h Under Base Conditions</b>									
(pc/h)	V (Veh/hr)	PHF	Terrain	%Truck	%Rv	f <sub>HV</sub>	f <sub>p</sub>	v = V/PHF x f <sub>HV</sub> x f <sub>p</sub>	
Freeway	2598	0.92	Level	5	0	0.976	1.00	2895	
Ramp	1693	0.92	Level	5	0	0.976	1.00	1886	
UpStream									
DownStream	116	0.90	Level	5	0	0.976	1.00	132	
Merge Areas					Diverge Areas				
Estimation of v <sub>12</sub>					Estimation of v <sub>12</sub>				
$V_{12} = V_F (P_{FM})$ L <sub>EQ</sub> = 1050.54 (Equation 13-6 or 13-7) P <sub>FM</sub> = 0.582 using Equation (Exhibit 13-6) V <sub>12</sub> = 1684 pc/h V <sub>3</sub> or V <sub>av34</sub> = 1211 pc/h (Equation 13-14 or 13-17) Is V <sub>3</sub> or V <sub>av34</sub> > 2,700 pc/h? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Is V <sub>3</sub> or V <sub>av34</sub> > 1.5 * V <sub>12</sub> /2 <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No If Yes, V <sub>12a</sub> = pc/h (Equation 13-16, 13-18, or 13-19)					$V_{12} = V_R + (V_F - V_R)P_{FD}$ L <sub>EQ</sub> = (Equation 13-12 or 13-13) P <sub>FD</sub> = using Equation (Exhibit 13-7) V <sub>12</sub> = pc/h V <sub>3</sub> or V <sub>av34</sub> = pc/h (Equation 13-14 or 13-17) Is V <sub>3</sub> or V <sub>av34</sub> > 2,700 pc/h? <input type="checkbox"/> Yes <input type="checkbox"/> No Is V <sub>3</sub> or V <sub>av34</sub> > 1.5 * V <sub>12</sub> /2 <input type="checkbox"/> Yes <input type="checkbox"/> No If Yes, V <sub>12a</sub> = pc/h (Equation 13-16, 13-18, or 13-19)				
Capacity Checks					Capacity Checks				
	Actual	Capacity		LOS F?		Actual	Capacity		LOS F?
V <sub>FO</sub>	4781	Exhibit 13-8		No	V <sub>F</sub>		Exhibit 13-8		
					V <sub>FO</sub> = V <sub>F</sub> - V <sub>R</sub>		Exhibit 13-8		
					V <sub>R</sub>		Exhibit 13-10		
Flow Entering Merge Influence Area					Flow Entering Diverge Influence Area				
	Actual	Max Desirable		Violation?		Actual	Max Desirable		Violation?
V <sub>R12</sub>	3570	Exhibit 13-8		4600:All	No	V <sub>12</sub>		Exhibit 13-8	
Level of Service Determination (if not F)					Level of Service Determination (if not F)				
$D_R = 5.475 + 0.00734 v_R + 0.0078 V_{12} - 0.00627 L_A$ D <sub>R</sub> = 31.5 (pc/mi/ln) LOS = D (Exhibit 13-2)					$D_R = 4.252 + 0.0086 V_{12} - 0.009 L_D$ D <sub>R</sub> = (pc/mi/ln) LOS = (Exhibit 13-2)				
Speed Determination					Speed Determination				
M <sub>S</sub> = 0.440 (Exhibit 13-11)	S <sub>R</sub> = 54.9 mph (Exhibit 13-11)	S <sub>0</sub> = 62.4 mph (Exhibit 13-11)	S = 56.6 mph (Exhibit 13-13)		D <sub>s</sub> = (Exhibit 13-12)	S <sub>R</sub> = mph (Exhibit 13-12)	S <sub>0</sub> = mph (Exhibit 13-12)	S = mph (Exhibit 13-13)	

RAMPS AND RAMP JUNCTIONS WORKSHEET										
<b>General Information</b>					<b>Site Information</b>					
Analyst	RB		Freeway/Dir of Travel	I 80 WB		Agency or Company	Fehr & Peers		Junction	I-780 Collector
Date Performed	10/31/2014		Jurisdiction	Sonoma County		Analysis Time Period	PM Peak		Analysis Year	Existing + VMT
Project Description Vallejo Marine Terminal										
<b>Inputs</b>										
Upstream Adj Ramp		Number of Lanes, N			3			Downstream Adj Ramp		
<input checked="" type="checkbox"/> Yes <input checked="" type="checkbox"/> On		Acceleration Lane Length, L <sub>A</sub>						<input type="checkbox"/> Yes <input type="checkbox"/> On		
<input type="checkbox"/> No <input type="checkbox"/> Off		Deceleration Lane Length L <sub>D</sub>			125			<input checked="" type="checkbox"/> No <input type="checkbox"/> Off		
L <sub>up</sub> = 1500 ft		Freeway Volume, V <sub>F</sub>			4794			L <sub>down</sub> = ft		
V <sub>u</sub> = 184 veh/h		Ramp Volume, V <sub>R</sub>			1670			V <sub>D</sub> = veh/h		
			Freeway Free-Flow Speed, S <sub>FF</sub>			65.0				
			Ramp Free-Flow Speed, S <sub>FR</sub>			65.0				
<b>Conversion to pc/h Under Base Conditions</b>										
(pc/h)	V (Veh/hr)	PHF	Terrain	%Truck	%Rv	f <sub>HV</sub>	f <sub>p</sub>	v = V/PHF x f <sub>HV</sub> x f <sub>p</sub>		
Freeway	4794	0.92	Level	5	0	0.976	1.00	5341		
Ramp	1670	0.92	Level	5	0	0.976	1.00	1861		
UpStream	184	0.90	Level	5	0	0.976	1.00	210		
DownStream										
<b>Merge Areas</b>					<b>Diverge Areas</b>					
<b>Estimation of v<sub>12</sub></b>					<b>Estimation of v<sub>12</sub></b>					
$V_{12} = V_F (P_{FM})$ (Equation 13-6 or 13-7) L <sub>EQ</sub> = P <sub>FM</sub> = using Equation (Exhibit 13-6) V <sub>12</sub> = pc/h V <sub>3</sub> or V <sub>av34</sub> pc/h (Equation 13-14 or 13-17) Is V <sub>3</sub> or V <sub>av34</sub> > 2,700 pc/h? <input type="checkbox"/> Yes <input type="checkbox"/> No Is V <sub>3</sub> or V <sub>av34</sub> > 1.5 * V <sub>12</sub> /2 <input type="checkbox"/> Yes <input type="checkbox"/> No If Yes, V <sub>12a</sub> = pc/h (Equation 13-16, 13-18, or 13-19)					$V_{12} = V_R + (V_F - V_R)P_{FD}$ L <sub>EQ</sub> = 4007.10 (Equation 13-12 or 13-13) P <sub>FD</sub> = 0.593 using Equation (Exhibit 13-7) V <sub>12</sub> = 3926 pc/h V <sub>3</sub> or V <sub>av34</sub> 1415 pc/h (Equation 13-14 or 13-17) Is V <sub>3</sub> or V <sub>av34</sub> > 2,700 pc/h? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Is V <sub>3</sub> or V <sub>av34</sub> > 1.5 * V <sub>12</sub> /2 <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No If Yes, V <sub>12a</sub> = pc/h (Equation 13-16, 13-18, or 13-19)					
<b>Capacity Checks</b>					<b>Capacity Checks</b>					
	Actual	Capacity		LOS F?		Actual	Capacity		LOS F?	
V <sub>FO</sub>		Exhibit 13-8			V <sub>F</sub>	5341	Exhibit 13-8	7050	No	
			V <sub>FO</sub> = V <sub>F</sub> - V <sub>R</sub>	3480	Exhibit 13-8	7050	No			
			V <sub>R</sub>	1861	Exhibit 13-10	2200	No			
<b>Flow Entering Merge Influence Area</b>					<b>Flow Entering Diverge Influence Area</b>					
	Actual	Max Desirable	Violation?			Actual	Max Desirable	Violation?		
V <sub>R12</sub>		Exhibit 13-8			V <sub>12</sub>	3926	Exhibit 13-8	4400:All	No	
<b>Level of Service Determination (if not F)</b>					<b>Level of Service Determination (if not F)</b>					
$D_R = 5.475 + 0.00734 v_R + 0.0078 V_{12} - 0.00627 L_A$ D <sub>R</sub> = (pc/mi/ln) LOS = (Exhibit 13-2)					$D_R = 4.252 + 0.0086 V_{12} - 0.009 L_D$ D <sub>R</sub> = 36.9 (pc/mi/ln) LOS = E (Exhibit 13-2)					
<b>Speed Determination</b>					<b>Speed Determination</b>					
M <sub>S</sub> = (Exhibit 13-11) S <sub>R</sub> = mph (Exhibit 13-11) S <sub>0</sub> = mph (Exhibit 13-11) S = mph (Exhibit 13-13)					D <sub>s</sub> = 0.205 (Exhibit 13-12) S <sub>R</sub> = 60.3 mph (Exhibit 13-12) S <sub>0</sub> = 69.7 mph (Exhibit 13-12) S = 62.5 mph (Exhibit 13-13)					

RAMPS AND RAMP JUNCTIONS WORKSHEET										
<b>General Information</b>					<b>Site Information</b>					
Analyst	RB		Freeway/Dir of Travel	I 80 WB		Agency or Company	Fehr & Peers		Junction	I-780 Collector
Date Performed	10/31/2014		Jurisdiction	Sonoma County		Analysis Time Period	AM Peak		Analysis Year	Existing + VMT
Project Description Vallejo Marine Terminal										
<b>Inputs</b>										
Upstream Adj Ramp		Number of Lanes, N			3			Downstream Adj Ramp		
<input checked="" type="checkbox"/> Yes <input checked="" type="checkbox"/> On		Acceleration Lane Length, L <sub>A</sub>						<input type="checkbox"/> Yes <input type="checkbox"/> On		
<input type="checkbox"/> No <input type="checkbox"/> Off		Deceleration Lane Length L <sub>D</sub>			125			<input checked="" type="checkbox"/> No <input type="checkbox"/> Off		
L <sub>up</sub> = 1500 ft		Freeway Volume, V <sub>F</sub>			4139			L <sub>down</sub> = ft		
V <sub>u</sub> = 145 veh/h		Ramp Volume, V <sub>R</sub>			1426			V <sub>D</sub> = veh/h		
		Freeway Free-Flow Speed, S <sub>FF</sub>			65.0					
		Ramp Free-Flow Speed, S <sub>FR</sub>			65.0					
<b>Conversion to pc/h Under Base Conditions</b>										
(pc/h)	V (Veh/hr)	PHF	Terrain	%Truck	%Rv	f <sub>HV</sub>	f <sub>p</sub>	v = V/PHF x f <sub>HV</sub> x f <sub>p</sub>		
Freeway	4139	0.92	Level	5	0	0.976	1.00	4611		
Ramp	1426	0.92	Level	5	0	0.976	1.00	1589		
UpStream	145	0.90	Level	5	0	0.976	1.00	165		
DownStream										
<b>Merge Areas</b>					<b>Diverge Areas</b>					
<b>Estimation of v<sub>12</sub></b>					<b>Estimation of v<sub>12</sub></b>					
$V_{12} = V_F (P_{FM})$ L <sub>EQ</sub> = (Equation 13-6 or 13-7) P <sub>FM</sub> = using Equation (Exhibit 13-6) V <sub>12</sub> = pc/h V <sub>3</sub> or V <sub>av34</sub> pc/h (Equation 13-14 or 13-17) Is V <sub>3</sub> or V <sub>av34</sub> > 2,700 pc/h? <input type="checkbox"/> Yes <input type="checkbox"/> No Is V <sub>3</sub> or V <sub>av34</sub> > 1.5 * V <sub>12</sub> /2 <input type="checkbox"/> Yes <input type="checkbox"/> No If Yes, V <sub>12a</sub> = pc/h (Equation 13-16, 13-18, or 13-19)					$V_{12} = V_R + (V_F - V_R)P_{FD}$ L <sub>EQ</sub> = 2931.30 (Equation 13-12 or 13-13) P <sub>FD</sub> = 0.604 using Equation (Exhibit 13-7) V <sub>12</sub> = 3413 pc/h V <sub>3</sub> or V <sub>av34</sub> 1198 pc/h (Equation 13-14 or 13-17) Is V <sub>3</sub> or V <sub>av34</sub> > 2,700 pc/h? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Is V <sub>3</sub> or V <sub>av34</sub> > 1.5 * V <sub>12</sub> /2 <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No If Yes, V <sub>12a</sub> = pc/h (Equation 13-16, 13-18, or 13-19)					
<b>Capacity Checks</b>					<b>Capacity Checks</b>					
	Actual	Capacity		LOS F?		Actual	Capacity		LOS F?	
V <sub>FO</sub>		Exhibit 13-8			V <sub>F</sub>	4611	Exhibit 13-8	7050	No	
					V <sub>FO</sub> = V <sub>F</sub> - V <sub>R</sub>	3022	Exhibit 13-8	7050	No	
					V <sub>R</sub>	1589	Exhibit 13-10	2200	No	
<b>Flow Entering Merge Influence Area</b>					<b>Flow Entering Diverge Influence Area</b>					
	Actual	Max Desirable		Violation?		Actual	Max Desirable		Violation?	
V <sub>R12</sub>		Exhibit 13-8			V <sub>12</sub>	3413	Exhibit 13-8	4400:All	No	
<b>Level of Service Determination (if not F)</b>					<b>Level of Service Determination (if not F)</b>					
$D_R = 5.475 + 0.00734 v_R + 0.0078 V_{12} - 0.00627 L_A$ D <sub>R</sub> = (pc/mi/ln) LOS = (Exhibit 13-2)					$D_R = 4.252 + 0.0086 V_{12} - 0.009 L_D$ D <sub>R</sub> = 32.5 (pc/mi/ln) LOS = D (Exhibit 13-2)					
<b>Speed Determination</b>					<b>Speed Determination</b>					
M <sub>S</sub> = (Exhibit 13-11) S <sub>R</sub> = mph (Exhibit 13-11) S <sub>0</sub> = mph (Exhibit 13-11) S = mph (Exhibit 13-13)					D <sub>s</sub> = 0.181 (Exhibit 13-12) S <sub>R</sub> = 60.8 mph (Exhibit 13-12) S <sub>0</sub> = 70.5 mph (Exhibit 13-12) S = 63.1 mph (Exhibit 13-13)					



<b>BASIC FREEWAY SEGMENTS WORKSHEET</b>			
<b>General Information</b>		<b>Site Information</b>	
Analyst	<i>RB</i>	Highway/Direction of Travel	<i>80 WB</i>
Agency or Company	<i>Fehr &amp; Peers</i>	From/To	<i>I-780 Collectors - Georgia St</i>
Date Performed	<i>10/23/2014</i>	Jurisdiction	<i>Sonoma County</i>
Analysis Time Period	<i>PM Peak Hour</i>	Analysis Year	<i>Existing + VMT</i>
Project Description <i>Vallejo Marine Terminal</i>			
<input checked="" type="checkbox"/> Oper.(LOS) <input type="checkbox"/> Des.(N) <input type="checkbox"/> Planning Data			
<b>Flow Inputs</b>			
Volume, V	<i>4799</i>	veh/h	Peak-Hour Factor, PHF
AADT		veh/day	<i>0.92</i>
Peak-Hr Prop. of AADT, K			%Trucks and Buses, P <sub>T</sub>
Peak-Hr Direction Prop, D			<i>5</i>
DDHV = AADT x K x D		veh/h	%RVs, P <sub>R</sub>
			<i>0</i>
			General Terrain:
			<i>Level</i>
			Grade % Length
			<i>mi</i>
			Up/Down %
<b>Calculate Flow Adjustments</b>			
f <sub>p</sub>	<i>1.00</i>	E <sub>R</sub>	<i>1.2</i>
E <sub>T</sub>	<i>1.5</i>	f <sub>HV</sub> = 1/[1+P <sub>T</sub> (E <sub>T</sub> - 1) + P <sub>R</sub> (E <sub>R</sub> - 1)]	<i>0.976</i>
<b>Speed Inputs</b>		<b>Calc Speed Adj and FFS</b>	
Lane Width	ft	f <sub>LW</sub>	mph
Rt-Side Lat. Clearance	ft	f <sub>LC</sub>	mph
Number of Lanes, N	<i>3</i>	TRD Adjustment	mph
Total Ramp Density, TRD	ramps/mi	FFS	<i>65.0</i>
FFS (measured)	<i>65.0</i>	mph	mph
Base free-flow Speed, BFFS	mph		
<b>LOS and Performance Measures</b>		<b>Design (N)</b>	
<u>Operational (LOS)</u>		<u>Design (N)</u>	
v <sub>p</sub> = (V or DDHV) / (PHF x N x f <sub>HV</sub> )	<i>1782</i>	Design LOS	pc/h/ln
x f <sub>p</sub> )		v <sub>p</sub> = (V or DDHV) / (PHF x N x f <sub>HV</sub> )	pc/h/ln
S	<i>62.9</i>	x f <sub>p</sub> )	
D = v <sub>p</sub> / S	<i>28.3</i>	S	mph
LOS	<i>D</i>	D = v <sub>p</sub> / S	pc/mi/ln
		Required Number of Lanes, N	
<b>Glossary</b>		<b>Factor Location</b>	
N - Number of lanes	S - Speed	E <sub>R</sub> - Exhibits 11-10, 11-12	f <sub>LW</sub> - Exhibit 11-8
V - Hourly volume	D - Density	E <sub>T</sub> - Exhibits 11-10, 11-11, 11-13	f <sub>LC</sub> - Exhibit 11-9
v <sub>p</sub> - Flow rate	FFS - Free-flow speed	f <sub>p</sub> - Page 11-18	TRD - Page 11-11
LOS - Level of service	BFFS - Base free-flow speed	LOS, S, FFS, v <sub>p</sub> - Exhibits 11-2, 11-3	
DDHV - Directional design hour volume			

<b>BASIC FREEWAY SEGMENTS WORKSHEET</b>			
<b>General Information</b>		<b>Site Information</b>	
Analyst	RB	Highway/Direction of Travel	80 WB
Agency or Company	Fehr & Peers	From/To	I-780 Collectors - Georgia St
Date Performed	10/23/2014	Jurisdiction	Sonoma County
Analysis Time Period	AM Peak Hour	Analysis Year	Existing + VMT
Project Description <i>Vallejo Marine Terminal</i>			
<input checked="" type="checkbox"/> Oper.(LOS)		<input type="checkbox"/> Des.(N)	
<input type="checkbox"/> Planning Data			
<b>Flow Inputs</b>			
Volume, V	4148	veh/h	Peak-Hour Factor, PHF
AADT		veh/day	0.92
Peak-Hr Prop. of AADT, K			%Trucks and Buses, P <sub>T</sub>
Peak-Hr Direction Prop, D			5
DDHV = AADT x K x D		veh/h	%RVs, P <sub>R</sub>
			0
			General Terrain: <i>Level</i>
			Grade % Length <i>mi</i>
			Up/Down %
<b>Calculate Flow Adjustments</b>			
f <sub>p</sub>	1.00	E <sub>R</sub>	1.2
E <sub>T</sub>	1.5	f <sub>HV</sub> = 1/[1+P <sub>T</sub> (E <sub>T</sub> - 1) + P <sub>R</sub> (E <sub>R</sub> - 1)] 0.976	
<b>Speed Inputs</b>		<b>Calc Speed Adj and FFS</b>	
Lane Width	ft		
Rt-Side Lat. Clearance	ft	f <sub>LW</sub>	mph
Number of Lanes, N	3	f <sub>LC</sub>	mph
Total Ramp Density, TRD	ramps/mi	TRD Adjustment	mph
FFS (measured)	65.0	FFS	65.0
Base free-flow Speed, BFFS	mph		mph
<b>LOS and Performance Measures</b>		<b>Design (N)</b>	
<u>Operational (LOS)</u>		<u>Design (N)</u>	
v <sub>p</sub> = (V or DDHV) / (PHF x N x f <sub>HV</sub> )	1540	Design LOS	
x f <sub>p</sub> )		v <sub>p</sub> = (V or DDHV) / (PHF x N x f <sub>HV</sub> )	pc/h/ln
S	64.7	x f <sub>p</sub> )	
D = v <sub>p</sub> / S	23.8	S	mph
LOS	C	D = v <sub>p</sub> / S	pc/mi/ln
		Required Number of Lanes, N	
<b>Glossary</b>		<b>Factor Location</b>	
N - Number of lanes	S - Speed	E <sub>R</sub> - Exhibits 11-10, 11-12	f <sub>LW</sub> - Exhibit 11-8
V - Hourly volume	D - Density	E <sub>T</sub> - Exhibits 11-10, 11-11, 11-13	f <sub>LC</sub> - Exhibit 11-9
v <sub>p</sub> - Flow rate	FFS - Free-flow speed	f <sub>p</sub> - Page 11-18	TRD - Page 11-11
LOS - Level of service	BFFS - Base free-flow speed	LOS, S, FFS, v <sub>p</sub> - Exhibits 11-2, 11-3	
DDHV - Directional design hour volume			

BASIC FREEWAY SEGMENTS WORKSHEET			
<b>General Information</b>		<b>Site Information</b>	
Analyst	RB	Highway/Direction of Travel	80 EB
Agency or Company	Fehr & Peers	From/To	I-780 Collectors - Georgia St
Date Performed	10/23/2014	Jurisdiction	Sonoma County
Analysis Time Period	PM Peak Hour	Analysis Year	Existing + VMT
Project Description <i>Vallejo Marine Terminal</i>			
<input checked="" type="checkbox"/> Oper.(LOS)		<input type="checkbox"/> Des.(N)	<input type="checkbox"/> Planning Data
<b>Flow Inputs</b>			
Volume, V	4006	veh/h	Peak-Hour Factor, PHF
AADT		veh/day	%Trucks and Buses, P <sub>T</sub>
Peak-Hr Prop. of AADT, K			%RVs, P <sub>R</sub>
Peak-Hr Direction Prop, D			General Terrain:
DDHV = AADT x K x D		veh/h	Grade % Length
			Up/Down %
			0.92
			5
			0
			Level
			mi
<b>Calculate Flow Adjustments</b>			
f <sub>p</sub>	1.00	E <sub>R</sub>	1.2
E <sub>T</sub>	1.5	f <sub>HV</sub> = 1/[1+P <sub>T</sub> (E <sub>T</sub> - 1) + P <sub>R</sub> (E <sub>R</sub> - 1)]	0.976
<b>Speed Inputs</b>		<b>Calc Speed Adj and FFS</b>	
Lane Width		ft	
Rt-Side Lat. Clearance		ft	
Number of Lanes, N	3		
Total Ramp Density, TRD		ramps/mi	
FFS (measured)	65.0	mph	
Base free-flow Speed, BFFS		mph	
			f <sub>LW</sub> mph
			f <sub>LC</sub> mph
			TRD Adjustment mph
			FFS 65.0 mph
<b>LOS and Performance Measures</b>		<b>Design (N)</b>	
<u>Operational (LOS)</u>		<u>Design (N)</u>	
v <sub>p</sub> = (V or DDHV) / (PHF x N x f <sub>HV</sub> )	1488	pc/h/ln	
x f <sub>p</sub> )			
S	64.9	mph	
D = v <sub>p</sub> / S	22.9	pc/mi/ln	
LOS	C		
			v <sub>p</sub> = (V or DDHV) / (PHF x N x f <sub>HV</sub> )
			x f <sub>p</sub> )
			S
			D = v <sub>p</sub> / S
			Required Number of Lanes, N
<b>Glossary</b>		<b>Factor Location</b>	
N - Number of lanes	S - Speed	E <sub>R</sub> - Exhibits 11-10, 11-12	f <sub>LW</sub> - Exhibit 11-8
V - Hourly volume	D - Density	E <sub>T</sub> - Exhibits 11-10, 11-11, 11-13	f <sub>LC</sub> - Exhibit 11-9
v <sub>p</sub> - Flow rate	FFS - Free-flow speed	f <sub>p</sub> - Page 11-18	TRD - Page 11-11
LOS - Level of service	BFFS - Base free-flow speed	LOS, S, FFS, v <sub>p</sub> - Exhibits 11-2, 11-3	
DDHV - Directional design hour volume			

<b>BASIC FREEWAY SEGMENTS WORKSHEET</b>			
<b>General Information</b>		<b>Site Information</b>	
Analyst	<i>RB</i>	Highway/Direction of Travel	<i>80 EB</i>
Agency or Company	<i>Fehr &amp; Peers</i>	From/To	<i>I-780 Collectors - Georgia St</i>
Date Performed	<i>10/23/2014</i>	Jurisdiction	<i>Sonoma County</i>
Analysis Time Period	<i>AM Peak Hour</i>	Analysis Year	<i>Existing + VMT</i>
Project Description <i>Vallejo Marine Terminal</i>			
<input checked="" type="checkbox"/> Oper.(LOS) <input type="checkbox"/> Des.(N) <input type="checkbox"/> Planning Data			
<b>Flow Inputs</b>			
Volume, V	<i>4291</i>	veh/h	Peak-Hour Factor, PHF
AADT		veh/day	<i>0.92</i>
Peak-Hr Prop. of AADT, K			%Trucks and Buses, P <sub>T</sub>
Peak-Hr Direction Prop, D			<i>5</i>
DDHV = AADT x K x D		veh/h	%RVs, P <sub>R</sub>
			<i>0</i>
			General Terrain:
			<i>Level</i>
			Grade % Length
			<i>mi</i>
			Up/Down %
<b>Calculate Flow Adjustments</b>			
f <sub>p</sub>	<i>1.00</i>	E <sub>R</sub>	<i>1.2</i>
E <sub>T</sub>	<i>1.5</i>	f <sub>HV</sub> = 1/[1+P <sub>T</sub> (E <sub>T</sub> - 1) + P <sub>R</sub> (E <sub>R</sub> - 1)]	<i>0.976</i>
<b>Speed Inputs</b>		<b>Calc Speed Adj and FFS</b>	
Lane Width	ft	f <sub>LW</sub>	mph
Rt-Side Lat. Clearance	ft	f <sub>LC</sub>	mph
Number of Lanes, N	<i>3</i>	TRD Adjustment	mph
Total Ramp Density, TRD	ramps/mi	FFS	<i>65.0</i>
FFS (measured)	<i>65.0</i>	mph	mph
Base free-flow Speed, BFFS	mph		
<b>LOS and Performance Measures</b>		<b>Design (N)</b>	
<u>Operational (LOS)</u>		<u>Design (N)</u>	
v <sub>p</sub> = (V or DDHV) / (PHF x N x f <sub>HV</sub> )	<i>1594</i>	Design LOS	pc/h/ln
x f <sub>p</sub> )		v <sub>p</sub> = (V or DDHV) / (PHF x N x f <sub>HV</sub> )	pc/h/ln
S	<i>64.5</i>	x f <sub>p</sub> )	
D = v <sub>p</sub> / S	<i>24.7</i>	S	mph
LOS	<i>C</i>	D = v <sub>p</sub> / S	pc/mi/ln
		Required Number of Lanes, N	
<b>Glossary</b>		<b>Factor Location</b>	
N - Number of lanes	S - Speed	E <sub>R</sub> - Exhibits 11-10, 11-12	f <sub>LW</sub> - Exhibit 11-8
V - Hourly volume	D - Density	E <sub>T</sub> - Exhibits 11-10, 11-11, 11-13	f <sub>LC</sub> - Exhibit 11-9
v <sub>p</sub> - Flow rate	FFS - Free-flow speed	f <sub>p</sub> - Page 11-18	TRD - Page 11-11
LOS - Level of service	BFFS - Base free-flow speed	LOS, S, FFS, v <sub>p</sub> - Exhibits 11-2, 11-3	
DDHV - Directional design hour volume			

RAMPS AND RAMP JUNCTIONS WORKSHEET									
General Information					Site Information				
Analyst	RB	Freeway/Dir of Travel	I 80 EB						
Agency or Company	Fehr & Peers	Junction	I-780 Collector						
Date Performed	10/31/2014	Jurisdiction	Sonoma County						
Analysis Time Period	PM Peak	Analysis Year	Existing + VMT						
Project Description Vallejo Marine Terminal									
Inputs									
Upstream Adj Ramp		Number of Lanes, N	3		Downstream Adj Ramp				
<input type="checkbox"/> Yes <input type="checkbox"/> On		Acceleration Lane Length, L <sub>A</sub>	150		<input checked="" type="checkbox"/> Yes <input type="checkbox"/> On				
<input checked="" type="checkbox"/> No <input type="checkbox"/> Off		Deceleration Lane Length L <sub>D</sub>			<input type="checkbox"/> No <input checked="" type="checkbox"/> Off				
L <sub>up</sub> =	ft	Freeway Volume, V <sub>F</sub>	2283		L <sub>down</sub> =	2100 ft			
V <sub>u</sub> =	veh/h	Ramp Volume, V <sub>R</sub>	1723		V <sub>D</sub> =	173 veh/h			
		Freeway Free-Flow Speed, S <sub>FF</sub>	65.0						
		Ramp Free-Flow Speed, S <sub>FR</sub>	65.0						
Conversion to pc/h Under Base Conditions									
(pc/h)	V (Veh/hr)	PHF	Terrain	%Truck	%Rv	f <sub>HV</sub>	f <sub>p</sub>	v = V/PHF x f <sub>HV</sub> x f <sub>p</sub>	
Freeway	2283	0.92	Level	5	0	0.976	1.00	2544	
Ramp	1723	0.92	Level	5	0	0.976	1.00	1920	
UpStream									
DownStream	173	0.90	Level	5	0	0.976	1.00	197	
Merge Areas					Diverge Areas				
Estimation of v <sub>12</sub>					Estimation of v <sub>12</sub>				
$V_{12} = V_F (P_{FM})$ L <sub>EQ</sub> = 1567.85 (Equation 13-6 or 13-7) P <sub>FM</sub> = 0.582 using Equation (Exhibit 13-6) V <sub>12</sub> = 1480 pc/h V <sub>3</sub> or V <sub>av34</sub> = 1064 pc/h (Equation 13-14 or 13-17) Is V <sub>3</sub> or V <sub>av34</sub> > 2,700 pc/h? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Is V <sub>3</sub> or V <sub>av34</sub> > 1.5 * V <sub>12</sub> /2 <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No If Yes, V <sub>12a</sub> = pc/h (Equation 13-16, 13-18, or 13-19)					$V_{12} = V_R + (V_F - V_R)P_{FD}$ L <sub>EQ</sub> = (Equation 13-12 or 13-13) P <sub>FD</sub> = using Equation (Exhibit 13-7) V <sub>12</sub> = pc/h V <sub>3</sub> or V <sub>av34</sub> = pc/h (Equation 13-14 or 13-17) Is V <sub>3</sub> or V <sub>av34</sub> > 2,700 pc/h? <input type="checkbox"/> Yes <input type="checkbox"/> No Is V <sub>3</sub> or V <sub>av34</sub> > 1.5 * V <sub>12</sub> /2 <input type="checkbox"/> Yes <input type="checkbox"/> No If Yes, V <sub>12a</sub> = pc/h (Equation 13-16, 13-18, or 13-19)				
Capacity Checks					Capacity Checks				
	Actual	Capacity		LOS F?		Actual	Capacity		LOS F?
V <sub>FO</sub>	4464	Exhibit 13-8		No	V <sub>F</sub>		Exhibit 13-8		
					V <sub>FO</sub> = V <sub>F</sub> - V <sub>R</sub>		Exhibit 13-8		
					V <sub>R</sub>		Exhibit 13-10		
Flow Entering Merge Influence Area					Flow Entering Diverge Influence Area				
	Actual	Max Desirable		Violation?		Actual	Max Desirable		Violation?
V <sub>R12</sub>	3400	Exhibit 13-8		4600:All	No	V <sub>12</sub>	Exhibit 13-8		
Level of Service Determination (if not F)					Level of Service Determination (if not F)				
$D_R = 5.475 + 0.00734 v_R + 0.0078 V_{12} - 0.00627 L_A$ D <sub>R</sub> = 30.2 (pc/mi/ln) LOS = D (Exhibit 13-2)					$D_R = 4.252 + 0.0086 V_{12} - 0.009 L_D$ D <sub>R</sub> = (pc/mi/ln) LOS = (Exhibit 13-2)				
Speed Determination					Speed Determination				
M <sub>S</sub> =	0.418 (Exhibit 13-11)				D <sub>S</sub> =	(Exhibit 13-12)			
S <sub>R</sub> =	55.4 mph (Exhibit 13-11)				S <sub>R</sub> =	mph (Exhibit 13-12)			
S <sub>0</sub> =	63.0 mph (Exhibit 13-11)				S <sub>0</sub> =	mph (Exhibit 13-12)			
S =	57.0 mph (Exhibit 13-13)				S =	mph (Exhibit 13-13)			

<b>BASIC FREEWAY SEGMENTS WORKSHEET</b>			
<b>General Information</b>		<b>Site Information</b>	
Analyst	RB	Highway/Direction of Travel <i>I-80 WB</i>	
Agency or Company	Fehr & Peers	From/To	South of Sonoma Blvd
Date Performed	10/23/2014	Jurisdiction	Sonoma County
Analysis Time Period	AM Peak Hour	Analysis Year	Existing + VMT
Project Description <i>Vallejo Marine Terminal</i>			
<input checked="" type="checkbox"/> Oper.(LOS)		<input type="checkbox"/> Des.(N)	
<input type="checkbox"/> Planning Data			
<b>Flow Inputs</b>			
Volume, V	5045	veh/h	Peak-Hour Factor, PHF
AADT		veh/day	0.92
Peak-Hr Prop. of AADT, K			%Trucks and Buses, P <sub>T</sub>
Peak-Hr Direction Prop, D			5
DDHV = AADT x K x D		veh/h	%RVs, P <sub>R</sub>
			0
			General Terrain: <i>Level</i>
			Grade % Length <i>mi</i>
			Up/Down %
<b>Calculate Flow Adjustments</b>			
f <sub>p</sub>	1.00	E <sub>R</sub>	1.2
E <sub>T</sub>	1.5	f <sub>HV</sub> = 1/[1+P <sub>T</sub> (E <sub>T</sub> - 1) + P <sub>R</sub> (E <sub>R</sub> - 1)] <b>0.976</b>	
<b>Speed Inputs</b>		<b>Calc Speed Adj and FFS</b>	
Lane Width	ft		
Rt-Side Lat. Clearance	ft	f <sub>LW</sub>	mph
Number of Lanes, N	4	f <sub>LC</sub>	mph
Total Ramp Density, TRD	ramps/mi	TRD Adjustment	mph
FFS (measured)	65.0	FFS	65.0
Base free-flow Speed, BFFS	mph		
<b>LOS and Performance Measures</b>		<b>Design (N)</b>	
<u>Operational (LOS)</u>		<u>Design (N)</u>	
v <sub>p</sub> = (V or DDHV) / (PHF x N x f <sub>HV</sub> )		Design LOS	
1405	pc/h/ln	v <sub>p</sub> = (V or DDHV) / (PHF x N x f <sub>HV</sub> )	
x f <sub>p</sub> )		pc/h/ln	
S	65.0	S	mph
D = v <sub>p</sub> / S	21.6	D = v <sub>p</sub> / S	pc/mi/ln
LOS	C	Required Number of Lanes, N	
<b>Glossary</b>		<b>Factor Location</b>	
N - Number of lanes	S - Speed	E <sub>R</sub> - Exhibits 11-10, 11-12	f <sub>LW</sub> - Exhibit 11-8
V - Hourly volume	D - Density	E <sub>T</sub> - Exhibits 11-10, 11-11, 11-13	f <sub>LC</sub> - Exhibit 11-9
v <sub>p</sub> - Flow rate	FFS - Free-flow speed	f <sub>p</sub> - Page 11-18	TRD - Page 11-11
LOS - Level of service	BFFS - Base free-flow speed	LOS, S, FFS, v <sub>p</sub> - Exhibits 11-2, 11-3	
DDHV - Directional design hour volume			

<b>BASIC FREEWAY SEGMENTS WORKSHEET</b>			
<b>General Information</b>		<b>Site Information</b>	
Analyst	<i>RB</i>	Highway/Direction of Travel <i>I-80 EB</i>	
Agency or Company	<i>Fehr &amp; Peers</i>	From/To	<i>South of Sonoma Blvd</i>
Date Performed	<i>10/23/2014</i>	Jurisdiction	<i>Sonoma County</i>
Analysis Time Period	<i>PM Peak Hour</i>	Analysis Year	<i>Existing + VMT</i>
Project Description <i>Vallejo Marine Terminal</i>			
<input checked="" type="checkbox"/> Oper.(LOS)		<input type="checkbox"/> Des.(N)	
<input type="checkbox"/> Planning Data			
<b>Flow Inputs</b>			
Volume, V	<i>4257</i>	veh/h	Peak-Hour Factor, PHF <i>0.92</i>
AADT		veh/day	%Trucks and Buses, P <sub>T</sub> <i>5</i>
Peak-Hr Prop. of AADT, K			%RVs, P <sub>R</sub> <i>0</i>
Peak-Hr Direction Prop, D			General Terrain: <i>Level</i>
DDHV = AADT x K x D		veh/h	Grade % Length <i>mi</i>
			Up/Down %
<b>Calculate Flow Adjustments</b>			
f <sub>p</sub>	<i>1.00</i>	E <sub>R</sub>	<i>1.2</i>
E <sub>T</sub>	<i>1.5</i>	f <sub>HV</sub> = 1/[1+P <sub>T</sub> (E <sub>T</sub> - 1) + P <sub>R</sub> (E <sub>R</sub> - 1)] <i>0.976</i>	
<b>Speed Inputs</b>		<b>Calc Speed Adj and FFS</b>	
Lane Width		ft	
Rt-Side Lat. Clearance		ft	
Number of Lanes, N	<i>4</i>		f <sub>LW</sub> mph
Total Ramp Density, TRD		ramps/mi	f <sub>LC</sub> mph
FFS (measured)	<i>65.0</i>	mph	TRD Adjustment mph
Base free-flow Speed, BFFS		mph	FFS <i>65.0</i> mph
<b>LOS and Performance Measures</b>		<b>Design (N)</b>	
<u>Operational (LOS)</u>		<u>Design (N)</u>	
v <sub>p</sub> = (V or DDHV) / (PHF x N x f <sub>HV</sub> x f <sub>p</sub> )		Design LOS	
<i>1186</i>	pc/h/ln	v <sub>p</sub> = (V or DDHV) / (PHF x N x f <sub>HV</sub> x f <sub>p</sub> )	
S	<i>65.0</i>	mph	pc/h/ln
D = v <sub>p</sub> / S	<i>18.2</i>	pc/mi/ln	S mph
LOS	<i>C</i>		D = v <sub>p</sub> / S pc/mi/ln
			Required Number of Lanes, N
<b>Glossary</b>		<b>Factor Location</b>	
N - Number of lanes	S - Speed	E <sub>R</sub> - Exhibits 11-10, 11-12	f <sub>LW</sub> - Exhibit 11-8
V - Hourly volume	D - Density	E <sub>T</sub> - Exhibits 11-10, 11-11, 11-13	f <sub>LC</sub> - Exhibit 11-9
v <sub>p</sub> - Flow rate	FFS - Free-flow speed	f <sub>p</sub> - Page 11-18	TRD - Page 11-11
LOS - Level of service	BFFS - Base free-flow speed	LOS, S, FFS, v <sub>p</sub> - Exhibits 11-2, 11-3	
DDHV - Directional design hour volume			

<b>BASIC FREEWAY SEGMENTS WORKSHEET</b>			
<b>General Information</b>		<b>Site Information</b>	
Analyst	RB	Highway/Direction of Travel <i>I-80 EB</i>	
Agency or Company	Fehr & Peers	From/To	South of Sonoma Blvd
Date Performed	10/23/2014	Jurisdiction	Sonoma County
Analysis Time Period	AM Peak Hour	Analysis Year	Existing + VMT
Project Description <i>Vallejo Marine Terminal</i>			
<input checked="" type="checkbox"/> Oper.(LOS)		<input type="checkbox"/> Des.(N)	
<input type="checkbox"/> Planning Data			
<b>Flow Inputs</b>			
Volume, V	2334	veh/h	Peak-Hour Factor, PHF
AADT		veh/day	0.92
Peak-Hr Prop. of AADT, K			%Trucks and Buses, P <sub>T</sub>
Peak-Hr Direction Prop, D			5
DDHV = AADT x K x D		veh/h	%RVs, P <sub>R</sub>
			0
			General Terrain: <i>Level</i>
			Grade % Length <i>mi</i>
			Up/Down %
<b>Calculate Flow Adjustments</b>			
f <sub>p</sub>	1.00	E <sub>R</sub>	1.2
E <sub>T</sub>	1.5	f <sub>HV</sub> = 1/[1+P <sub>T</sub> (E <sub>T</sub> - 1) + P <sub>R</sub> (E <sub>R</sub> - 1)] <b>0.976</b>	
<b>Speed Inputs</b>		<b>Calc Speed Adj and FFS</b>	
Lane Width	ft		
Rt-Side Lat. Clearance	ft	f <sub>LW</sub>	mph
Number of Lanes, N	4	f <sub>LC</sub>	mph
Total Ramp Density, TRD	ramps/mi	TRD Adjustment	mph
FFS (measured)	65.0	FFS	65.0
Base free-flow Speed, BFFS	mph		mph
<b>LOS and Performance Measures</b>		<b>Design (N)</b>	
<u>Operational (LOS)</u>		<u>Design (N)</u>	
v <sub>p</sub> = (V or DDHV) / (PHF x N x f <sub>HV</sub> x f <sub>p</sub> )		Design LOS	
650	pc/h/ln	v <sub>p</sub> = (V or DDHV) / (PHF x N x f <sub>HV</sub> x f <sub>p</sub> )	
S	65.0	mph	pc/h/ln
D = v <sub>p</sub> / S	10.0	pc/mi/ln	S
LOS	A		mph
			D = v <sub>p</sub> / S
			pc/mi/ln
			Required Number of Lanes, N
<b>Glossary</b>		<b>Factor Location</b>	
N - Number of lanes	S - Speed	E <sub>R</sub> - Exhibits 11-10, 11-12	f <sub>LW</sub> - Exhibit 11-8
V - Hourly volume	D - Density	E <sub>T</sub> - Exhibits 11-10, 11-11, 11-13	f <sub>LC</sub> - Exhibit 11-9
v <sub>p</sub> - Flow rate	FFS - Free-flow speed	f <sub>p</sub> - Page 11-18	TRD - Page 11-11
LOS - Level of service	BFFS - Base free-flow speed	LOS, S, FFS, v <sub>p</sub> - Exhibits 11-2, 11-3	
DDHV - Directional design hour volume			



<b>BASIC FREEWAY SEGMENTS WORKSHEET</b>			
<b>General Information</b>		<b>Site Information</b>	
Analyst	<i>RB</i>	Highway/Direction of Travel <i>I-80 WB</i>	
Agency or Company	<i>Fehr &amp; Peers</i>	From/To	<i>South of Sonoma Blvd</i>
Date Performed	<i>10/23/2014</i>	Jurisdiction	<i>Sonoma County</i>
Analysis Time Period	<i>PM Peak Hour</i>	Analysis Year	<i>Existing + VMT</i>
Project Description <i>Vallejo Marine Terminal</i>			
<input checked="" type="checkbox"/> Oper.(LOS)		<input type="checkbox"/> Des.(N)	
<input type="checkbox"/> Planning Data			
<b>Flow Inputs</b>			
Volume, V	<i>2830</i>	veh/h	Peak-Hour Factor, PHF <i>0.92</i>
AADT		veh/day	%Trucks and Buses, P <sub>T</sub> <i>5</i>
Peak-Hr Prop. of AADT, K			%RVs, P <sub>R</sub> <i>0</i>
Peak-Hr Direction Prop, D			General Terrain: <i>Level</i>
DDHV = AADT x K x D		veh/h	Grade % Length <i>mi</i>
			Up/Down %
<b>Calculate Flow Adjustments</b>			
f <sub>p</sub>	<i>1.00</i>	E <sub>R</sub>	<i>1.2</i>
E <sub>T</sub>	<i>1.5</i>	f <sub>HV</sub> = 1/[1+P <sub>T</sub> (E <sub>T</sub> - 1) + P <sub>R</sub> (E <sub>R</sub> - 1)] <i>0.976</i>	
<b>Speed Inputs</b>		<b>Calc Speed Adj and FFS</b>	
Lane Width		ft	
Rt-Side Lat. Clearance		ft	
Number of Lanes, N	<i>4</i>		f <sub>LW</sub> mph
Total Ramp Density, TRD		ramps/mi	f <sub>LC</sub> mph
FFS (measured)	<i>65.0</i>	mph	TRD Adjustment mph
Base free-flow Speed, BFFS		mph	FFS <i>65.0</i> mph
<b>LOS and Performance Measures</b>		<b>Design (N)</b>	
<u>Operational (LOS)</u>		<u>Design (N)</u>	
v <sub>p</sub> = (V or DDHV) / (PHF x N x f <sub>HV</sub> x f <sub>p</sub> )		Design LOS	
<i>788</i>	pc/h/ln	v <sub>p</sub> = (V or DDHV) / (PHF x N x f <sub>HV</sub> x f <sub>p</sub> )	
S	<i>65.0</i>	mph	pc/h/ln
D = v <sub>p</sub> / S	<i>12.1</i>	pc/mi/ln	S mph
LOS	<i>B</i>		D = v <sub>p</sub> / S pc/mi/ln
			Required Number of Lanes, N
<b>Glossary</b>		<b>Factor Location</b>	
N - Number of lanes	S - Speed	E <sub>R</sub> - Exhibits 11-10, 11-12	f <sub>LW</sub> - Exhibit 11-8
V - Hourly volume	D - Density	E <sub>T</sub> - Exhibits 11-10, 11-11, 11-13	f <sub>LC</sub> - Exhibit 11-9
v <sub>p</sub> - Flow rate	FFS - Free-flow speed	f <sub>p</sub> - Page 11-18	TRD - Page 11-11
LOS - Level of service	BFFS - Base free-flow speed	LOS, S, FFS, v <sub>p</sub> - Exhibits 11-2, 11-3	
DDHV - Directional design hour volume			

<b>BASIC FREEWAY SEGMENTS WORKSHEET</b>			
<b>General Information</b>		<b>Site Information</b>	
Analyst	<i>RB</i>	Highway/Direction of Travel <i>I-780 WB</i>	
Agency or Company	<i>Fehr &amp; Peers</i>	From/To	<i>Glen Cove to Laurel</i>
Date Performed	<i>10/23/2014</i>	Jurisdiction	<i>Sonoma County</i>
Analysis Time Period	<i>PM Peak Hour</i>	Analysis Year	<i>Existing + VMT</i>
Project Description <i>Vallejo Marine Terminal</i>			
<input checked="" type="checkbox"/> Oper.(LOS) <input type="checkbox"/> Des.(N) <input type="checkbox"/> Planning Data			
<b>Flow Inputs</b>			
Volume, V	<i>2778</i>	veh/h	Peak-Hour Factor, PHF <i>0.92</i>
AADT		veh/day	%Trucks and Buses, P <sub>T</sub> <i>5</i>
Peak-Hr Prop. of AADT, K			%RVs, P <sub>R</sub> <i>0</i>
Peak-Hr Direction Prop, D			General Terrain: <i>Level</i>
DDHV = AADT x K x D		veh/h	Grade % Length <i>mi</i> Up/Down %
<b>Calculate Flow Adjustments</b>			
f <sub>p</sub>	<i>1.00</i>	E <sub>R</sub>	<i>1.2</i>
E <sub>T</sub>	<i>1.5</i>	f <sub>HV</sub> = 1/[1+P <sub>T</sub> (E <sub>T</sub> - 1) + P <sub>R</sub> (E <sub>R</sub> - 1)] <i>0.976</i>	
<b>Speed Inputs</b>		<b>Calc Speed Adj and FFS</b>	
Lane Width	ft		
Rt-Side Lat. Clearance	ft	f <sub>LW</sub>	mph
Number of Lanes, N	<i>2</i>	f <sub>LC</sub>	mph
Total Ramp Density, TRD	ramps/mi	TRD Adjustment	mph
FFS (measured)	<i>65.0</i>	FFS	<i>65.0</i> mph
Base free-flow Speed, BFFS	mph		
<b>LOS and Performance Measures</b>		<b>Design (N)</b>	
<u>Operational (LOS)</u>		<u>Design (N)</u>	
v <sub>p</sub> = (V or DDHV) / (PHF x N x f <sub>HV</sub> x f <sub>p</sub> )	<i>1548</i> pc/h/ln	Design LOS	
S	<i>64.7</i> mph	v <sub>p</sub> = (V or DDHV) / (PHF x N x f <sub>HV</sub> x f <sub>p</sub> )	pc/h/ln
D = v <sub>p</sub> / S	<i>23.9</i> pc/mi/ln	S	mph
LOS	<i>C</i>	D = v <sub>p</sub> / S	pc/mi/ln
		Required Number of Lanes, N	
<b>Glossary</b>		<b>Factor Location</b>	
N - Number of lanes	S - Speed	E <sub>R</sub> - Exhibits 11-10, 11-12	f <sub>LW</sub> - Exhibit 11-8
V - Hourly volume	D - Density	E <sub>T</sub> - Exhibits 11-10, 11-11, 11-13	f <sub>LC</sub> - Exhibit 11-9
v <sub>p</sub> - Flow rate	FFS - Free-flow speed	f <sub>p</sub> - Page 11-18	TRD - Page 11-11
LOS - Level of service	BFFS - Base free-flow speed	LOS, S, FFS, v <sub>p</sub> - Exhibits 11-2, 11-3	
DDHV - Directional design hour volume			

<b>BASIC FREEWAY SEGMENTS WORKSHEET</b>			
<b>General Information</b>		<b>Site Information</b>	
Analyst	<i>RB</i>	Highway/Direction of Travel <i>I-780 WB</i>	
Agency or Company	<i>Fehr &amp; Peers</i>	From/To	<i>Glen Cove to Laurel</i>
Date Performed	<i>10/23/2014</i>	Jurisdiction	<i>Sonoma County</i>
Analysis Time Period	<i>AM Peak Hour</i>	Analysis Year	<i>Existing + VMT</i>
Project Description <i>Vallejo Marine Terminal</i>			
<input checked="" type="checkbox"/> Oper.(LOS) <input type="checkbox"/> Des.(N) <input type="checkbox"/> Planning Data			
<b>Flow Inputs</b>			
Volume, V	<i>1899</i>	veh/h	Peak-Hour Factor, PHF <i>0.92</i>
AADT		veh/day	%Trucks and Buses, P <sub>T</sub> <i>5</i>
Peak-Hr Prop. of AADT, K			%RVs, P <sub>R</sub> <i>0</i>
Peak-Hr Direction Prop, D			General Terrain: <i>Level</i>
DDHV = AADT x K x D		veh/h	Grade % Length <i>mi</i> Up/Down %
<b>Calculate Flow Adjustments</b>			
f <sub>p</sub>	<i>1.00</i>	E <sub>R</sub>	<i>1.2</i>
E <sub>T</sub>	<i>1.5</i>	f <sub>HV</sub> = 1/[1+P <sub>T</sub> (E <sub>T</sub> - 1) + P <sub>R</sub> (E <sub>R</sub> - 1)] <i>0.976</i>	
<b>Speed Inputs</b>		<b>Calc Speed Adj and FFS</b>	
Lane Width	ft		
Rt-Side Lat. Clearance	ft	f <sub>LW</sub>	mph
Number of Lanes, N	<i>2</i>	f <sub>LC</sub>	mph
Total Ramp Density, TRD	ramps/mi	TRD Adjustment	mph
FFS (measured)	<i>65.0</i>	FFS	<i>65.0</i> mph
Base free-flow Speed, BFFS	mph		
<b>LOS and Performance Measures</b>		<b>Design (N)</b>	
<u>Operational (LOS)</u>		<u>Design (N)</u>	
v <sub>p</sub> = (V or DDHV) / (PHF x N x f <sub>HV</sub> x f <sub>p</sub> )	<i>1058</i> pc/h/ln	Design LOS	
S	<i>65.0</i> mph	v <sub>p</sub> = (V or DDHV) / (PHF x N x f <sub>HV</sub> x f <sub>p</sub> )	pc/h/ln
D = v <sub>p</sub> / S	<i>16.3</i> pc/mi/ln	S	mph
LOS	<i>B</i>	D = v <sub>p</sub> / S	pc/mi/ln
		Required Number of Lanes, N	
<b>Glossary</b>		<b>Factor Location</b>	
N - Number of lanes	S - Speed	E <sub>R</sub> - Exhibits 11-10, 11-12	f <sub>LW</sub> - Exhibit 11-8
V - Hourly volume	D - Density	E <sub>T</sub> - Exhibits 11-10, 11-11, 11-13	f <sub>LC</sub> - Exhibit 11-9
v <sub>p</sub> - Flow rate	FFS - Free-flow speed	f <sub>p</sub> - Page 11-18	TRD - Page 11-11
LOS - Level of service	BFFS - Base free-flow speed	LOS, S, FFS, v <sub>p</sub> - Exhibits 11-2, 11-3	
DDHV - Directional design hour volume			

<b>BASIC FREEWAY SEGMENTS WORKSHEET</b>			
<b>General Information</b>		<b>Site Information</b>	
Analyst	<i>RB</i>	Highway/Direction of Travel <i>I-780 EB</i>	
Agency or Company	<i>Fehr &amp; Peers</i>	From/To	<i>Laurel to Glen Cove</i>
Date Performed	<i>10/23/2014</i>	Jurisdiction	<i>Sonoma County</i>
Analysis Time Period	<i>PM Peak Hour</i>	Analysis Year	<i>Existing + VMT</i>
Project Description <i>Vallejo Marine Terminal</i>			
<input checked="" type="checkbox"/> Oper.(LOS)		<input type="checkbox"/> Des.(N)	
<input type="checkbox"/> Planning Data			
<b>Flow Inputs</b>			
Volume, V	<i>2204</i>	veh/h	Peak-Hour Factor, PHF <i>0.92</i>
AADT		veh/day	%Trucks and Buses, P <sub>T</sub> <i>5</i>
Peak-Hr Prop. of AADT, K			%RVs, P <sub>R</sub> <i>0</i>
Peak-Hr Direction Prop, D			General Terrain: <i>Level</i>
DDHV = AADT x K x D		veh/h	Grade % Length <i>mi</i>
			Up/Down %
<b>Calculate Flow Adjustments</b>			
f <sub>p</sub>	<i>1.00</i>	E <sub>R</sub>	<i>1.2</i>
E <sub>T</sub>	<i>1.5</i>	f <sub>HV</sub> = 1/[1+P <sub>T</sub> (E <sub>T</sub> - 1) + P <sub>R</sub> (E <sub>R</sub> - 1)] <i>0.976</i>	
<b>Speed Inputs</b>		<b>Calc Speed Adj and FFS</b>	
Lane Width	ft		
Rt-Side Lat. Clearance	ft	f <sub>LW</sub>	mph
Number of Lanes, N	<i>2</i>	f <sub>LC</sub>	mph
Total Ramp Density, TRD	ramps/mi	TRD Adjustment	mph
FFS (measured)	<i>65.0</i>	FFS	<i>65.0</i>
Base free-flow Speed, BFFS	mph		
<b>LOS and Performance Measures</b>		<b>Design (N)</b>	
<u>Operational (LOS)</u>		<u>Design (N)</u>	
v <sub>p</sub> = (V or DDHV) / (PHF x N x f <sub>HV</sub> x f <sub>p</sub> )		Design LOS	
S	<i>65.0</i>	v <sub>p</sub> = (V or DDHV) / (PHF x N x f <sub>HV</sub> x f <sub>p</sub> )	pc/h/ln
D = v <sub>p</sub> / S	<i>18.9</i>	S	mph
LOS	<i>C</i>	D = v <sub>p</sub> / S	pc/mi/ln
		Required Number of Lanes, N	
<b>Glossary</b>		<b>Factor Location</b>	
N - Number of lanes	S - Speed	E <sub>R</sub> - Exhibits 11-10, 11-12	f <sub>LW</sub> - Exhibit 11-8
V - Hourly volume	D - Density	E <sub>T</sub> - Exhibits 11-10, 11-11, 11-13	f <sub>LC</sub> - Exhibit 11-9
v <sub>p</sub> - Flow rate	FFS - Free-flow speed	f <sub>p</sub> - Page 11-18	TRD - Page 11-11
LOS - Level of service	BFFS - Base free-flow speed	LOS, S, FFS, v <sub>p</sub> - Exhibits 11-2, 11-3	
DDHV - Directional design hour volume			

BASIC FREEWAY SEGMENTS WORKSHEET			
<b>General Information</b>		<b>Site Information</b>	
Analyst	<i>RB</i>	Highway/Direction of Travel	<i>I-780 EB</i>
Agency or Company	<i>Fehr &amp; Peers</i>	From/To	<i>Laurel to Glen Cove</i>
Date Performed	<i>10/23/2014</i>	Jurisdiction	<i>Sonoma County</i>
Analysis Time Period	<i>AM Peak Hour</i>	Analysis Year	<i>Existing + VMT</i>
Project Description <i>Vallejo Marine Terminal</i>			
<input checked="" type="checkbox"/> Oper.(LOS)		<input type="checkbox"/> Des.(N)	
		<input type="checkbox"/> Planning Data	
<b>Flow Inputs</b>			
Volume, V	<i>2384</i>	veh/h	Peak-Hour Factor, PHF <i>0.92</i>
AADT		veh/day	%Trucks and Buses, P <sub>T</sub> <i>5</i>
Peak-Hr Prop. of AADT, K			%RVs, P <sub>R</sub> <i>0</i>
Peak-Hr Direction Prop, D			General Terrain: <i>Level</i>
DDHV = AADT x K x D		veh/h	Grade % Length <i>mi</i>
			Up/Down %
<b>Calculate Flow Adjustments</b>			
f <sub>p</sub>	<i>1.00</i>	E <sub>R</sub>	<i>1.2</i>
E <sub>T</sub>	<i>1.5</i>	f <sub>HV</sub> = 1/[1+P <sub>T</sub> (E <sub>T</sub> - 1) + P <sub>R</sub> (E <sub>R</sub> - 1)]	<i>0.976</i>
<b>Speed Inputs</b>		<b>Calc Speed Adj and FFS</b>	
Lane Width		ft	
Rt-Side Lat. Clearance		ft	
Number of Lanes, N	<i>2</i>		f <sub>LW</sub> mph
Total Ramp Density, TRD		ramps/mi	f <sub>LC</sub> mph
FFS (measured)	<i>65.0</i>	mph	TRD Adjustment mph
Base free-flow Speed, BFFS		mph	FFS <i>65.0</i> mph
<b>LOS and Performance Measures</b>		<b>Design (N)</b>	
<u>Operational (LOS)</u>		<u>Design (N)</u>	
v <sub>p</sub> = (V or DDHV) / (PHF x N x f <sub>HV</sub> x f <sub>p</sub> )	<i>1328</i>	pc/h/ln	Design LOS
S	<i>65.0</i>	mph	v <sub>p</sub> = (V or DDHV) / (PHF x N x f <sub>HV</sub> x f <sub>p</sub> )
D = v <sub>p</sub> / S	<i>20.4</i>	pc/mi/ln	S
LOS	<i>C</i>		D = v <sub>p</sub> / S
			Required Number of Lanes, N
<b>Glossary</b>		<b>Factor Location</b>	
N - Number of lanes	S - Speed	E <sub>R</sub> - Exhibits 11-10, 11-12	f <sub>LW</sub> - Exhibit 11-8
V - Hourly volume	D - Density	E <sub>T</sub> - Exhibits 11-10, 11-11, 11-13	f <sub>LC</sub> - Exhibit 11-9
v <sub>p</sub> - Flow rate	FFS - Free-flow speed	f <sub>p</sub> - Page 11-18	TRD - Page 11-11
LOS - Level of service	BFFS - Base free-flow speed	LOS, S, FFS, v <sub>p</sub> - Exhibits 11-2, 11-3	
DDHV - Directional design hour volume			

# Leisch Method for Weaving Analysis

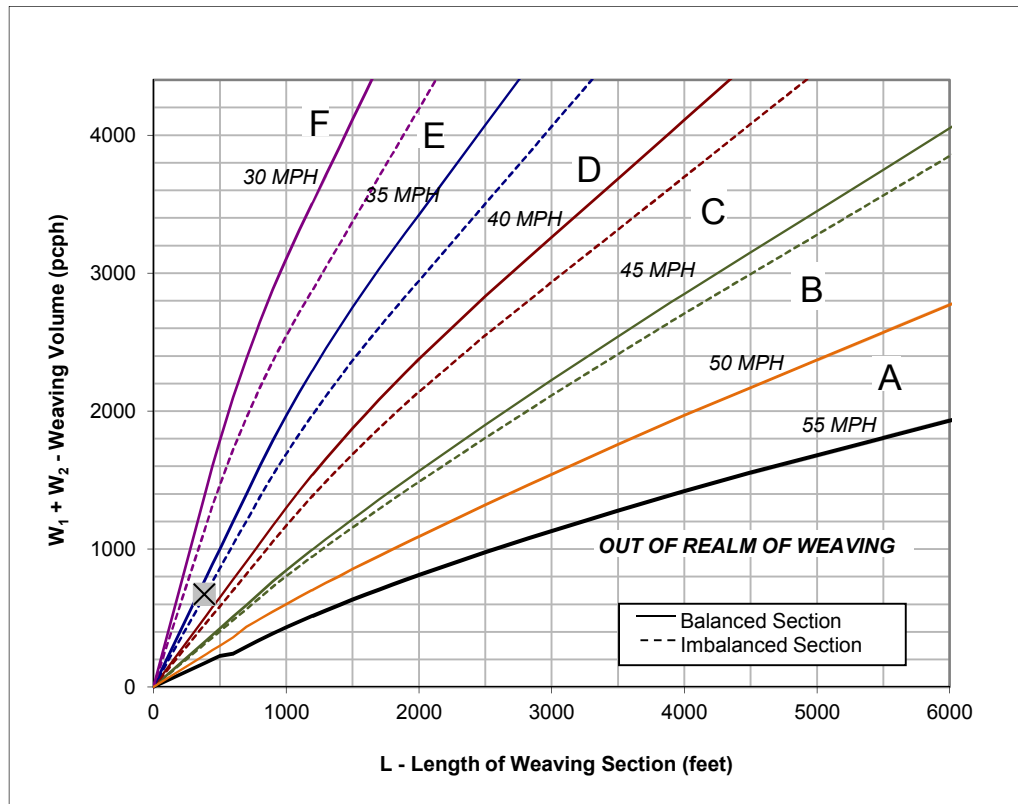
## Data Input

Number of Entering Mainline Lanes	$N_b$	2
Number of Lanes in Weaving Section	N	3
Length of Weaving Section (feet)	L	385

## Project Information

Project	Vallejo Marine Terminal
Scenario	AM + VMT
Freeway	I-780 EB
On-ramp	W1: EB on from WB 80
Off-ramp	W2: EB off to EB 80

Total Weaving Section (V)		On-ramp to Mainline ( $W_1$ )		Mainline to Off-ramp ( $W_2$ )	
Volume (vph)*	997	Volume (vph)*	589	Volume (vph)*	67
Truck Percentage	5%	Truck Percentage	5%	Truck Percentage	5%
PCE for Trucks	1.5	PCE for Trucks	1.5	PCE for Trucks	1.5
Volume (pcph)	1,022	Volume (pcph)	604	Volume (pcph)	69

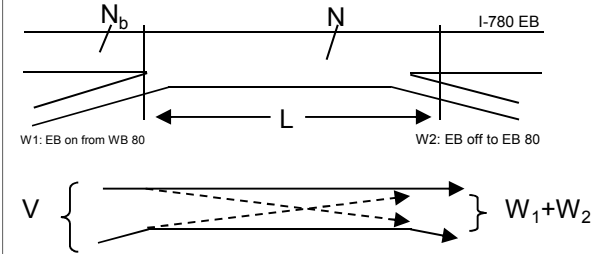


The LOS in the chart above refers to the capacity of weaving traffic only; through and ramp to ramp traffic is not included.

\* Note: **Do not adjust by a Peak Hour Factor (PHF)**. The methodology incorporates the PHF in the Service Volume tables.

Sources: *Completion of Procedures for Analysis and Design of Traffic Weaving Sections*, Jack E. Leisch & Associates, September 1983 and *Highway Design Manual*, California Department of Transportation, July 24, 2009

## Figure



## Capacity Analysis

- Is the weaving section balanced ( $Y / N$ )? **N**  
[If optional exit lane, then "Y". Otherwise "N".]
- In the Weaving Speed Chart to the left, which two speed curves is the black "x" between?

**35 MPH** and **40 MPH**

If below the 55 MPH curve, out of the realm of weaving.  
If left of the 30 MPH curve, LOS is F.

- Interpolated Weaving Speed ( $S_w$ , mph) **34.8**
- Weaving Intensity Factor ( $k$ ) **3.00**
- Service Volume (SV, pcph)  
 $SV = (1/N) * [V + (k - 1) * \min(W_1, W_2)]$  **387**
- Level of Service (LOS) **A**

# Leisch Method for Weaving Analysis

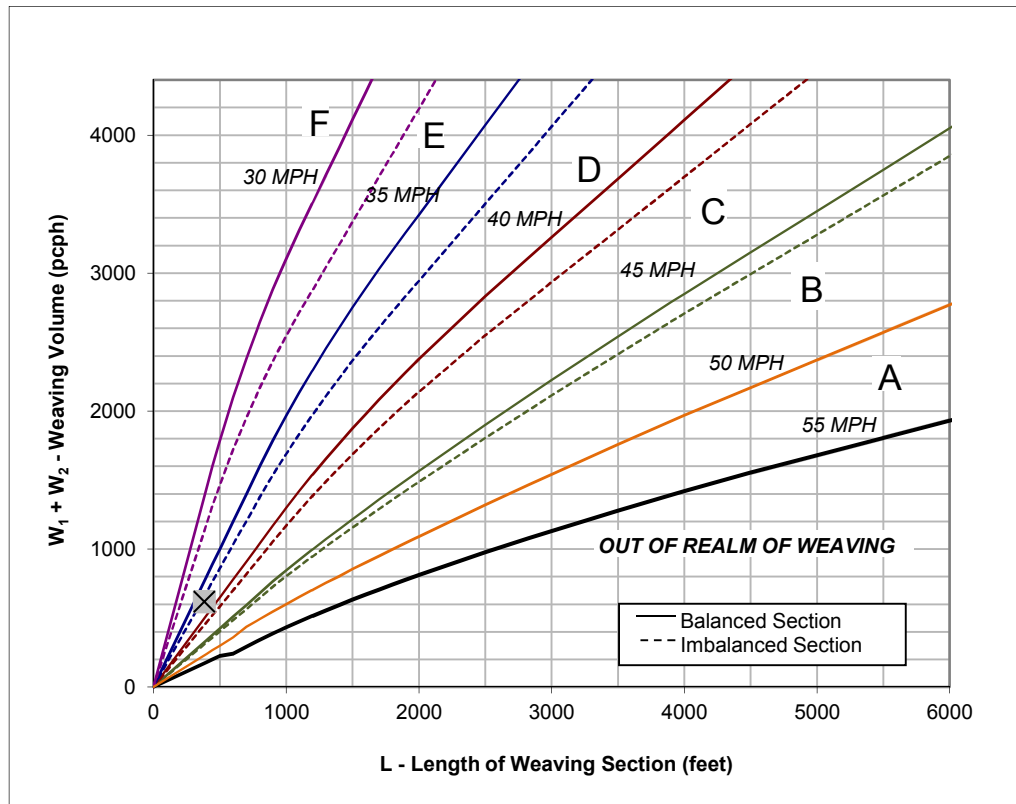
## Data Input

Number of Entering Mainline Lanes	$N_b$	2
Number of Lanes in Weaving Section	$N$	3
Length of Weaving Section (feet)	$L$	385

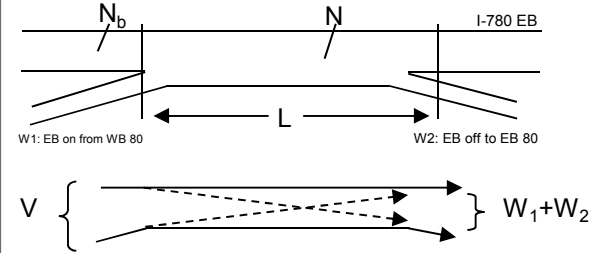
## Project Information

Project	Vallejo Marine Terminal
Scenario	PM + VMT
Freeway	I-780 EB
On-ramp	W1: EB on from WB 80
Off-ramp	W2: EB off to EB 80

Total Weaving Section (V)		On-ramp to Mainline ( $W_1$ )		Mainline to Off-ramp ( $W_2$ )	
Volume (vph)*	1,517	Volume (vph)*	403	Volume (vph)*	202
Truck Percentage	5%	Truck Percentage	5%	Truck Percentage	5%
PCE for Trucks	1.5	PCE for Trucks	1.5	PCE for Trucks	1.5
Volume (pcph)	1,554	Volume (pcph)	413	Volume (pcph)	207



## Figure



## Capacity Analysis

- Is the weaving section balanced ( $Y / N$ )? **N**  
[If optional exit lane, then "Y". Otherwise "N".]
- In the Weaving Speed Chart to the left, which two speed curves is the black "x" between?  
**35 MPH** and **40 MPH**

If below the 55 MPH curve, out of the realm of weaving.  
If left of the 30 MPH curve, LOS is F.

- Interpolated Weaving Speed ( $S_w$ , mph) **36.0**
- Weaving Intensity Factor ( $k$ ) **2.84**
- Service Volume (SV, pcph)  
 $SV = (1/N) * [V + (k - 1) * \min(W_1, W_2)]$  **645**
- Level of Service (LOS) **A**

The LOS in the chart above refers to the capacity of weaving traffic only; through and ramp to ramp traffic is not included.

\* Note: **Do not adjust by a Peak Hour Factor (PHF)**. The methodology incorporates the PHF in the Service Volume tables.

Sources: *Completion of Procedures for Analysis and Design of Traffic Weaving Sections*, Jack E. Leisch & Associates, September 1983 and *Highway Design Manual*, California Department of Transportation, July 24, 2009

# Leisch Method for Weaving Analysis

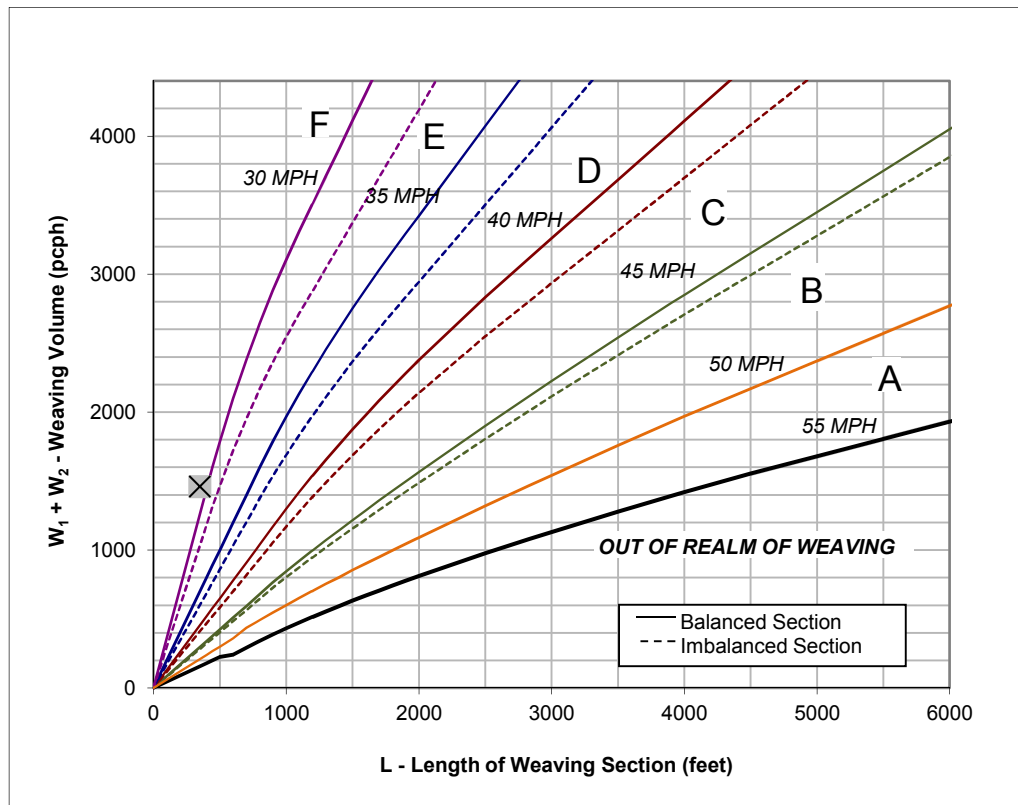
## Data Input

Number of Entering Mainline Lanes	$N_b$	2
Number of Lanes in Weaving Section	N	3
Length of Weaving Section (feet)	L	350

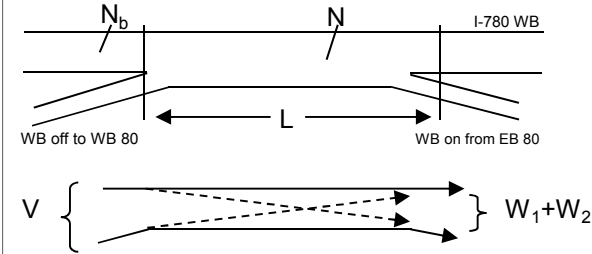
## Project Information

Project	Vallejo Marine Terminal
Scenario	AM + VMT
Freeway	I-780 WB
On-ramp	WB off to WB 80
Off-ramp	WB on from EB 80

Total Weaving Section (V)		On-ramp to Mainline ( $W_1$ )		Mainline to Off-ramp ( $W_2$ )	
Volume (vph)*	1,785	Volume (vph)*	1,278	Volume (vph)*	149
Truck Percentage	5%	Truck Percentage	5%	Truck Percentage	5%
PCE for Trucks	1.5	PCE for Trucks	1.5	PCE for Trucks	1.5
Volume (pcph)	1,830	Volume (pcph)	1,310	Volume (pcph)	152



## Figure



## Capacity Analysis

1. Is the weaving section balanced ( $Y / N$ )? [If optional exit lane, then "Y". Otherwise "N".]	N
2. In the Weaving Speed Chart to the left, which two speed curves is the black "x" between? <b>0 MPH</b> and <b>30 MPH</b>	-
If below the 55 MPH curve, out of the realm of weaving. If left of the 30 MPH curve, LOS is F.	
3. Interpolated Weaving Speed ( $S_w$ , mph)	-
4. Weaving Intensity Factor ( $k$ )	-
5. Service Volume (SV, pcph) $SV = (1/N) * [V + (k - 1) * \min(W_1, W_2)]$	-
6. Level of Service (LOS)	F

The LOS in the chart above refers to the capacity of weaving traffic only; through and ramp to ramp traffic is not included.

\* Note: **Do not adjust by a Peak Hour Factor (PHF)**. The methodology incorporates the PHF in the Service Volume tables.

Sources: *Completion of Procedures for Analysis and Design of Traffic Weaving Sections*, Jack E. Leisch & Associates, September 1983 and *Highway Design Manual*, California Department of Transportation, July 24, 2009



# Leisch Method for Weaving Analysis

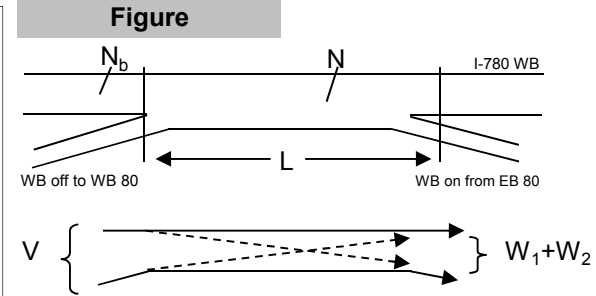
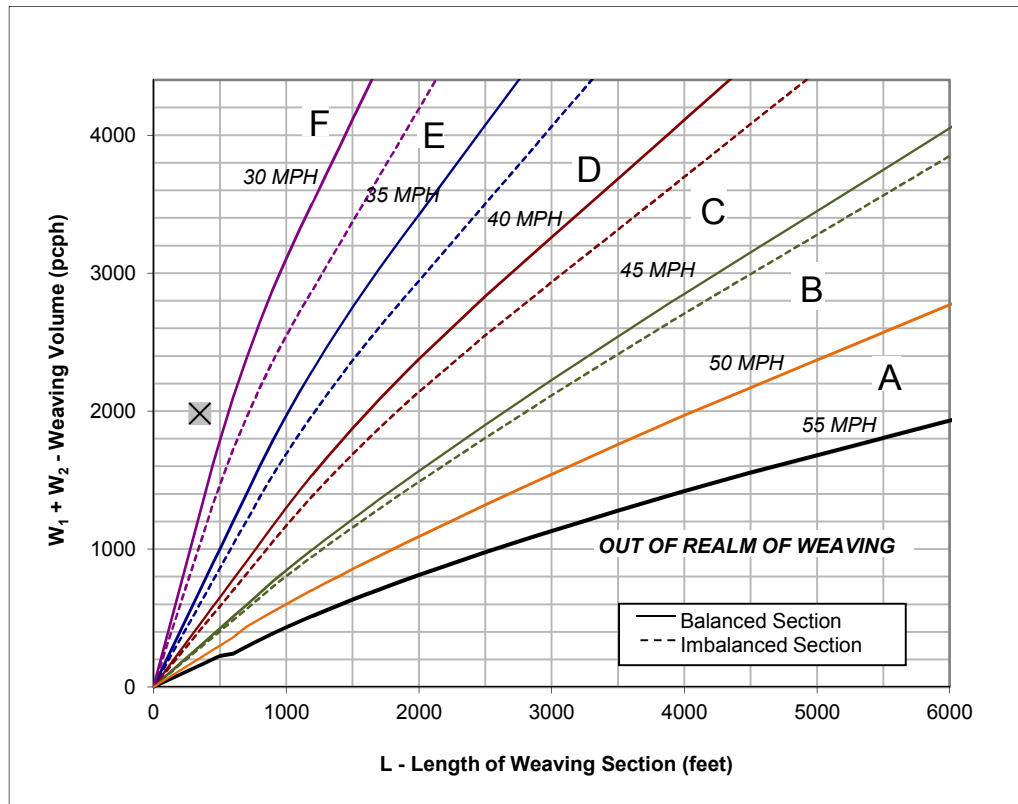
## Data Input

Number of Entering Mainline Lanes	$N_b$	2
Number of Lanes in Weaving Section	N	3
Length of Weaving Section (feet)	L	350

## Project Information

Project	Vallejo Marine Terminal
Scenario	PM + VMT
Freeway	I-780 WB
On-ramp	WB off to WB 80
Off-ramp	WB on from EB 80

Total Weaving Section (V)		On-ramp to Mainline ( $W_1$ )		Mainline to Off-ramp ( $W_2$ )	
Volume (vph)*	2,707	Volume (vph)*	1,549	Volume (vph)*	386
Truck Percentage	5%	Truck Percentage	5%	Truck Percentage	5%
PCE for Trucks	1.5	PCE for Trucks	1.5	PCE for Trucks	1.5
Volume (pcph)	2,775	Volume (pcph)	1,588	Volume (pcph)	396



## Capacity Analysis

1. Is the weaving section balanced ( $Y / N$ )? **N**  
[If optional exit lane, then "Y". Otherwise "N".]
2. In the Weaving Speed Chart to the left, which two speed curves is the black "x" between?

**0 MPH** and **30 MPH** -

If below the 55 MPH curve, out of the realm of weaving.  
If left of the 30 MPH curve, LOS is F.

3. Interpolated Weaving Speed ( $S_w$ , mph) -
4. Weaving Intensity Factor (k) -
5. Service Volume (SV, pcph)  
 $SV = (1/N) * [V + (k - 1) * \min(W_1, W_2)]$  -
6. Level of Service (LOS) **F**

The LOS in the chart above refers to the capacity of weaving traffic only; through and ramp to ramp traffic is not included.

\* Note: **Do not adjust by a Peak Hour Factor (PHF)**. The methodology incorporates the PHF in the Service Volume tables.

Sources: *Completion of Procedures for Analysis and Design of Traffic Weaving Sections*, Jack E. Leisch & Associates, September 1983 and *Highway Design Manual*, California Department of Transportation, July 24, 2009

**APPENDIX L.5.4 — EXISTING PLUS ORCEM PROJECT**



RAMPS AND RAMP JUNCTIONS WORKSHEET											
<b>General Information</b>					<b>Site Information</b>						
Analyst	RB		Freeway/Dir of Travel	I 80 WB		Agency or Company	Fehr & Peers		Junction	I-780 Collector	
Date Performed	10/31/2014		Jurisdiction	Sonoma County		Analysis Time Period	PM Peak		Analysis Year	Existing + ORCEM	
Project Description Vallejo Marine Terminal											
<b>Inputs</b>											
Upstream Adj Ramp		Number of Lanes, N			3			Downstream Adj Ramp			
<input checked="" type="checkbox"/> Yes <input checked="" type="checkbox"/> On		Acceleration Lane Length, L <sub>A</sub>						<input type="checkbox"/> Yes <input type="checkbox"/> On			
<input type="checkbox"/> No <input type="checkbox"/> Off		Deceleration Lane Length L <sub>D</sub>			125			<input checked="" type="checkbox"/> No <input type="checkbox"/> Off			
L <sub>up</sub> = 1500 ft		Freeway Volume, V <sub>F</sub>			4794			L <sub>down</sub> = ft			
V <sub>u</sub> = 184 veh/h		Ramp Volume, V <sub>R</sub>			1677			V <sub>D</sub> = veh/h			
			Freeway Free-Flow Speed, S <sub>FF</sub>			65.0					
			Ramp Free-Flow Speed, S <sub>FR</sub>			65.0					
<b>Conversion to pc/h Under Base Conditions</b>											
(pc/h)	V (Veh/hr)	PHF	Terrain	%Truck	%Rv	f <sub>HV</sub>	f <sub>p</sub>	v = V/PHF x f <sub>HV</sub> x f <sub>p</sub>			
Freeway	4794	0.92	Level	5	0	0.976	1.00	5341			
Ramp	1677	0.92	Level	5	0	0.976	1.00	1868			
UpStream	184	0.90	Level	5	0	0.976	1.00	210			
DownStream											
<b>Merge Areas</b>					<b>Diverge Areas</b>						
<b>Estimation of v<sub>12</sub></b>					<b>Estimation of v<sub>12</sub></b>						
$V_{12} = V_F (P_{FM})$ (Equation 13-6 or 13-7) L <sub>EQ</sub> = P <sub>FM</sub> = using Equation (Exhibit 13-6) V <sub>12</sub> = pc/h V <sub>3</sub> or V <sub>av34</sub> pc/h (Equation 13-14 or 13-17) Is V <sub>3</sub> or V <sub>av34</sub> > 2,700 pc/h? <input type="checkbox"/> Yes <input type="checkbox"/> No Is V <sub>3</sub> or V <sub>av34</sub> > 1.5 * V <sub>12</sub> /2 <input type="checkbox"/> Yes <input type="checkbox"/> No If Yes, V <sub>12a</sub> = pc/h (Equation 13-16, 13-18, or 13-19)					$V_{12} = V_R + (V_F - V_R)P_{FD}$ L <sub>EQ</sub> = 4048.19 (Equation 13-12 or 13-13) P <sub>FD</sub> = 0.593 using Equation (Exhibit 13-7) V <sub>12</sub> = 3928 pc/h V <sub>3</sub> or V <sub>av34</sub> 1413 pc/h (Equation 13-14 or 13-17) Is V <sub>3</sub> or V <sub>av34</sub> > 2,700 pc/h? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Is V <sub>3</sub> or V <sub>av34</sub> > 1.5 * V <sub>12</sub> /2 <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No If Yes, V <sub>12a</sub> = pc/h (Equation 13-16, 13-18, or 13-19)						
<b>Capacity Checks</b>					<b>Capacity Checks</b>						
	Actual	Capacity		LOS F?		Actual	Capacity		LOS F?		
V <sub>FO</sub>		Exhibit 13-8			V <sub>F</sub>	5341	Exhibit 13-8	7050	No		
					V <sub>FO</sub> = V <sub>F</sub> - V <sub>R</sub>	3473	Exhibit 13-8	7050	No		
					V <sub>R</sub>	1868	Exhibit 13-10	2200	No		
<b>Flow Entering Merge Influence Area</b>					<b>Flow Entering Diverge Influence Area</b>						
	Actual	Max Desirable		Violation?		Actual	Max Desirable		Violation?		
V <sub>R12</sub>		Exhibit 13-8			V <sub>12</sub>	3928	Exhibit 13-8	4400:All	No		
<b>Level of Service Determination (if not F)</b>					<b>Level of Service Determination (if not F)</b>						
$D_R = 5.475 + 0.00734 v_R + 0.0078 V_{12} - 0.00627 L_A$ D <sub>R</sub> = (pc/mi/ln) LOS = (Exhibit 13-2)					$D_R = 4.252 + 0.0086 V_{12} - 0.009 L_D$ D <sub>R</sub> = 36.9 (pc/mi/ln) LOS = E (Exhibit 13-2)						
<b>Speed Determination</b>					<b>Speed Determination</b>						
M <sub>S</sub> = (Exhibit 13-11)					D <sub>S</sub> = 0.206 (Exhibit 13-12)						
S <sub>R</sub> = mph (Exhibit 13-11)					S <sub>R</sub> = 60.3 mph (Exhibit 13-12)						
S <sub>0</sub> = mph (Exhibit 13-11)					S <sub>0</sub> = 69.7 mph (Exhibit 13-12)						
S = mph (Exhibit 13-13)					S = 62.5 mph (Exhibit 13-13)						

RAMPS AND RAMP JUNCTIONS WORKSHEET										
<b>General Information</b>					<b>Site Information</b>					
Analyst	RB		Freeway/Dir of Travel	I 80 WB		Agency or Company	Fehr & Peers		Junction	I-780 Collector
Date Performed	10/31/2014		Jurisdiction	Sonoma County		Analysis Time Period	AM Peak		Analysis Year	Existing + ORCEM
Project Description Vallejo Marine Terminal										
<b>Inputs</b>										
Upstream Adj Ramp		Number of Lanes, N			3			Downstream Adj Ramp		
<input checked="" type="checkbox"/> Yes <input checked="" type="checkbox"/> On		Acceleration Lane Length, L <sub>A</sub>						<input type="checkbox"/> Yes <input type="checkbox"/> On		
<input type="checkbox"/> No <input type="checkbox"/> Off		Deceleration Lane Length L <sub>D</sub>			125			<input checked="" type="checkbox"/> No <input type="checkbox"/> Off		
L <sub>up</sub> = 1500 ft		Freeway Volume, V <sub>F</sub>			4139			L <sub>down</sub> = ft		
V <sub>u</sub> = 145 veh/h		Ramp Volume, V <sub>R</sub>			1439			V <sub>D</sub> = veh/h		
		Freeway Free-Flow Speed, S <sub>FF</sub>			65.0					
		Ramp Free-Flow Speed, S <sub>FR</sub>			65.0					
<b>Conversion to pc/h Under Base Conditions</b>										
(pc/h)	V (Veh/hr)	PHF	Terrain	%Truck	%Rv	f <sub>HV</sub>	f <sub>p</sub>	v = V/PHF x f <sub>HV</sub> x f <sub>p</sub>		
Freeway	4139	0.92	Level	5	0	0.976	1.00	4611		
Ramp	1439	0.92	Level	5	0	0.976	1.00	1603		
UpStream	145	0.90	Level	5	0	0.976	1.00	165		
DownStream										
<b>Merge Areas</b>					<b>Diverge Areas</b>					
<b>Estimation of v<sub>12</sub></b>					<b>Estimation of v<sub>12</sub></b>					
$V_{12} = V_F (P_{FM})$ L <sub>EQ</sub> = (Equation 13-6 or 13-7) P <sub>FM</sub> = using Equation (Exhibit 13-6) V <sub>12</sub> = pc/h V <sub>3</sub> or V <sub>av34</sub> pc/h (Equation 13-14 or 13-17) Is V <sub>3</sub> or V <sub>av34</sub> > 2,700 pc/h? <input type="checkbox"/> Yes <input type="checkbox"/> No Is V <sub>3</sub> or V <sub>av34</sub> > 1.5 * V <sub>12</sub> /2 <input type="checkbox"/> Yes <input type="checkbox"/> No If Yes, V <sub>12a</sub> = pc/h (Equation 13-16, 13-18, or 13-19)					$V_{12} = V_R + (V_F - V_R)P_{FD}$ L <sub>EQ</sub> = 2987.78 (Equation 13-12 or 13-13) P <sub>FD</sub> = 0.604 using Equation (Exhibit 13-7) V <sub>12</sub> = 3419 pc/h V <sub>3</sub> or V <sub>av34</sub> 1192 pc/h (Equation 13-14 or 13-17) Is V <sub>3</sub> or V <sub>av34</sub> > 2,700 pc/h? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Is V <sub>3</sub> or V <sub>av34</sub> > 1.5 * V <sub>12</sub> /2 <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No If Yes, V <sub>12a</sub> = pc/h (Equation 13-16, 13-18, or 13-19)					
<b>Capacity Checks</b>					<b>Capacity Checks</b>					
	Actual	Capacity		LOS F?		Actual	Capacity		LOS F?	
V <sub>FO</sub>		Exhibit 13-8			V <sub>F</sub>	4611	Exhibit 13-8	7050	No	
			V <sub>FO</sub> = V <sub>F</sub> - V <sub>R</sub>	3008	Exhibit 13-8	7050	No			
			V <sub>R</sub>	1603	Exhibit 13-10	2200	No			
<b>Flow Entering Merge Influence Area</b>					<b>Flow Entering Diverge Influence Area</b>					
	Actual	Max Desirable	Violation?			Actual	Max Desirable	Violation?		
V <sub>R12</sub>		Exhibit 13-8			V <sub>12</sub>	3419	Exhibit 13-8	4400:All	No	
<b>Level of Service Determination (if not F)</b>					<b>Level of Service Determination (if not F)</b>					
$D_R = 5.475 + 0.00734 v_R + 0.0078 V_{12} - 0.00627 L_A$ D <sub>R</sub> = (pc/mi/ln) LOS = (Exhibit 13-2)					$D_R = 4.252 + 0.0086 V_{12} - 0.009 L_D$ D <sub>R</sub> = 32.5 (pc/mi/ln) LOS = D (Exhibit 13-2)					
<b>Speed Determination</b>					<b>Speed Determination</b>					
M <sub>S</sub> = (Exhibit 13-11) S <sub>R</sub> = mph (Exhibit 13-11) S <sub>0</sub> = mph (Exhibit 13-11) S = mph (Exhibit 13-13)					D <sub>s</sub> = 0.182 (Exhibit 13-12) S <sub>R</sub> = 60.8 mph (Exhibit 13-12) S <sub>0</sub> = 70.6 mph (Exhibit 13-12) S = 63.1 mph (Exhibit 13-13)					

<b>BASIC FREEWAY SEGMENTS WORKSHEET</b>			
<b>General Information</b>		<b>Site Information</b>	
Analyst	<i>RB</i>	Highway/Direction of Travel	<i>80 WB</i>
Agency or Company	<i>Fehr &amp; Peers</i>	From/To	<i>I-780 Collectors - Georgia St</i>
Date Performed	<i>10/23/2014</i>	Jurisdiction	<i>Sonoma County</i>
Analysis Time Period	<i>PM Peak Hour</i>	Analysis Year	<i>Existing + ORCEM</i>
Project Description <i>Vallejo Marine Terminal</i>			
<input checked="" type="checkbox"/> Oper.(LOS) <input type="checkbox"/> Des.(N) <input type="checkbox"/> Planning Data			
<b>Flow Inputs</b>			
Volume, V	<i>4806</i>	veh/h	Peak-Hour Factor, PHF
AADT		veh/day	%Trucks and Buses, P <sub>T</sub>
Peak-Hr Prop. of AADT, K			%RVs, P <sub>R</sub>
Peak-Hr Direction Prop, D			General Terrain:
DDHV = AADT x K x D		veh/h	Grade %    Length <i>mi</i>
			Up/Down %
<b>Calculate Flow Adjustments</b>			
f <sub>p</sub>	<i>1.00</i>	E <sub>R</sub>	<i>1.2</i>
E <sub>T</sub>	<i>1.5</i>	f <sub>HV</sub> = 1/[1+P <sub>T</sub> (E <sub>T</sub> - 1) + P <sub>R</sub> (E <sub>R</sub> - 1)]	<i>0.976</i>
<b>Speed Inputs</b>		<b>Calc Speed Adj and FFS</b>	
Lane Width	ft	f <sub>LW</sub>	mph
Rt-Side Lat. Clearance	ft	f <sub>LC</sub>	mph
Number of Lanes, N	<i>3</i>	TRD Adjustment	mph
Total Ramp Density, TRD	ramps/mi	FFS	<i>65.0</i> mph
FFS (measured)	<i>65.0</i> mph		
Base free-flow Speed, BFFS	mph		
<b>LOS and Performance Measures</b>		<b>Design (N)</b>	
<u>Operational (LOS)</u>		<u>Design (N)</u>	
v <sub>p</sub> = (V or DDHV) / (PHF x N x f <sub>HV</sub> x f <sub>p</sub> )	<i>1785</i> pc/h/ln	Design LOS	
S	<i>62.9</i> mph	v <sub>p</sub> = (V or DDHV) / (PHF x N x f <sub>HV</sub> x f <sub>p</sub> )	pc/h/ln
D = v <sub>p</sub> / S	<i>28.4</i> pc/mi/ln	S	mph
LOS	<i>D</i>	D = v <sub>p</sub> / S	pc/mi/ln
		Required Number of Lanes, N	
<b>Glossary</b>		<b>Factor Location</b>	
N - Number of lanes	S - Speed	E <sub>R</sub> - Exhibits 11-10, 11-12	f <sub>LW</sub> - Exhibit 11-8
V - Hourly volume	D - Density	E <sub>T</sub> - Exhibits 11-10, 11-11, 11-13	f <sub>LC</sub> - Exhibit 11-9
v <sub>p</sub> - Flow rate	FFS - Free-flow speed	f <sub>p</sub> - Page 11-18	TRD - Page 11-11
LOS - Level of service	BFFS - Base free-flow speed	LOS, S, FFS, v <sub>p</sub> - Exhibits 11-2, 11-3	
DDHV - Directional design hour volume			

<b>BASIC FREEWAY SEGMENTS WORKSHEET</b>			
<b>General Information</b>		<b>Site Information</b>	
Analyst	<i>RB</i>	Highway/Direction of Travel	<i>80 WB</i>
Agency or Company	<i>Fehr &amp; Peers</i>	From/To	<i>I-780 Collectors - Georgia St</i>
Date Performed	<i>10/23/2014</i>	Jurisdiction	<i>Sonoma County</i>
Analysis Time Period	<i>AM Peak Hour</i>	Analysis Year	<i>Existing + ORCEM</i>
Project Description <i>Vallejo Marine Terminal</i>			
<input checked="" type="checkbox"/> Oper.(LOS) <input type="checkbox"/> Des.(N) <input type="checkbox"/> Planning Data			
<b>Flow Inputs</b>			
Volume, V	<i>4155</i>	veh/h	Peak-Hour Factor, PHF
AADT		veh/day	%Trucks and Buses, P <sub>T</sub>
Peak-Hr Prop. of AADT, K			%RVs, P <sub>R</sub>
Peak-Hr Direction Prop, D			General Terrain:
DDHV = AADT x K x D		veh/h	Grade %    Length <i>mi</i>
			Up/Down %
<b>Calculate Flow Adjustments</b>			
f <sub>p</sub>	<i>1.00</i>	E <sub>R</sub>	<i>1.2</i>
E <sub>T</sub>	<i>1.5</i>	f <sub>HV</sub> = 1/[1+P <sub>T</sub> (E <sub>T</sub> - 1) + P <sub>R</sub> (E <sub>R</sub> - 1)]	<i>0.976</i>
<b>Speed Inputs</b>		<b>Calc Speed Adj and FFS</b>	
Lane Width		ft	
Rt-Side Lat. Clearance		ft	f <sub>LW</sub>
Number of Lanes, N	<i>3</i>		mph
Total Ramp Density, TRD		ramps/mi	f <sub>LC</sub>
FFS (measured)	<i>65.0</i>	mph	TRD Adjustment
Base free-flow Speed, BFFS		mph	FFS
			<i>65.0</i>
			mph
<b>LOS and Performance Measures</b>		<b>Design (N)</b>	
<u>Operational (LOS)</u>		<u>Design (N)</u>	
v <sub>p</sub> = (V or DDHV) / (PHF x N x f <sub>HV</sub> )	<i>1543</i>	pc/h/ln	Design LOS
x f <sub>p</sub> )			v <sub>p</sub> = (V or DDHV) / (PHF x N x f <sub>HV</sub> )
S	<i>64.7</i>	mph	x f <sub>p</sub> )
D = v <sub>p</sub> / S	<i>23.8</i>	pc/mi/ln	S
LOS	<i>C</i>		D = v <sub>p</sub> / S
			pc/mi/ln
			Required Number of Lanes, N
<b>Glossary</b>		<b>Factor Location</b>	
N - Number of lanes	S - Speed	E <sub>R</sub> - Exhibits 11-10, 11-12	f <sub>LW</sub> - Exhibit 11-8
V - Hourly volume	D - Density	E <sub>T</sub> - Exhibits 11-10, 11-11, 11-13	f <sub>LC</sub> - Exhibit 11-9
v <sub>p</sub> - Flow rate	FFS - Free-flow speed	f <sub>p</sub> - Page 11-18	TRD - Page 11-11
LOS - Level of service	BFFS - Base free-flow speed	LOS, S, FFS, v <sub>p</sub> - Exhibits 11-2, 11-3	
DDHV - Directional design hour volume			

<b>BASIC FREEWAY SEGMENTS WORKSHEET</b>			
<b>General Information</b>		<b>Site Information</b>	
Analyst	RB	Highway/Direction of Travel	80 EB
Agency or Company	Fehr & Peers	From/To	I-780 Collectors - Georgia St
Date Performed	10/23/2014	Jurisdiction	Sonoma County
Analysis Time Period	PM Peak Hour	Analysis Year	Existing + ORCEM
Project Description <i>Vallejo Marine Terminal</i>			
<input checked="" type="checkbox"/> Oper.(LOS) <input type="checkbox"/> Des.(N) <input type="checkbox"/> Planning Data			
<b>Flow Inputs</b>			
Volume, V	4020	veh/h	Peak-Hour Factor, PHF
AADT		veh/day	0.92
Peak-Hr Prop. of AADT, K			%Trucks and Buses, P <sub>T</sub>
Peak-Hr Direction Prop, D			5
DDHV = AADT x K x D		veh/h	%RVs, P <sub>R</sub>
			0
			General Terrain: Level
			Grade % Length mi
			Up/Down %
<b>Calculate Flow Adjustments</b>			
f <sub>p</sub>	1.00	E <sub>R</sub>	1.2
E <sub>T</sub>	1.5	f <sub>HV</sub> = 1/[1+P <sub>T</sub> (E <sub>T</sub> - 1) + P <sub>R</sub> (E <sub>R</sub> - 1)]	0.976
<b>Speed Inputs</b>		<b>Calc Speed Adj and FFS</b>	
Lane Width	ft	f <sub>LW</sub>	mph
Rt-Side Lat. Clearance	ft	f <sub>LC</sub>	mph
Number of Lanes, N	3	TRD Adjustment	mph
Total Ramp Density, TRD	ramps/mi	FFS	65.0
FFS (measured)	65.0	mph	mph
Base free-flow Speed, BFFS	mph		
<b>LOS and Performance Measures</b>		<b>Design (N)</b>	
<u>Operational (LOS)</u>		<u>Design (N)</u>	
v <sub>p</sub> = (V or DDHV) / (PHF x N x f <sub>HV</sub> )	1493	Design LOS	pc/h/ln
x f <sub>p</sub> )		v <sub>p</sub> = (V or DDHV) / (PHF x N x f <sub>HV</sub> )	pc/h/ln
S	64.9	x f <sub>p</sub> )	
D = v <sub>p</sub> / S	23.0	S	mph
LOS	C	D = v <sub>p</sub> / S	pc/mi/ln
		Required Number of Lanes, N	
<b>Glossary</b>		<b>Factor Location</b>	
N - Number of lanes	S - Speed	E <sub>R</sub> - Exhibits 11-10, 11-12	f <sub>LW</sub> - Exhibit 11-8
V - Hourly volume	D - Density	E <sub>T</sub> - Exhibits 11-10, 11-11, 11-13	f <sub>LC</sub> - Exhibit 11-9
v <sub>p</sub> - Flow rate	FFS - Free-flow speed	f <sub>p</sub> - Page 11-18	TRD - Page 11-11
LOS - Level of service	BFFS - Base free-flow speed	LOS, S, FFS, v <sub>p</sub> - Exhibits 11-2, 11-3	
DDHV - Directional design hour volume			

<b>BASIC FREEWAY SEGMENTS WORKSHEET</b>			
<b>General Information</b>		<b>Site Information</b>	
Analyst	RB	Highway/Direction of Travel	80 EB
Agency or Company	Fehr & Peers	From/To	I-780 Collectors - Georgia St
Date Performed	10/23/2014	Jurisdiction	Sonoma County
Analysis Time Period	AM Peak Hour	Analysis Year	Existing + ORCEM
Project Description <i>Vallejo Marine Terminal</i>			
<input checked="" type="checkbox"/> Oper.(LOS) <input type="checkbox"/> Des.(N) <input type="checkbox"/> Planning Data			
<b>Flow Inputs</b>			
Volume, V	4300	veh/h	Peak-Hour Factor, PHF
AADT		veh/day	0.92
Peak-Hr Prop. of AADT, K			%Trucks and Buses, P <sub>T</sub>
Peak-Hr Direction Prop, D			5
DDHV = AADT x K x D		veh/h	%RVs, P <sub>R</sub>
			0
			General Terrain: <i>Level</i>
			Grade % Length <i>mi</i>
			Up/Down %
<b>Calculate Flow Adjustments</b>			
f <sub>p</sub>	1.00	E <sub>R</sub>	1.2
E <sub>T</sub>	1.5	f <sub>HV</sub> = 1/[1+P <sub>T</sub> (E <sub>T</sub> - 1) + P <sub>R</sub> (E <sub>R</sub> - 1)]	0.976
<b>Speed Inputs</b>		<b>Calc Speed Adj and FFS</b>	
Lane Width	ft	f <sub>LW</sub>	mph
Rt-Side Lat. Clearance	ft	f <sub>LC</sub>	mph
Number of Lanes, N	3	TRD Adjustment	mph
Total Ramp Density, TRD	ramps/mi	FFS	65.0
FFS (measured)	65.0	mph	mph
Base free-flow Speed, BFFS	mph		
<b>LOS and Performance Measures</b>		<b>Design (N)</b>	
<u>Operational (LOS)</u>		<u>Design (N)</u>	
v <sub>p</sub> = (V or DDHV) / (PHF x N x f <sub>HV</sub> )	1597	Design LOS	pc/h/ln
x f <sub>p</sub> )		v <sub>p</sub> = (V or DDHV) / (PHF x N x f <sub>HV</sub> )	pc/h/ln
S	64.4	x f <sub>p</sub> )	
D = v <sub>p</sub> / S	24.8	S	mph
LOS	C	D = v <sub>p</sub> / S	pc/mi/ln
		Required Number of Lanes, N	
<b>Glossary</b>		<b>Factor Location</b>	
N - Number of lanes	S - Speed	E <sub>R</sub> - Exhibits 11-10, 11-12	f <sub>LW</sub> - Exhibit 11-8
V - Hourly volume	D - Density	E <sub>T</sub> - Exhibits 11-10, 11-11, 11-13	f <sub>LC</sub> - Exhibit 11-9
v <sub>p</sub> - Flow rate	FFS - Free-flow speed	f <sub>p</sub> - Page 11-18	TRD - Page 11-11
LOS - Level of service	BFFS - Base free-flow speed	LOS, S, FFS, v <sub>p</sub> - Exhibits 11-2, 11-3	
DDHV - Directional design hour volume			



RAMPS AND RAMP JUNCTIONS WORKSHEET									
General Information					Site Information				
Analyst	RB	Freeway/Dir of Travel	I 80 EB						
Agency or Company	Fehr & Peers	Junction	I-780 Collector						
Date Performed	10/31/2014	Jurisdiction	Sonoma County						
Analysis Time Period	PM Peak	Analysis Year	Existing + ORCEM						
Project Description Vallejo Marine Terminal									
Inputs									
Upstream Adj Ramp <input type="checkbox"/> Yes <input type="checkbox"/> On <input checked="" type="checkbox"/> No <input type="checkbox"/> Off	Number of Lanes, N Acceleration Lane Length, L <sub>A</sub> Deceleration Lane Length L <sub>D</sub>	3 150	Downstream Adj Ramp <input checked="" type="checkbox"/> Yes <input type="checkbox"/> On <input type="checkbox"/> No <input checked="" type="checkbox"/> Off	L <sub>down</sub> = 2100 ft					
L <sub>up</sub> = ft	Freeway Volume, V <sub>F</sub>	2283	Ramp Volume, V <sub>R</sub>	1737					
V <sub>u</sub> = veh/h	Freeway Free-Flow Speed, S <sub>FF</sub>	65.0	Ramp Free-Flow Speed, S <sub>FR</sub>	65.0					
<b>Conversion to pc/h Under Base Conditions</b>									
(pc/h)	V (Veh/hr)	PHF	Terrain	%Truck	%Rv	f <sub>HV</sub>	f <sub>p</sub>	v = V/PHF x f <sub>HV</sub> x f <sub>p</sub>	
Freeway	2283	0.92	Level	5	0	0.976	1.00	2544	
Ramp	1737	0.92	Level	5	0	0.976	1.00	1935	
UpStream									
DownStream	173	0.90	Level	5	0	0.976	1.00	197	
Merge Areas					Diverge Areas				
Estimation of v <sub>12</sub>					Estimation of v <sub>12</sub>				
$V_{12} = V_F (P_{FM})$ L <sub>EQ</sub> = 1567.85 (Equation 13-6 or 13-7) P <sub>FM</sub> = 0.582 using Equation (Exhibit 13-6) V <sub>12</sub> = 1480 pc/h V <sub>3</sub> or V <sub>av34</sub> = 1064 pc/h (Equation 13-14 or 13-17) Is V <sub>3</sub> or V <sub>av34</sub> > 2,700 pc/h? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Is V <sub>3</sub> or V <sub>av34</sub> > 1.5 * V <sub>12</sub> /2 <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No If Yes, V <sub>12a</sub> = pc/h (Equation 13-16, 13-18, or 13-19)					$V_{12} = V_R + (V_F - V_R)P_{FD}$ L <sub>EQ</sub> = (Equation 13-12 or 13-13) P <sub>FD</sub> = using Equation (Exhibit 13-7) V <sub>12</sub> = pc/h V <sub>3</sub> or V <sub>av34</sub> = pc/h (Equation 13-14 or 13-17) Is V <sub>3</sub> or V <sub>av34</sub> > 2,700 pc/h? <input type="checkbox"/> Yes <input type="checkbox"/> No Is V <sub>3</sub> or V <sub>av34</sub> > 1.5 * V <sub>12</sub> /2 <input type="checkbox"/> Yes <input type="checkbox"/> No If Yes, V <sub>12a</sub> = pc/h (Equation 13-16, 13-18, or 13-19)				
Capacity Checks					Capacity Checks				
	Actual	Capacity		LOS F?		Actual	Capacity		LOS F?
V <sub>FO</sub>	4479	Exhibit 13-8		No	V <sub>F</sub>		Exhibit 13-8		
					V <sub>FO</sub> = V <sub>F</sub> - V <sub>R</sub>		Exhibit 13-8		
					V <sub>R</sub>		Exhibit 13-10		
Flow Entering Merge Influence Area					Flow Entering Diverge Influence Area				
	Actual	Max Desirable		Violation?		Actual	Max Desirable		Violation?
V <sub>R12</sub>	3415	Exhibit 13-8		4600:All	No	V <sub>12</sub>		Exhibit 13-8	
Level of Service Determination (if not F)					Level of Service Determination (if not F)				
$D_R = 5.475 + 0.00734 v_R + 0.0078 V_{12} - 0.00627 L_A$ D <sub>R</sub> = 30.3 (pc/mi/ln) LOS = D (Exhibit 13-2)					$D_R = 4.252 + 0.0086 V_{12} - 0.009 L_D$ D <sub>R</sub> = (pc/mi/ln) LOS = (Exhibit 13-2)				
Speed Determination					Speed Determination				
M <sub>S</sub> = 0.420 (Exhibit 13-11)					D <sub>S</sub> = (Exhibit 13-12)				
S <sub>R</sub> = 55.3 mph (Exhibit 13-11)					S <sub>R</sub> = mph (Exhibit 13-12)				
S <sub>0</sub> = 63.0 mph (Exhibit 13-11)					S <sub>0</sub> = mph (Exhibit 13-12)				
S = 57.0 mph (Exhibit 13-13)					S = mph (Exhibit 13-13)				

RAMPS AND RAMP JUNCTIONS WORKSHEET									
General Information					Site Information				
Analyst	RB	Freeway/Dir of Travel	I 80 EB						
Agency or Company	Fehr & Peers	Junction	I-780 Collector						
Date Performed	10/31/2014	Jurisdiction	Sonoma County						
Analysis Time Period	AM Peak	Analysis Year	Existing + ORCEM						
Project Description Vallejo Marine Terminal									
Inputs									
Upstream Adj Ramp		Number of Lanes, N		3		Downstream Adj Ramp			
<input type="checkbox"/> Yes <input type="checkbox"/> On		Acceleration Lane Length, L <sub>A</sub>		150		<input checked="" type="checkbox"/> Yes <input type="checkbox"/> On			
<input checked="" type="checkbox"/> No <input type="checkbox"/> Off		Deceleration Lane Length L <sub>D</sub>				<input type="checkbox"/> No <input checked="" type="checkbox"/> Off			
L <sub>up</sub> = ft		Freeway Volume, V <sub>F</sub>		2598		L <sub>down</sub> = 2100 ft			
		Ramp Volume, V <sub>R</sub>		1702		V <sub>D</sub> = 116 veh/h			
V <sub>u</sub> = veh/h		Freeway Free-Flow Speed, S <sub>FF</sub>		65.0					
		Ramp Free-Flow Speed, S <sub>FR</sub>		65.0					
Conversion to pc/h Under Base Conditions									
(pc/h)	V (Veh/hr)	PHF	Terrain	%Truck	%Rv	f <sub>HV</sub>	f <sub>p</sub>	v = V/PHF x f <sub>HV</sub> x f <sub>p</sub>	
Freeway	2598	0.92	Level	5	0	0.976	1.00	2895	
Ramp	1702	0.92	Level	5	0	0.976	1.00	1896	
UpStream									
DownStream	116	0.90	Level	5	0	0.976	1.00	132	
Merge Areas					Diverge Areas				
Estimation of v <sub>12</sub>					Estimation of v <sub>12</sub>				
$V_{12} = V_F (P_{FM})$ L <sub>EQ</sub> = 1050.54 (Equation 13-6 or 13-7) P <sub>FM</sub> = 0.582 using Equation (Exhibit 13-6) V <sub>12</sub> = 1684 pc/h V <sub>3</sub> or V <sub>av34</sub> = 1211 pc/h (Equation 13-14 or 13-17) Is V <sub>3</sub> or V <sub>av34</sub> > 2,700 pc/h? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Is V <sub>3</sub> or V <sub>av34</sub> > 1.5 * V <sub>12</sub> /2 <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No If Yes, V <sub>12a</sub> = pc/h (Equation 13-16, 13-18, or 13-19)					$V_{12} = V_R + (V_F - V_R)P_{FD}$ L <sub>EQ</sub> = (Equation 13-12 or 13-13) P <sub>FD</sub> = using Equation (Exhibit 13-7) V <sub>12</sub> = pc/h V <sub>3</sub> or V <sub>av34</sub> = pc/h (Equation 13-14 or 13-17) Is V <sub>3</sub> or V <sub>av34</sub> > 2,700 pc/h? <input type="checkbox"/> Yes <input type="checkbox"/> No Is V <sub>3</sub> or V <sub>av34</sub> > 1.5 * V <sub>12</sub> /2 <input type="checkbox"/> Yes <input type="checkbox"/> No If Yes, V <sub>12a</sub> = pc/h (Equation 13-16, 13-18, or 13-19)				
Capacity Checks					Capacity Checks				
	Actual	Capacity		LOS F?		Actual	Capacity		LOS F?
V <sub>FO</sub>	4791	Exhibit 13-8		No	V <sub>F</sub>		Exhibit 13-8		
					V <sub>FO</sub> = V <sub>F</sub> - V <sub>R</sub>		Exhibit 13-8		
					V <sub>R</sub>		Exhibit 13-10		
Flow Entering Merge Influence Area					Flow Entering Diverge Influence Area				
	Actual	Max Desirable		Violation?		Actual	Max Desirable		Violation?
V <sub>R12</sub>	3580	Exhibit 13-8		4600:All	No	V <sub>12</sub>	Exhibit 13-8		
Level of Service Determination (if not F)					Level of Service Determination (if not F)				
$D_R = 5.475 + 0.00734 v_R + 0.0078 V_{12} - 0.00627 L_A$ D <sub>R</sub> = 31.6 (pc/mi/ln) LOS = D (Exhibit 13-2)					$D_R = 4.252 + 0.0086 V_{12} - 0.009 L_D$ D <sub>R</sub> = (pc/mi/ln) LOS = (Exhibit 13-2)				
Speed Determination					Speed Determination				
M <sub>S</sub> = 0.441 (Exhibit 13-11)					D <sub>S</sub> = (Exhibit 13-12)				
S <sub>R</sub> = 54.8 mph (Exhibit 13-11)					S <sub>R</sub> = mph (Exhibit 13-12)				
S <sub>0</sub> = 62.4 mph (Exhibit 13-11)					S <sub>0</sub> = mph (Exhibit 13-12)				
S = 56.6 mph (Exhibit 13-13)					S = mph (Exhibit 13-13)				

<b>BASIC FREEWAY SEGMENTS WORKSHEET</b>			
<b>General Information</b>		<b>Site Information</b>	
Analyst	<i>RB</i>	Highway/Direction of Travel <i>I-80 WB</i>	
Agency or Company	<i>Fehr &amp; Peers</i>	From/To	<i>South of Sonoma Blvd</i>
Date Performed	<i>10/23/2014</i>	Jurisdiction	<i>Sonoma County</i>
Analysis Time Period	<i>PM Peak Hour</i>	Analysis Year	<i>Existing + ORCEM</i>
Project Description <i>Vallejo Marine Terminal</i>			
<input checked="" type="checkbox"/> Oper.(LOS)		<input type="checkbox"/> Des.(N)	
<input type="checkbox"/> Planning Data			
<b>Flow Inputs</b>			
Volume, V	<i>2840</i>	veh/h	Peak-Hour Factor, PHF <i>0.92</i>
AADT		veh/day	%Trucks and Buses, P <sub>T</sub> <i>5</i>
Peak-Hr Prop. of AADT, K			%RVs, P <sub>R</sub> <i>0</i>
Peak-Hr Direction Prop, D			General Terrain: <i>Level</i>
DDHV = AADT x K x D		veh/h	Grade % Length <i>mi</i>
			Up/Down %
<b>Calculate Flow Adjustments</b>			
f <sub>p</sub>	<i>1.00</i>	E <sub>R</sub>	<i>1.2</i>
E <sub>T</sub>	<i>1.5</i>	f <sub>HV</sub> = 1/[1+P <sub>T</sub> (E <sub>T</sub> - 1) + P <sub>R</sub> (E <sub>R</sub> - 1)] <i>0.976</i>	
<b>Speed Inputs</b>		<b>Calc Speed Adj and FFS</b>	
Lane Width		ft	
Rt-Side Lat. Clearance		ft	
Number of Lanes, N	<i>4</i>		f <sub>LW</sub> mph
Total Ramp Density, TRD		ramps/mi	f <sub>LC</sub> mph
FFS (measured)	<i>65.0</i>	mph	TRD Adjustment mph
Base free-flow Speed, BFFS		mph	FFS <i>65.0</i> mph
<b>LOS and Performance Measures</b>		<b>Design (N)</b>	
<u>Operational (LOS)</u>		<u>Design (N)</u>	
v <sub>p</sub> = (V or DDHV) / (PHF x N x f <sub>HV</sub> ) <i>791</i>		Design LOS	
x f <sub>p</sub> )		pc/h/ln	v <sub>p</sub> = (V or DDHV) / (PHF x N x f <sub>HV</sub> )
S	<i>65.0</i>	mph	x f <sub>p</sub> )
D = v <sub>p</sub> / S	<i>12.2</i>	pc/mi/ln	S
LOS	<i>B</i>		D = v <sub>p</sub> / S
			pc/mi/ln
			Required Number of Lanes, N
<b>Glossary</b>		<b>Factor Location</b>	
N - Number of lanes	S - Speed	E <sub>R</sub> - Exhibits 11-10, 11-12	f <sub>LW</sub> - Exhibit 11-8
V - Hourly volume	D - Density	E <sub>T</sub> - Exhibits 11-10, 11-11, 11-13	f <sub>LC</sub> - Exhibit 11-9
v <sub>p</sub> - Flow rate	FFS - Free-flow speed	f <sub>p</sub> - Page 11-18	TRD - Page 11-11
LOS - Level of service	BFFS - Base free-flow speed	LOS, S, FFS, v <sub>p</sub> - Exhibits 11-2, 11-3	
DDHV - Directional design hour volume			

<b>BASIC FREEWAY SEGMENTS WORKSHEET</b>			
<b>General Information</b>		<b>Site Information</b>	
Analyst	<i>RB</i>	Highway/Direction of Travel <i>I-80 WB</i>	
Agency or Company	<i>Fehr &amp; Peers</i>	From/To	<i>South of Sonoma Blvd</i>
Date Performed	<i>10/23/2014</i>	Jurisdiction	<i>Sonoma County</i>
Analysis Time Period	<i>AM Peak Hour</i>	Analysis Year	<i>Existing + ORCEM</i>
Project Description <i>Vallejo Marine Terminal</i>			
<input checked="" type="checkbox"/> Oper.(LOS)		<input type="checkbox"/> Des.(N)	
<input type="checkbox"/> Planning Data			
<b>Flow Inputs</b>			
Volume, V	<i>5061</i>	veh/h	Peak-Hour Factor, PHF
AADT		veh/day	<i>0.92</i>
Peak-Hr Prop. of AADT, K			%Trucks and Buses, P <sub>T</sub>
Peak-Hr Direction Prop, D			<i>5</i>
DDHV = AADT x K x D		veh/h	%RVs, P <sub>R</sub>
			<i>0</i>
			General Terrain:
			<i>Level</i>
			Grade % Length
			<i>mi</i>
			Up/Down %
<b>Calculate Flow Adjustments</b>			
f <sub>p</sub>	<i>1.00</i>	E <sub>R</sub>	<i>1.2</i>
E <sub>T</sub>	<i>1.5</i>	f <sub>HV</sub> = 1/[1+P <sub>T</sub> (E <sub>T</sub> - 1) + P <sub>R</sub> (E <sub>R</sub> - 1)]	
			<i>0.976</i>
<b>Speed Inputs</b>		<b>Calc Speed Adj and FFS</b>	
Lane Width		ft	
Rt-Side Lat. Clearance		ft	
Number of Lanes, N	<i>4</i>		f <sub>LW</sub>
Total Ramp Density, TRD		ramps/mi	mph
FFS (measured)	<i>65.0</i>	mph	f <sub>LC</sub>
Base free-flow Speed, BFFS		mph	mph
			TRD Adjustment
			mph
			FFS
			<i>65.0</i>
			mph
<b>LOS and Performance Measures</b>		<b>Design (N)</b>	
<u>Operational (LOS)</u>		<u>Design (N)</u>	
v <sub>p</sub> = (V or DDHV) / (PHF x N x f <sub>HV</sub> )		Design LOS	
<i>1410</i>	pc/h/ln	v <sub>p</sub> = (V or DDHV) / (PHF x N x f <sub>HV</sub> )	
x f <sub>p</sub> )		pc/h/ln	
S	<i>65.0</i>	mph	x f <sub>p</sub> )
D = v <sub>p</sub> / S	<i>21.7</i>	pc/mi/ln	S
LOS	<i>C</i>		mph
			D = v <sub>p</sub> / S
			pc/mi/ln
			Required Number of Lanes, N
<b>Glossary</b>		<b>Factor Location</b>	
N - Number of lanes	S - Speed	E <sub>R</sub> - Exhibits 11-10, 11-12	f <sub>LW</sub> - Exhibit 11-8
V - Hourly volume	D - Density	E <sub>T</sub> - Exhibits 11-10, 11-11, 11-13	f <sub>LC</sub> - Exhibit 11-9
v <sub>p</sub> - Flow rate	FFS - Free-flow speed	f <sub>p</sub> - Page 11-18	TRD - Page 11-11
LOS - Level of service	BFFS - Base free-flow speed	LOS, S, FFS, v <sub>p</sub> - Exhibits 11-2, 11-3	
DDHV - Directional design hour volume			

<b>BASIC FREEWAY SEGMENTS WORKSHEET</b>			
<b>General Information</b>		<b>Site Information</b>	
Analyst	<i>RB</i>	Highway/Direction of Travel <i>I-80 EB</i>	
Agency or Company	<i>Fehr &amp; Peers</i>	From/To	<i>South of Sonoma Blvd</i>
Date Performed	<i>10/23/2014</i>	Jurisdiction	<i>Sonoma County</i>
Analysis Time Period	<i>PM Peak Hour</i>	Analysis Year	<i>Existing + ORCEM</i>
Project Description <i>Vallejo Marine Terminal</i>			
<input checked="" type="checkbox"/> Oper.(LOS)		<input type="checkbox"/> Des.(N)	
<input type="checkbox"/> Planning Data			
<b>Flow Inputs</b>			
Volume, V	<i>4273</i>	veh/h	Peak-Hour Factor, PHF <i>0.92</i>
AADT		veh/day	%Trucks and Buses, P <sub>T</sub> <i>5</i>
Peak-Hr Prop. of AADT, K			%RVs, P <sub>R</sub> <i>0</i>
Peak-Hr Direction Prop, D			General Terrain: <i>Level</i>
DDHV = AADT x K x D		veh/h	Grade % Length <i>mi</i>
			Up/Down %
<b>Calculate Flow Adjustments</b>			
f <sub>p</sub>	<i>1.00</i>	E <sub>R</sub>	<i>1.2</i>
E <sub>T</sub>	<i>1.5</i>	f <sub>HV</sub> = 1/[1+P <sub>T</sub> (E <sub>T</sub> - 1) + P <sub>R</sub> (E <sub>R</sub> - 1)] <i>0.976</i>	
<b>Speed Inputs</b>		<b>Calc Speed Adj and FFS</b>	
Lane Width		ft	
Rt-Side Lat. Clearance		ft	
Number of Lanes, N	<i>4</i>		f <sub>LW</sub> mph
Total Ramp Density, TRD		ramps/mi	f <sub>LC</sub> mph
FFS (measured)	<i>65.0</i>	mph	TRD Adjustment mph
Base free-flow Speed, BFFS		mph	FFS <i>65.0</i> mph
<b>LOS and Performance Measures</b>		<b>Design (N)</b>	
<u>Operational (LOS)</u>		<u>Design (N)</u>	
v <sub>p</sub> = (V or DDHV) / (PHF x N x f <sub>HV</sub> ) <i>1190</i>		Design LOS	
x f <sub>p</sub> )		v <sub>p</sub> = (V or DDHV) / (PHF x N x f <sub>HV</sub> )	pc/h/ln
S	<i>65.0</i>	x f <sub>p</sub> )	
D = v <sub>p</sub> / S	<i>18.3</i>	S	mph
LOS	<i>C</i>	D = v <sub>p</sub> / S	pc/mi/ln
		Required Number of Lanes, N	
<b>Glossary</b>		<b>Factor Location</b>	
N - Number of lanes	S - Speed	E <sub>R</sub> - Exhibits 11-10, 11-12	f <sub>LW</sub> - Exhibit 11-8
V - Hourly volume	D - Density	E <sub>T</sub> - Exhibits 11-10, 11-11, 11-13	f <sub>LC</sub> - Exhibit 11-9
v <sub>p</sub> - Flow rate	FFS - Free-flow speed	f <sub>p</sub> - Page 11-18	TRD - Page 11-11
LOS - Level of service	BFFS - Base free-flow speed	LOS, S, FFS, v <sub>p</sub> - Exhibits 11-2, 11-3	
DDHV - Directional design hour volume			

<b>BASIC FREEWAY SEGMENTS WORKSHEET</b>			
<b>General Information</b>		<b>Site Information</b>	
Analyst	<i>RB</i>	Highway/Direction of Travel <i>I-80 EB</i>	
Agency or Company	<i>Fehr &amp; Peers</i>	From/To	<i>South of Sonoma Blvd</i>
Date Performed	<i>10/23/2014</i>	Jurisdiction	<i>Sonoma County</i>
Analysis Time Period	<i>AM Peak Hour</i>	Analysis Year	<i>Existing + ORCEM</i>
Project Description <i>Vallejo Marine Terminal</i>			
<input checked="" type="checkbox"/> Oper.(LOS) <input type="checkbox"/> Des.(N) <input type="checkbox"/> Planning Data			
<b>Flow Inputs</b>			
Volume, V	<i>2342</i>	veh/h	Peak-Hour Factor, PHF <i>0.92</i>
AADT		veh/day	%Trucks and Buses, P <sub>T</sub> <i>5</i>
Peak-Hr Prop. of AADT, K			%RVs, P <sub>R</sub> <i>0</i>
Peak-Hr Direction Prop, D			General Terrain: <i>Level</i>
DDHV = AADT x K x D		veh/h	Grade % Length <i>mi</i> Up/Down %
<b>Calculate Flow Adjustments</b>			
f <sub>p</sub>	<i>1.00</i>	E <sub>R</sub>	<i>1.2</i>
E <sub>T</sub>	<i>1.5</i>	f <sub>HV</sub> = 1/[1+P <sub>T</sub> (E <sub>T</sub> - 1) + P <sub>R</sub> (E <sub>R</sub> - 1)] <i>0.976</i>	
<b>Speed Inputs</b>		<b>Calc Speed Adj and FFS</b>	
Lane Width	ft		
Rt-Side Lat. Clearance	ft	f <sub>LW</sub>	mph
Number of Lanes, N	<i>4</i>	f <sub>LC</sub>	mph
Total Ramp Density, TRD	ramps/mi	TRD Adjustment	mph
FFS (measured)	<i>65.0</i>	FFS	<i>65.0</i> mph
Base free-flow Speed, BFFS	mph		
<b>LOS and Performance Measures</b>		<b>Design (N)</b>	
<u>Operational (LOS)</u>		<u>Design (N)</u>	
v <sub>p</sub> = (V or DDHV) / (PHF x N x f <sub>HV</sub> x f <sub>p</sub> )	<i>652</i> pc/h/ln	Design LOS	
S	<i>65.0</i> mph	v <sub>p</sub> = (V or DDHV) / (PHF x N x f <sub>HV</sub> x f <sub>p</sub> )	pc/h/ln
D = v <sub>p</sub> / S	<i>10.0</i> pc/mi/ln	S	mph
LOS	<i>A</i>	D = v <sub>p</sub> / S	pc/mi/ln
		Required Number of Lanes, N	
<b>Glossary</b>		<b>Factor Location</b>	
N - Number of lanes	S - Speed	E <sub>R</sub> - Exhibits 11-10, 11-12	f <sub>LW</sub> - Exhibit 11-8
V - Hourly volume	D - Density	E <sub>T</sub> - Exhibits 11-10, 11-11, 11-13	f <sub>LC</sub> - Exhibit 11-9
v <sub>p</sub> - Flow rate	FFS - Free-flow speed	f <sub>p</sub> - Page 11-18	TRD - Page 11-11
LOS - Level of service	BFFS - Base free-flow speed	LOS, S, FFS, v <sub>p</sub> - Exhibits 11-2, 11-3	
DDHV - Directional design hour volume			

<b>BASIC FREEWAY SEGMENTS WORKSHEET</b>			
<b>General Information</b>		<b>Site Information</b>	
Analyst	<i>RB</i>	Highway/Direction of Travel <i>I-780 WB</i>	
Agency or Company	<i>Fehr &amp; Peers</i>	From/To	<i>Glen Cove to Laurel</i>
Date Performed	<i>10/23/2014</i>	Jurisdiction	<i>Sonoma County</i>
Analysis Time Period	<i>PM Peak Hour</i>	Analysis Year	<i>Existing + ORCEM</i>
Project Description <i>Vallejo Marine Terminal</i>			
<input checked="" type="checkbox"/> Oper.(LOS)		<input type="checkbox"/> Des.(N)	
<input type="checkbox"/> Planning Data			
<b>Flow Inputs</b>			
Volume, V	<i>2782</i>	veh/h	Peak-Hour Factor, PHF <i>0.92</i>
AADT		veh/day	%Trucks and Buses, P <sub>T</sub> <i>5</i>
Peak-Hr Prop. of AADT, K			%RVs, P <sub>R</sub> <i>0</i>
Peak-Hr Direction Prop, D			General Terrain: <i>Level</i>
DDHV = AADT x K x D		veh/h	Grade % Length <i>mi</i>
			Up/Down %
<b>Calculate Flow Adjustments</b>			
f <sub>p</sub>	<i>1.00</i>	E <sub>R</sub>	<i>1.2</i>
E <sub>T</sub>	<i>1.5</i>	f <sub>HV</sub> = 1/[1+P <sub>T</sub> (E <sub>T</sub> - 1) + P <sub>R</sub> (E <sub>R</sub> - 1)] <i>0.976</i>	
<b>Speed Inputs</b>		<b>Calc Speed Adj and FFS</b>	
Lane Width	ft		
Rt-Side Lat. Clearance	ft	f <sub>LW</sub>	mph
Number of Lanes, N	<i>2</i>	f <sub>LC</sub>	mph
Total Ramp Density, TRD	ramps/mi	TRD Adjustment	mph
FFS (measured)	<i>65.0</i>	FFS	<i>65.0</i> mph
Base free-flow Speed, BFFS	mph		
<b>LOS and Performance Measures</b>		<b>Design (N)</b>	
<u>Operational (LOS)</u>		<u>Design (N)</u>	
v <sub>p</sub> = (V or DDHV) / (PHF x N x f <sub>HV</sub> x f <sub>p</sub> )		Design LOS	
<i>1550</i>	pc/h/ln	v <sub>p</sub> = (V or DDHV) / (PHF x N x f <sub>HV</sub> x f <sub>p</sub> )	
S	<i>64.7</i> mph	S	
D = v <sub>p</sub> / S	<i>24.0</i> pc/mi/ln	D = v <sub>p</sub> / S	
LOS	<i>C</i>	Required Number of Lanes, N	
<b>Glossary</b>		<b>Factor Location</b>	
N - Number of lanes	S - Speed	E <sub>R</sub> - Exhibits 11-10, 11-12	f <sub>LW</sub> - Exhibit 11-8
V - Hourly volume	D - Density	E <sub>T</sub> - Exhibits 11-10, 11-11, 11-13	f <sub>LC</sub> - Exhibit 11-9
v <sub>p</sub> - Flow rate	FFS - Free-flow speed	f <sub>p</sub> - Page 11-18	TRD - Page 11-11
LOS - Level of service	BFFS - Base free-flow speed	LOS, S, FFS, v <sub>p</sub> - Exhibits 11-2, 11-3	
DDHV - Directional design hour volume			

<b>BASIC FREEWAY SEGMENTS WORKSHEET</b>			
<b>General Information</b>		<b>Site Information</b>	
Analyst	<i>RB</i>	Highway/Direction of Travel <i>I-780 WB</i>	
Agency or Company	<i>Fehr &amp; Peers</i>	From/To	<i>Glen Cove to Laurel</i>
Date Performed	<i>10/23/2014</i>	Jurisdiction	<i>Sonoma County</i>
Analysis Time Period	<i>AM Peak Hour</i>	Analysis Year	<i>Existing + ORCEM</i>
Project Description <i>Vallejo Marine Terminal</i>			
<input checked="" type="checkbox"/> Oper.(LOS)		<input type="checkbox"/> Des.(N)	
<input type="checkbox"/> Planning Data			
<b>Flow Inputs</b>			
Volume, V	<i>1906</i>	veh/h	Peak-Hour Factor, PHF <i>0.92</i>
AADT		veh/day	%Trucks and Buses, P <sub>T</sub> <i>5</i>
Peak-Hr Prop. of AADT, K			%RVs, P <sub>R</sub> <i>0</i>
Peak-Hr Direction Prop, D			General Terrain: <i>Level</i>
DDHV = AADT x K x D		veh/h	Grade % Length <i>mi</i>
			Up/Down %
<b>Calculate Flow Adjustments</b>			
f <sub>p</sub>	<i>1.00</i>	E <sub>R</sub>	<i>1.2</i>
E <sub>T</sub>	<i>1.5</i>	f <sub>HV</sub> = 1/[1+P <sub>T</sub> (E <sub>T</sub> - 1) + P <sub>R</sub> (E <sub>R</sub> - 1)] <i>0.976</i>	
<b>Speed Inputs</b>		<b>Calc Speed Adj and FFS</b>	
Lane Width	ft		
Rt-Side Lat. Clearance	ft	f <sub>LW</sub>	mph
Number of Lanes, N	<i>2</i>	f <sub>LC</sub>	mph
Total Ramp Density, TRD	ramps/mi	TRD Adjustment	mph
FFS (measured)	<i>65.0</i>	FFS	<i>65.0</i> mph
Base free-flow Speed, BFFS	mph		
<b>LOS and Performance Measures</b>		<b>Design (N)</b>	
<u>Operational (LOS)</u>		<u>Design (N)</u>	
v <sub>p</sub> = (V or DDHV) / (PHF x N x f <sub>HV</sub> x f <sub>p</sub> )		Design LOS	
S	<i>65.0</i> mph	v <sub>p</sub> = (V or DDHV) / (PHF x N x f <sub>HV</sub> x f <sub>p</sub> )	pc/h/ln
D = v <sub>p</sub> / S	<i>16.3</i> pc/mi/ln	S	mph
LOS	<i>B</i>	D = v <sub>p</sub> / S	pc/mi/ln
		Required Number of Lanes, N	
<b>Glossary</b>		<b>Factor Location</b>	
N - Number of lanes	S - Speed	E <sub>R</sub> - Exhibits 11-10, 11-12	f <sub>LW</sub> - Exhibit 11-8
V - Hourly volume	D - Density	E <sub>T</sub> - Exhibits 11-10, 11-11, 11-13	f <sub>LC</sub> - Exhibit 11-9
v <sub>p</sub> - Flow rate	FFS - Free-flow speed	f <sub>p</sub> - Page 11-18	TRD - Page 11-11
LOS - Level of service	BFFS - Base free-flow speed	LOS, S, FFS, v <sub>p</sub> - Exhibits 11-2, 11-3	
DDHV - Directional design hour volume			



<b>BASIC FREEWAY SEGMENTS WORKSHEET</b>			
<b>General Information</b>		<b>Site Information</b>	
Analyst	<i>RB</i>	Highway/Direction of Travel <i>I-780 EB</i>	
Agency or Company	<i>Fehr &amp; Peers</i>	From/To	<i>Laurel to Glen Cove</i>
Date Performed	<i>10/23/2014</i>	Jurisdiction	<i>Sonoma County</i>
Analysis Time Period	<i>PM Peak Hour</i>	Analysis Year	<i>Existing + ORCEM</i>
Project Description <i>Vallejo Marine Terminal</i>			
<input checked="" type="checkbox"/> Oper.(LOS)		<input type="checkbox"/> Des.(N)	
<input type="checkbox"/> Planning Data			
<b>Flow Inputs</b>			
Volume, V	<i>2210</i>	veh/h	Peak-Hour Factor, PHF <i>0.92</i>
AADT		veh/day	%Trucks and Buses, P <sub>T</sub> <i>5</i>
Peak-Hr Prop. of AADT, K			%RVs, P <sub>R</sub> <i>0</i>
Peak-Hr Direction Prop, D			General Terrain: <i>Level</i>
DDHV = AADT x K x D		veh/h	Grade % Length <i>mi</i>
			Up/Down %
<b>Calculate Flow Adjustments</b>			
f <sub>p</sub>	<i>1.00</i>	E <sub>R</sub>	<i>1.2</i>
E <sub>T</sub>	<i>1.5</i>	f <sub>HV</sub> = 1/[1+P <sub>T</sub> (E <sub>T</sub> - 1) + P <sub>R</sub> (E <sub>R</sub> - 1)] <i>0.976</i>	
<b>Speed Inputs</b>		<b>Calc Speed Adj and FFS</b>	
Lane Width	ft		
Rt-Side Lat. Clearance	ft	f <sub>LW</sub>	mph
Number of Lanes, N	<i>2</i>	f <sub>LC</sub>	mph
Total Ramp Density, TRD	ramps/mi	TRD Adjustment	mph
FFS (measured)	<i>65.0</i>	FFS	<i>65.0</i>
Base free-flow Speed, BFFS	mph		
<b>LOS and Performance Measures</b>		<b>Design (N)</b>	
<u>Operational (LOS)</u>		<u>Design (N)</u>	
v <sub>p</sub> = (V or DDHV) / (PHF x N x f <sub>HV</sub> x f <sub>p</sub> )		Design LOS	
S	<i>65.0</i>	v <sub>p</sub> = (V or DDHV) / (PHF x N x f <sub>HV</sub> x f <sub>p</sub> )	pc/h/ln
D = v <sub>p</sub> / S	<i>18.9</i>	S	mph
LOS	<i>C</i>	D = v <sub>p</sub> / S	pc/mi/ln
		Required Number of Lanes, N	
<b>Glossary</b>		<b>Factor Location</b>	
N - Number of lanes	S - Speed	E <sub>R</sub> - Exhibits 11-10, 11-12	f <sub>LW</sub> - Exhibit 11-8
V - Hourly volume	D - Density	E <sub>T</sub> - Exhibits 11-10, 11-11, 11-13	f <sub>LC</sub> - Exhibit 11-9
v <sub>p</sub> - Flow rate	FFS - Free-flow speed	f <sub>p</sub> - Page 11-18	TRD - Page 11-11
LOS - Level of service	BFFS - Base free-flow speed	LOS, S, FFS, v <sub>p</sub> - Exhibits 11-2, 11-3	
DDHV - Directional design hour volume			

BASIC FREEWAY SEGMENTS WORKSHEET			
<b>General Information</b>		<b>Site Information</b>	
Analyst	<i>RB</i>	Highway/Direction of Travel	<i>I-780 EB</i>
Agency or Company	<i>Fehr &amp; Peers</i>	From/To	<i>Laurel to Glen Cove</i>
Date Performed	<i>10/23/2014</i>	Jurisdiction	<i>Sonoma County</i>
Analysis Time Period	<i>AM Peak Hour</i>	Analysis Year	<i>Existing + ORCEM</i>
Project Description <i>Vallejo Marine Terminal</i>			
<input checked="" type="checkbox"/> Oper.(LOS)		<input type="checkbox"/> Des.(N)	<input type="checkbox"/> Planning Data
<b>Flow Inputs</b>			
Volume, V	<i>2387</i>	veh/h	Peak-Hour Factor, PHF <i>0.92</i>
AADT		veh/day	%Trucks and Buses, P <sub>T</sub> <i>5</i>
Peak-Hr Prop. of AADT, K			%RVs, P <sub>R</sub> <i>0</i>
Peak-Hr Direction Prop, D			General Terrain: <i>Level</i>
DDHV = AADT x K x D		veh/h	Grade % Length <i>mi</i> Up/Down %
<b>Calculate Flow Adjustments</b>			
f <sub>p</sub>	<i>1.00</i>	E <sub>R</sub>	<i>1.2</i>
E <sub>T</sub>	<i>1.5</i>	f <sub>HV</sub> = 1/[1+P <sub>T</sub> (E <sub>T</sub> - 1) + P <sub>R</sub> (E <sub>R</sub> - 1)]	<i>0.976</i>
<b>Speed Inputs</b>		<b>Calc Speed Adj and FFS</b>	
Lane Width		ft	
Rt-Side Lat. Clearance		ft	f <sub>LW</sub>
Number of Lanes, N	<i>2</i>		mph
Total Ramp Density, TRD		ramps/mi	f <sub>LC</sub>
FFS (measured)	<i>65.0</i>	mph	TRD Adjustment
Base free-flow Speed, BFFS		mph	FFS
			<i>65.0</i>
			mph
<b>LOS and Performance Measures</b>		<b>Design (N)</b>	
<u>Operational (LOS)</u>		<u>Design (N)</u>	
v <sub>p</sub> = (V or DDHV) / (PHF x N x f <sub>HV</sub> x f <sub>p</sub> )	<i>1330</i>	pc/h/ln	Design LOS
S	<i>65.0</i>	mph	v <sub>p</sub> = (V or DDHV) / (PHF x N x f <sub>HV</sub> x f <sub>p</sub> )
D = v <sub>p</sub> / S	<i>20.5</i>	pc/mi/ln	pc/h/ln
LOS	<i>C</i>		S
			mph
			D = v <sub>p</sub> / S
			pc/mi/ln
			Required Number of Lanes, N
<b>Glossary</b>		<b>Factor Location</b>	
N - Number of lanes	S - Speed	E <sub>R</sub> - Exhibits 11-10, 11-12	f <sub>LW</sub> - Exhibit 11-8
V - Hourly volume	D - Density	E <sub>T</sub> - Exhibits 11-10, 11-11, 11-13	f <sub>LC</sub> - Exhibit 11-9
v <sub>p</sub> - Flow rate	FFS - Free-flow speed	f <sub>p</sub> - Page 11-18	TRD - Page 11-11
LOS - Level of service	BFFS - Base free-flow speed	LOS, S, FFS, v <sub>p</sub> - Exhibits 11-2, 11-3	
DDHV - Directional design hour volume			

# Leisch Method for Weaving Analysis

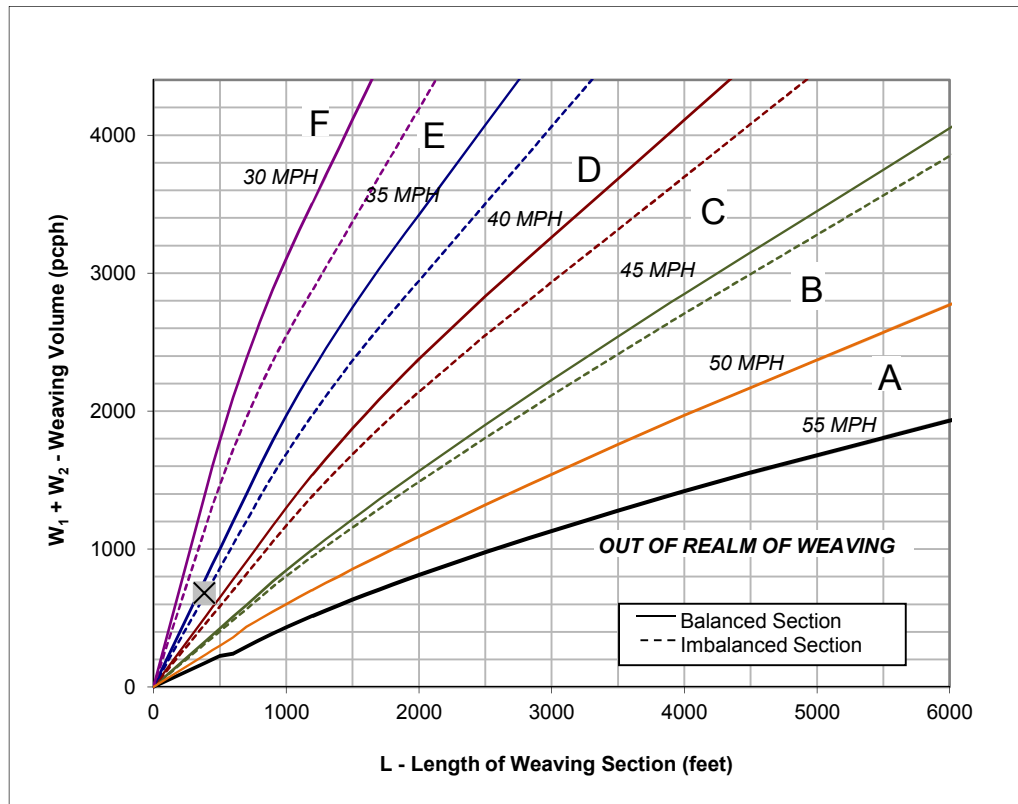
## Data Input

Number of Entering Mainline Lanes	$N_b$	2
Number of Lanes in Weaving Section	N	3
Length of Weaving Section (feet)	L	385

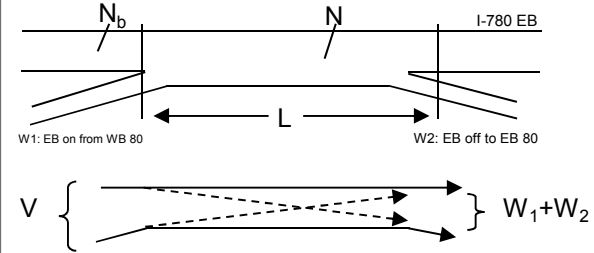
## Project Information

Project	Vallejo Marine Terminal
Scenario	AM + ORCEM
Freeway	I-780 EB
On-ramp	W1: EB on from WB 80
Off-ramp	W2: EB off to EB 80

Total Weaving Section (V)		On-ramp to Mainline ( $W_1$ )		Mainline to Off-ramp ( $W_2$ )	
Volume (vph)*	1,010	Volume (vph)*	598	Volume (vph)*	67
Truck Percentage	5%	Truck Percentage	5%	Truck Percentage	5%
PCE for Trucks	1.5	PCE for Trucks	1.5	PCE for Trucks	1.5
Volume (pcph)	1,036	Volume (pcph)	613	Volume (pcph)	69



## Figure



## Capacity Analysis

- Is the weaving section balanced ( $Y / N$ )? **N**  
[If optional exit lane, then "Y". Otherwise "N".]
- In the Weaving Speed Chart to the left, which two speed curves is the black "x" between?

**30 MPH** and **35 MPH**

If below the 55 MPH curve, out of the realm of weaving.  
If left of the 30 MPH curve, LOS is F.

- Interpolated Weaving Speed ( $S_w$ , mph) **34.8**
- Weaving Intensity Factor ( $k$ ) **3.00**
- Service Volume (SV, pcph)  
 $SV = (1/N) * [V + (k - 1) * \min(W_1, W_2)]$  **391**
- Level of Service (LOS) **A**

The LOS in the chart above refers to the capacity of weaving traffic only; through and ramp to ramp traffic is not included.

\* Note: **Do not adjust by a Peak Hour Factor (PHF)**. The methodology incorporates the PHF in the Service Volume tables.

Sources: *Completion of Procedures for Analysis and Design of Traffic Weaving Sections*, Jack E. Leisch & Associates, September 1983 and *Highway Design Manual*, California Department of Transportation, July 24, 2009

# Leisch Method for Weaving Analysis

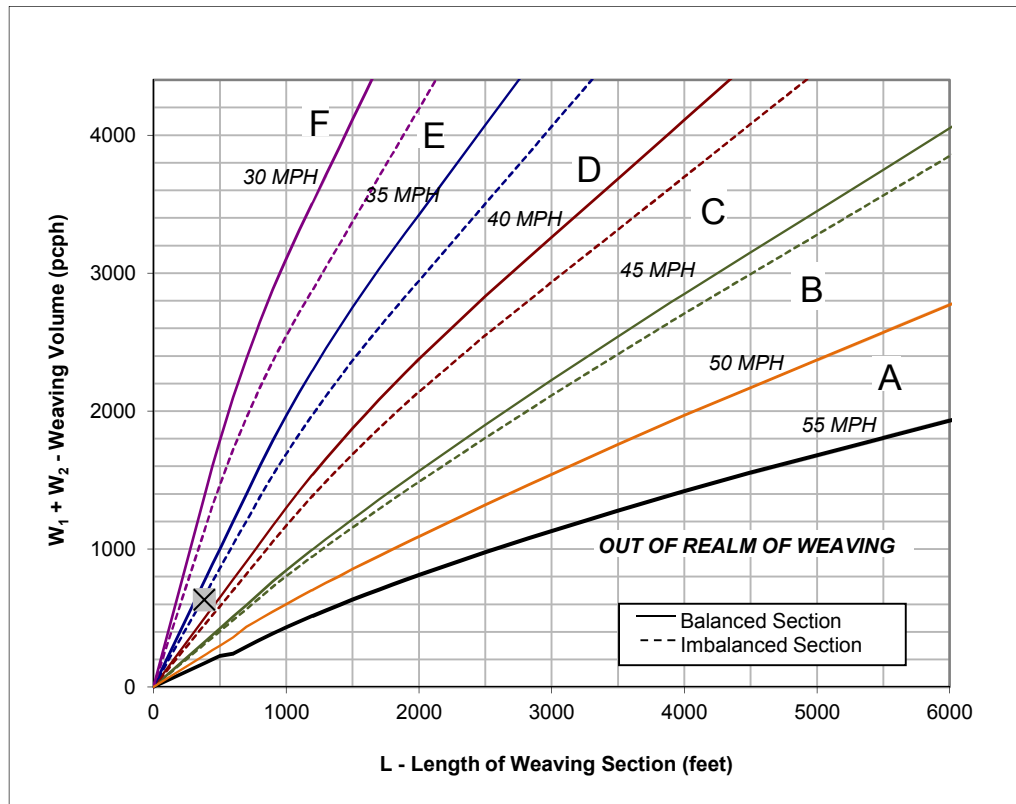
## Data Input

Number of Entering Mainline Lanes	$N_b$	2
Number of Lanes in Weaving Section	N	3
Length of Weaving Section (feet)	L	385

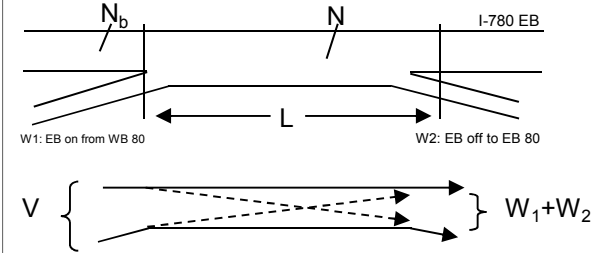
## Project Information

Project	Vallejo Marine Terminal
Scenario	PM + ORCEM
Freeway	I-780 EB
On-ramp	W1: EB on from WB 80
Off-ramp	W2: EB off to EB 80

Total Weaving Section (V)		On-ramp to Mainline ( $W_1$ )		Mainline to Off-ramp ( $W_2$ )	
Volume (vph)*	1,538	Volume (vph)*	417	Volume (vph)*	202
Truck Percentage	5%	Truck Percentage	5%	Truck Percentage	5%
PCE for Trucks	1.5	PCE for Trucks	1.5	PCE for Trucks	1.5
Volume (pcph)	1,576	Volume (pcph)	427	Volume (pcph)	207



## Figure



## Capacity Analysis

- Is the weaving section balanced ( $Y / N$ )? **N**  
[If optional exit lane, then "Y". Otherwise "N".]
- In the Weaving Speed Chart to the left, which two speed curves is the black "x" between?  
**35 MPH** and **40 MPH**

If below the 55 MPH curve, out of the realm of weaving.  
If left of the 30 MPH curve, LOS is F.

- Interpolated Weaving Speed ( $S_w$ , mph) **35.7**
- Weaving Intensity Factor (k) **2.86**
- Service Volume (SV, pcph)  
 $SV = (1/N) * [V + (k - 1) * \min(W_1, W_2)]$  **654**
- Level of Service (LOS) **A**

The LOS in the chart above refers to the capacity of weaving traffic only; through and ramp to ramp traffic is not included.

\* Note: **Do not adjust by a Peak Hour Factor (PHF)**. The methodology incorporates the PHF in the Service Volume tables.

Sources: *Completion of Procedures for Analysis and Design of Traffic Weaving Sections*, Jack E. Leisch & Associates, September 1983 and *Highway Design Manual*, California Department of Transportation, July 24, 2009

# Leisch Method for Weaving Analysis

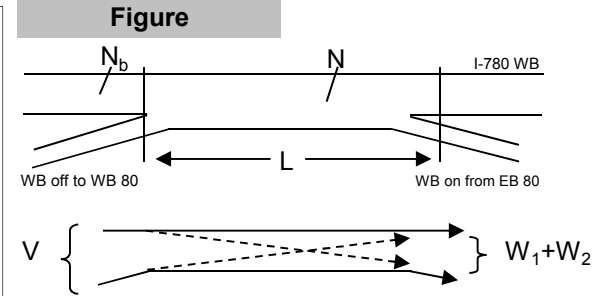
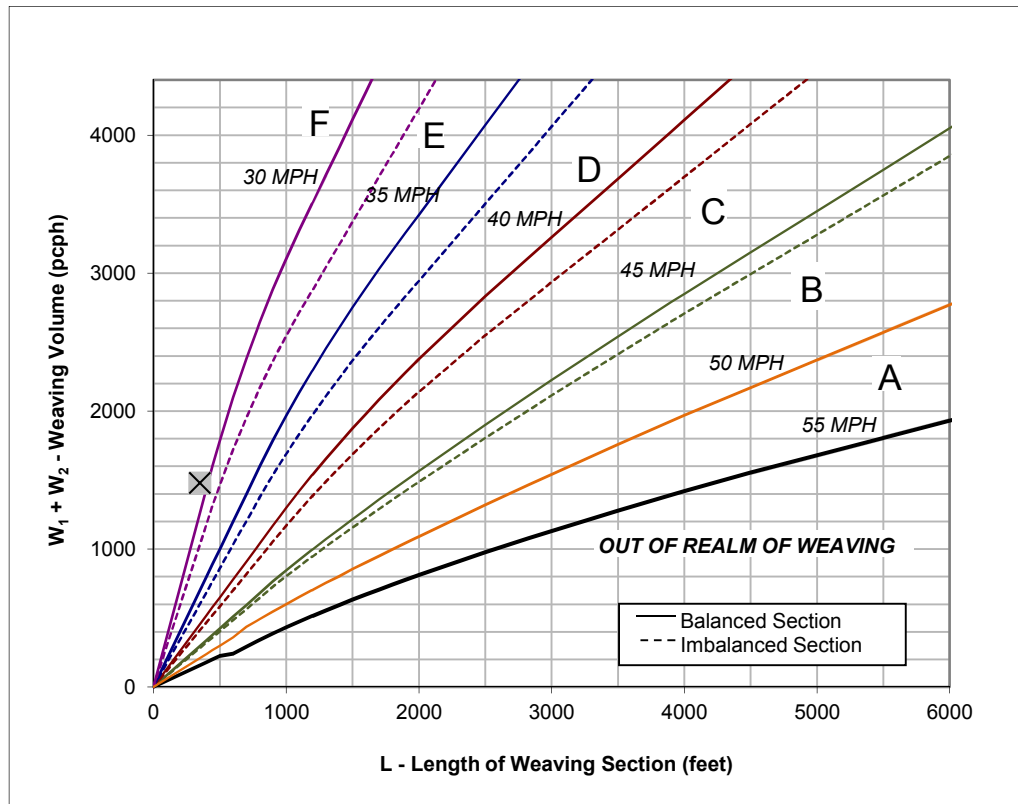
## Data Input

Number of Entering Mainline Lanes	$N_b$	2
Number of Lanes in Weaving Section	N	3
Length of Weaving Section (feet)	L	350

## Project Information

Project	Vallejo Marine Terminal
Scenario	AM + ORCEM
Freeway	I-780 WB
On-ramp	WB off to WB 80
Off-ramp	WB on from EB 80

Total Weaving Section (V)		On-ramp to Mainline ( $W_1$ )		Mainline to Off-ramp ( $W_2$ )	
Volume (vph)*	1,810	Volume (vph)*	1,278	Volume (vph)*	166
Truck Percentage	5%	Truck Percentage	5%	Truck Percentage	5%
PCE for Trucks	1.5	PCE for Trucks	1.5	PCE for Trucks	1.5
Volume (pcph)	1,855	Volume (pcph)	1,310	Volume (pcph)	170



## Capacity Analysis

1. Is the weaving section balanced ( $Y / N$ )? [If optional exit lane, then "Y". Otherwise "N".]	N
2. In the Weaving Speed Chart to the left, which two speed curves is the black "x" between? <b>0 MPH</b> and <b>30 MPH</b>	-
If below the 55 MPH curve, out of the realm of weaving. If left of the 30 MPH curve, LOS is F.	
3. Interpolated Weaving Speed ( $S_w$ , mph)	-
4. Weaving Intensity Factor ( $k$ )	-
5. Service Volume (SV, pcph) $SV = (1/N) * [V + (k - 1) * \min(W_1, W_2)]$	-
6. Level of Service (LOS)	F

The LOS in the chart above refers to the capacity of weaving traffic only; through and ramp to ramp traffic is not included.

\* Note: **Do not adjust by a Peak Hour Factor (PHF)**. The methodology incorporates the PHF in the Service Volume tables.

Sources: *Completion of Procedures for Analysis and Design of Traffic Weaving Sections*, Jack E. Leisch & Associates, September 1983 and *Highway Design Manual*, California Department of Transportation, July 24, 2009

# Leisch Method for Weaving Analysis

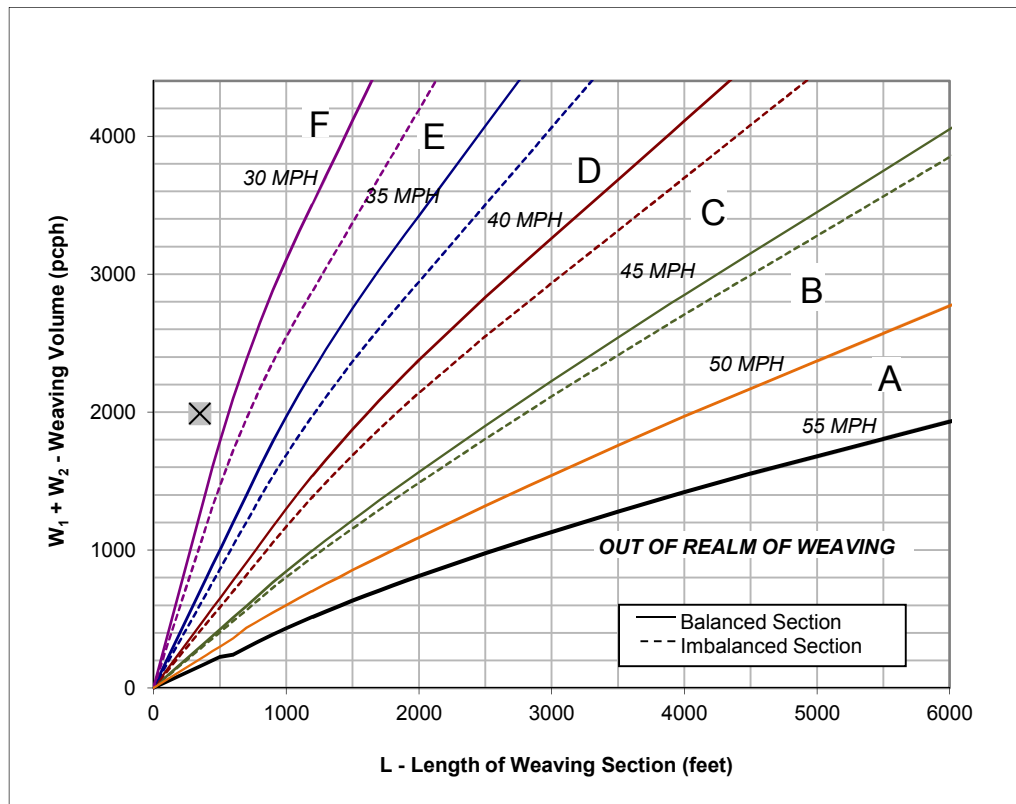
## Data Input

Number of Entering Mainline Lanes	$N_b$	2
Number of Lanes in Weaving Section	N	3
Length of Weaving Section (feet)	L	350

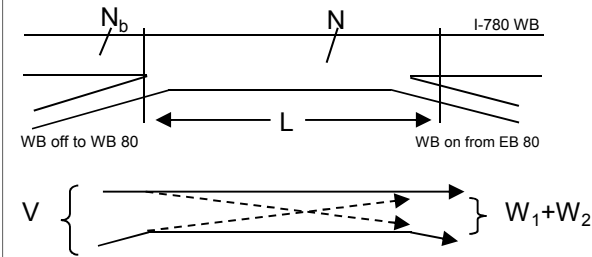
## Project Information

Project	Vallejo Marine Terminal
Scenario	PM + ORCEM
Freeway	I-780 WB
On-ramp	WB off to WB 80
Off-ramp	WB on from EB 80

Total Weaving Section (V)		On-ramp to Mainline ( $W_1$ )		Mainline to Off-ramp ( $W_2$ )	
Volume (vph)*	2,719	Volume (vph)*	1,549	Volume (vph)*	393
Truck Percentage	5%	Truck Percentage	5%	Truck Percentage	5%
PCE for Trucks	1.5	PCE for Trucks	1.5	PCE for Trucks	1.5
Volume (pcph)	2,787	Volume (pcph)	1,588	Volume (pcph)	403



## Figure



## Capacity Analysis

1. Is the weaving section balanced ( $Y / N$ )? [If optional exit lane, then "Y". Otherwise "N".]	N
2. In the Weaving Speed Chart to the left, which two speed curves is the black "x" between?	0 MPH and 30 MPH
If below the 55 MPH curve, out of the realm of weaving. If left of the 30 MPH curve, LOS is F.	
3. Interpolated Weaving Speed ( $S_w$ , mph)	-
4. Weaving Intensity Factor ( $k$ )	-
5. Service Volume (SV, pcph) $SV = (1/N) * [V + (k - 1) * \min(W_1, W_2)]$	-
6. Level of Service (LOS)	F

The LOS in the chart above refers to the capacity of weaving traffic only; through and ramp to ramp traffic is not included.

\* Note: **Do not adjust by a Peak Hour Factor (PHF)**. The methodology incorporates the PHF in the Service Volume tables.

Sources: *Completion of Procedures for Analysis and Design of Traffic Weaving Sections*, Jack E. Leisch & Associates, September 1983 and *Highway Design Manual*, California Department of Transportation, July 24, 2009

**APPENDIX L.5.5 — EXISTING PLUS COMBINED PROJECTS**



RAMPS AND RAMP JUNCTIONS WORKSHEET									
General Information					Site Information				
Analyst	RB	Freeway/Dir of Travel	I 80 EB						
Agency or Company	Fehr & Peers	Junction	I-780 Collector						
Date Performed	10/31/2014	Jurisdiction	Sonoma County						
Analysis Time Period	PM Peak	Analysis Year	Existing + Both						
Project Description Vallejo Marine Terminal									
Inputs									
Upstream Adj Ramp <input type="checkbox"/> Yes <input type="checkbox"/> On <input checked="" type="checkbox"/> No <input type="checkbox"/> Off	Number of Lanes, N Acceleration Lane Length, L <sub>A</sub> Deceleration Lane Length L <sub>D</sub>	3 150			Downstream Adj Ramp <input checked="" type="checkbox"/> Yes <input type="checkbox"/> On <input type="checkbox"/> No <input checked="" type="checkbox"/> Off				
L <sub>up</sub> = ft	Freeway Volume, V <sub>F</sub>	2283			L <sub>down</sub> = 2100 ft				
V <sub>u</sub> = veh/h	Ramp Volume, V <sub>R</sub>	1746			V <sub>D</sub> = 173 veh/h				
	Freeway Free-Flow Speed, S <sub>FF</sub>	65.0							
	Ramp Free-Flow Speed, S <sub>FR</sub>	65.0							
Conversion to pc/h Under Base Conditions									
(pc/h)	V (Veh/hr)	PHF	Terrain	%Truck	%Rv	f <sub>HV</sub>	f <sub>p</sub>	v = V/PHF x f <sub>HV</sub> x f <sub>p</sub>	
Freeway	2283	0.92	Level	5	0	0.976	1.00	2544	
Ramp	1746	0.92	Level	5	0	0.976	1.00	1945	
UpStream									
DownStream	173	0.90	Level	5	0	0.976	1.00	197	
Merge Areas					Diverge Areas				
Estimation of v <sub>12</sub>					Estimation of v <sub>12</sub>				
$V_{12} = V_F (P_{FM})$ L <sub>EQ</sub> = 1567.85 (Equation 13-6 or 13-7) P <sub>FM</sub> = 0.582 using Equation (Exhibit 13-6) V <sub>12</sub> = 1480 pc/h V <sub>3</sub> or V <sub>av34</sub> = 1064 pc/h (Equation 13-14 or 13-17) Is V <sub>3</sub> or V <sub>av34</sub> > 2,700 pc/h? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Is V <sub>3</sub> or V <sub>av34</sub> > 1.5 * V <sub>12</sub> /2 <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No If Yes, V <sub>12a</sub> = pc/h (Equation 13-16, 13-18, or 13-19)					$V_{12} = V_R + (V_F - V_R)P_{FD}$ L <sub>EQ</sub> = (Equation 13-12 or 13-13) P <sub>FD</sub> = using Equation (Exhibit 13-7) V <sub>12</sub> = pc/h V <sub>3</sub> or V <sub>av34</sub> = pc/h (Equation 13-14 or 13-17) Is V <sub>3</sub> or V <sub>av34</sub> > 2,700 pc/h? <input type="checkbox"/> Yes <input type="checkbox"/> No Is V <sub>3</sub> or V <sub>av34</sub> > 1.5 * V <sub>12</sub> /2 <input type="checkbox"/> Yes <input type="checkbox"/> No If Yes, V <sub>12a</sub> = pc/h (Equation 13-16, 13-18, or 13-19)				
Capacity Checks					Capacity Checks				
	Actual	Capacity		LOS F?		Actual	Capacity		LOS F?
V <sub>FO</sub>	4489	Exhibit 13-8		No	V <sub>F</sub>		Exhibit 13-8		
					V <sub>FO</sub> = V <sub>F</sub> - V <sub>R</sub>		Exhibit 13-8		
					V <sub>R</sub>		Exhibit 13-10		
Flow Entering Merge Influence Area					Flow Entering Diverge Influence Area				
	Actual	Max Desirable		Violation?		Actual	Max Desirable		Violation?
V <sub>R12</sub>	3425	Exhibit 13-8		No	V <sub>12</sub>		Exhibit 13-8		
Level of Service Determination (if not F)					Level of Service Determination (if not F)				
$D_R = 5.475 + 0.00734 v_R + 0.0078 V_{12} - 0.00627 L_A$ D <sub>R</sub> = 30.4 (pc/mi/ln) LOS = D (Exhibit 13-2)					$D_R = 4.252 + 0.0086 V_{12} - 0.009 L_D$ D <sub>R</sub> = (pc/mi/ln) LOS = (Exhibit 13-2)				
Speed Determination					Speed Determination				
M <sub>S</sub> = 0.421 (Exhibit 13-11)					D <sub>S</sub> = (Exhibit 13-12)				
S <sub>R</sub> = 55.3 mph (Exhibit 13-11)					S <sub>R</sub> = mph (Exhibit 13-12)				
S <sub>0</sub> = 63.0 mph (Exhibit 13-11)					S <sub>0</sub> = mph (Exhibit 13-12)				
S = 57.0 mph (Exhibit 13-13)					S = mph (Exhibit 13-13)				



RAMPS AND RAMP JUNCTIONS WORKSHEET									
General Information					Site Information				
Analyst	RB	Freeway/Dir of Travel	I 80 EB						
Agency or Company	Fehr & Peers	Junction	I-780 Collector						
Date Performed	10/31/2014	Jurisdiction	Sonoma County						
Analysis Time Period	AM Peak	Analysis Year	Existing + Both						
Project Description Vallejo Marine Terminal									
Inputs									
Upstream Adj Ramp		Number of Lanes, N		3		Downstream Adj Ramp			
<input type="checkbox"/> Yes <input type="checkbox"/> On		Acceleration Lane Length, L <sub>A</sub>		150		<input checked="" type="checkbox"/> Yes <input type="checkbox"/> On			
<input checked="" type="checkbox"/> No <input type="checkbox"/> Off		Deceleration Lane Length L <sub>D</sub>				<input type="checkbox"/> No <input checked="" type="checkbox"/> Off			
L <sub>up</sub> = ft		Freeway Volume, V <sub>F</sub>		2598		L <sub>down</sub> = 2100 ft			
		Ramp Volume, V <sub>R</sub>		1711		V <sub>D</sub> = 116 veh/h			
V <sub>u</sub> = veh/h		Freeway Free-Flow Speed, S <sub>FF</sub>		65.0					
		Ramp Free-Flow Speed, S <sub>FR</sub>		65.0					
Conversion to pc/h Under Base Conditions									
(pc/h)	V (Veh/hr)	PHF	Terrain	%Truck	%Rv	f <sub>HV</sub>	f <sub>p</sub>	v = V/PHF x f <sub>HV</sub> x f <sub>p</sub>	
Freeway	2598	0.92	Level	5	0	0.976	1.00	2895	
Ramp	1711	0.92	Level	5	0	0.976	1.00	1906	
UpStream									
DownStream	116	0.90	Level	5	0	0.976	1.00	132	
Merge Areas					Diverge Areas				
Estimation of v <sub>12</sub>					Estimation of v <sub>12</sub>				
$V_{12} = V_F (P_{FM})$ L <sub>EQ</sub> = 1050.54 (Equation 13-6 or 13-7) P <sub>FM</sub> = 0.582 using Equation (Exhibit 13-6) V <sub>12</sub> = 1684 pc/h V <sub>3</sub> or V <sub>av34</sub> = 1211 pc/h (Equation 13-14 or 13-17) Is V <sub>3</sub> or V <sub>av34</sub> > 2,700 pc/h? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Is V <sub>3</sub> or V <sub>av34</sub> > 1.5 * V <sub>12</sub> /2 <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No If Yes, V <sub>12a</sub> = pc/h (Equation 13-16, 13-18, or 13-19)					$V_{12} = V_R + (V_F - V_R)P_{FD}$ L <sub>EQ</sub> = (Equation 13-12 or 13-13) P <sub>FD</sub> = using Equation (Exhibit 13-7) V <sub>12</sub> = pc/h V <sub>3</sub> or V <sub>av34</sub> = pc/h (Equation 13-14 or 13-17) Is V <sub>3</sub> or V <sub>av34</sub> > 2,700 pc/h? <input type="checkbox"/> Yes <input type="checkbox"/> No Is V <sub>3</sub> or V <sub>av34</sub> > 1.5 * V <sub>12</sub> /2 <input type="checkbox"/> Yes <input type="checkbox"/> No If Yes, V <sub>12a</sub> = pc/h (Equation 13-16, 13-18, or 13-19)				
Capacity Checks					Capacity Checks				
	Actual	Capacity		LOS F?		Actual	Capacity		LOS F?
V <sub>FO</sub>	4801	Exhibit 13-8		No	V <sub>F</sub>		Exhibit 13-8		
					V <sub>FO</sub> = V <sub>F</sub> - V <sub>R</sub>		Exhibit 13-8		
					V <sub>R</sub>		Exhibit 13-10		
Flow Entering Merge Influence Area					Flow Entering Diverge Influence Area				
	Actual	Max Desirable		Violation?		Actual	Max Desirable		Violation?
V <sub>R12</sub>	3590	Exhibit 13-8		4600:All	No	V <sub>12</sub>	Exhibit 13-8		
Level of Service Determination (if not F)					Level of Service Determination (if not F)				
$D_R = 5.475 + 0.00734 v_R + 0.0078 V_{12} - 0.00627 L_A$ D <sub>R</sub> = 31.7 (pc/mi/ln) LOS = D (Exhibit 13-2)					$D_R = 4.252 + 0.0086 V_{12} - 0.009 L_D$ D <sub>R</sub> = (pc/mi/ln) LOS = (Exhibit 13-2)				
Speed Determination					Speed Determination				
M <sub>S</sub> = 0.443 (Exhibit 13-11)					D <sub>S</sub> = (Exhibit 13-12)				
S <sub>R</sub> = 54.8 mph (Exhibit 13-11)					S <sub>R</sub> = mph (Exhibit 13-12)				
S <sub>0</sub> = 62.4 mph (Exhibit 13-11)					S <sub>0</sub> = mph (Exhibit 13-12)				
S = 56.6 mph (Exhibit 13-13)					S = mph (Exhibit 13-13)				

RAMPS AND RAMP JUNCTIONS WORKSHEET											
<b>General Information</b>					<b>Site Information</b>						
Analyst	RB		Freeway/Dir of Travel	I 80 WB		Agency or Company	Fehr & Peers		Junction	I-780 Collector	
Date Performed	10/31/2014		Jurisdiction	Sonoma County		Analysis Time Period	PM Peak		Analysis Year	Existing + Both	
Project Description Vallejo Marine Terminal											
<b>Inputs</b>											
Upstream Adj Ramp		Number of Lanes, N			3			Downstream Adj Ramp			
<input checked="" type="checkbox"/> Yes <input checked="" type="checkbox"/> On		Acceleration Lane Length, L <sub>A</sub>						<input type="checkbox"/> Yes <input type="checkbox"/> On			
<input type="checkbox"/> No <input type="checkbox"/> Off		Deceleration Lane Length L <sub>D</sub>			125			<input checked="" type="checkbox"/> No <input type="checkbox"/> Off			
L <sub>up</sub> = 1500 ft		Freeway Volume, V <sub>F</sub>			4794			L <sub>down</sub> = ft			
V <sub>u</sub> = 184 veh/h		Ramp Volume, V <sub>R</sub>			1682			V <sub>D</sub> = veh/h			
			Freeway Free-Flow Speed, S <sub>FF</sub>			65.0					
			Ramp Free-Flow Speed, S <sub>FR</sub>			65.0					
<b>Conversion to pc/h Under Base Conditions</b>											
(pc/h)	V (Veh/hr)	PHF	Terrain	%Truck	%Rv	f <sub>HV</sub>	f <sub>p</sub>	v = V/PHF x f <sub>HV</sub> x f <sub>p</sub>			
Freeway	4794	0.92	Level	5	0	0.976	1.00	5341			
Ramp	1682	0.92	Level	5	0	0.976	1.00	1874			
UpStream	184	0.90	Level	5	0	0.976	1.00	210			
DownStream											
<b>Merge Areas</b>					<b>Diverge Areas</b>						
<b>Estimation of v<sub>12</sub></b>					<b>Estimation of v<sub>12</sub></b>						
$V_{12} = V_F (P_{FM})$ (Equation 13-6 or 13-7) L <sub>EQ</sub> = P <sub>FM</sub> = using Equation (Exhibit 13-6) V <sub>12</sub> = pc/h V <sub>3</sub> or V <sub>av34</sub> pc/h (Equation 13-14 or 13-17) Is V <sub>3</sub> or V <sub>av34</sub> > 2,700 pc/h? <input type="checkbox"/> Yes <input type="checkbox"/> No Is V <sub>3</sub> or V <sub>av34</sub> > 1.5 * V <sub>12</sub> /2 <input type="checkbox"/> Yes <input type="checkbox"/> No If Yes, V <sub>12a</sub> = pc/h (Equation 13-16, 13-18, or 13-19)					$V_{12} = V_R + (V_F - V_R)P_{FD}$ L <sub>EQ</sub> = 4084.09 (Equation 13-12 or 13-13) P <sub>FD</sub> = 0.593 using Equation (Exhibit 13-7) V <sub>12</sub> = 3931 pc/h V <sub>3</sub> or V <sub>av34</sub> 1410 pc/h (Equation 13-14 or 13-17) Is V <sub>3</sub> or V <sub>av34</sub> > 2,700 pc/h? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Is V <sub>3</sub> or V <sub>av34</sub> > 1.5 * V <sub>12</sub> /2 <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No If Yes, V <sub>12a</sub> = pc/h (Equation 13-16, 13-18, or 13-19)						
<b>Capacity Checks</b>					<b>Capacity Checks</b>						
	Actual	Capacity		LOS F?		Actual	Capacity		LOS F?		
V <sub>FO</sub>		Exhibit 13-8			V <sub>F</sub>	5341	Exhibit 13-8	7050	No		
					V <sub>FO</sub> = V <sub>F</sub> - V <sub>R</sub>	3467	Exhibit 13-8	7050	No		
					V <sub>R</sub>	1874	Exhibit 13-10	2200	No		
<b>Flow Entering Merge Influence Area</b>					<b>Flow Entering Diverge Influence Area</b>						
	Actual	Max Desirable		Violation?		Actual	Max Desirable		Violation?		
V <sub>R12</sub>		Exhibit 13-8			V <sub>12</sub>	3931	Exhibit 13-8	4400:All	No		
<b>Level of Service Determination (if not F)</b>					<b>Level of Service Determination (if not F)</b>						
$D_R = 5.475 + 0.00734 v_R + 0.0078 V_{12} - 0.00627 L_A$ D <sub>R</sub> = (pc/mi/ln) LOS = (Exhibit 13-2)					$D_R = 4.252 + 0.0086 V_{12} - 0.009 L_D$ D <sub>R</sub> = 36.9 (pc/mi/ln) LOS = E (Exhibit 13-2)						
<b>Speed Determination</b>					<b>Speed Determination</b>						
M <sub>S</sub> = (Exhibit 13-11) S <sub>R</sub> = mph (Exhibit 13-11) S <sub>0</sub> = mph (Exhibit 13-11) S = mph (Exhibit 13-13)					D <sub>s</sub> = 0.207 (Exhibit 13-12) S <sub>R</sub> = 60.2 mph (Exhibit 13-12) S <sub>0</sub> = 69.7 mph (Exhibit 13-12) S = 62.5 mph (Exhibit 13-13)						

RAMPS AND RAMP JUNCTIONS WORKSHEET											
<b>General Information</b>					<b>Site Information</b>						
Analyst	RB		Freeway/Dir of Travel	I 80 WB		Agency or Company	Fehr & Peers		Junction	I-780 Collector	
Date Performed	10/31/2014		Jurisdiction	Sonoma County		Analysis Time Period	AM Peak		Analysis Year	Existing + Both	
Project Description Vallejo Marine Terminal											
<b>Inputs</b>											
Upstream Adj Ramp		Number of Lanes, N			3			Downstream Adj Ramp			
<input checked="" type="checkbox"/> Yes <input checked="" type="checkbox"/> On		Acceleration Lane Length, L <sub>A</sub>						<input type="checkbox"/> Yes <input type="checkbox"/> On			
<input type="checkbox"/> No <input type="checkbox"/> Off		Deceleration Lane Length L <sub>D</sub>			125			<input checked="" type="checkbox"/> No <input type="checkbox"/> Off			
L <sub>up</sub> = 1500 ft		Freeway Volume, V <sub>F</sub>			4139			L <sub>down</sub> = ft			
V <sub>u</sub> = 145 veh/h		Ramp Volume, V <sub>R</sub>			1452			V <sub>D</sub> = veh/h			
			Freeway Free-Flow Speed, S <sub>FF</sub>			65.0					
			Ramp Free-Flow Speed, S <sub>FR</sub>			65.0					
<b>Conversion to pc/h Under Base Conditions</b>											
(pc/h)	V (Veh/hr)	PHF	Terrain	%Truck	%Rv	f <sub>HV</sub>	f <sub>p</sub>	v = V/PHF x f <sub>HV</sub> x f <sub>p</sub>			
Freeway	4139	0.92	Level	5	0	0.976	1.00	4611			
Ramp	1452	0.92	Level	5	0	0.976	1.00	1618			
UpStream	145	0.90	Level	5	0	0.976	1.00	165			
DownStream											
<b>Merge Areas</b>					<b>Diverge Areas</b>						
<b>Estimation of v<sub>12</sub></b>					<b>Estimation of v<sub>12</sub></b>						
$V_{12} = V_F (P_{FM})$ L <sub>EQ</sub> = (Equation 13-6 or 13-7) P <sub>FM</sub> = using Equation (Exhibit 13-6) V <sub>12</sub> = pc/h V <sub>3</sub> or V <sub>av34</sub> pc/h (Equation 13-14 or 13-17) Is V <sub>3</sub> or V <sub>av34</sub> > 2,700 pc/h? <input type="checkbox"/> Yes <input type="checkbox"/> No Is V <sub>3</sub> or V <sub>av34</sub> > 1.5 * V <sub>12</sub> /2 <input type="checkbox"/> Yes <input type="checkbox"/> No If Yes, V <sub>12a</sub> = pc/h (Equation 13-16, 13-18, or 13-19)					$V_{12} = V_R + (V_F - V_R)P_{FD}$ L <sub>EQ</sub> = 3050.75 (Equation 13-12 or 13-13) P <sub>FD</sub> = 0.604 using Equation (Exhibit 13-7) V <sub>12</sub> = 3425 pc/h V <sub>3</sub> or V <sub>av34</sub> 1186 pc/h (Equation 13-14 or 13-17) Is V <sub>3</sub> or V <sub>av34</sub> > 2,700 pc/h? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Is V <sub>3</sub> or V <sub>av34</sub> > 1.5 * V <sub>12</sub> /2 <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No If Yes, V <sub>12a</sub> = pc/h (Equation 13-16, 13-18, or 13-19)						
<b>Capacity Checks</b>					<b>Capacity Checks</b>						
	Actual	Capacity		LOS F?		Actual	Capacity		LOS F?		
V <sub>FO</sub>		Exhibit 13-8			V <sub>F</sub>	4611	Exhibit 13-8	7050	No		
					V <sub>FO</sub> = V <sub>F</sub> - V <sub>R</sub>	2993	Exhibit 13-8	7050	No		
					V <sub>R</sub>	1618	Exhibit 13-10	2200	No		
<b>Flow Entering Merge Influence Area</b>					<b>Flow Entering Diverge Influence Area</b>						
	Actual	Max Desirable		Violation?		Actual	Max Desirable		Violation?		
V <sub>R12</sub>		Exhibit 13-8			V <sub>12</sub>	3425	Exhibit 13-8	4400:All	No		
<b>Level of Service Determination (if not F)</b>					<b>Level of Service Determination (if not F)</b>						
$D_R = 5.475 + 0.00734 v_R + 0.0078 V_{12} - 0.00627 L_A$ D <sub>R</sub> = (pc/mi/ln) LOS = (Exhibit 13-2)					$D_R = 4.252 + 0.0086 V_{12} - 0.009 L_D$ D <sub>R</sub> = 32.6 (pc/mi/ln) LOS = D (Exhibit 13-2)						
<b>Speed Determination</b>					<b>Speed Determination</b>						
M <sub>S</sub> = (Exhibit 13-11) S <sub>R</sub> = mph (Exhibit 13-11) S <sub>0</sub> = mph (Exhibit 13-11) S = mph (Exhibit 13-13)					D <sub>S</sub> = 0.184 (Exhibit 13-12) S <sub>R</sub> = 60.8 mph (Exhibit 13-12) S <sub>0</sub> = 70.6 mph (Exhibit 13-12) S = 63.0 mph (Exhibit 13-13)						

<b>BASIC FREEWAY SEGMENTS WORKSHEET</b>			
<b>General Information</b>		<b>Site Information</b>	
Analyst	<i>RB</i>	Highway/Direction of Travel	<i>80 WB</i>
Agency or Company	<i>Fehr &amp; Peers</i>	From/To	<i>I-780 Collectors - Georgia St</i>
Date Performed	<i>10/23/2014</i>	Jurisdiction	<i>Sonoma County</i>
Analysis Time Period	<i>PM Peak Hour</i>	Analysis Year	<i>Existing + Both</i>
Project Description <i>Vallejo Marine Terminal</i>			
<input checked="" type="checkbox"/> Oper.(LOS) <input type="checkbox"/> Des.(N) <input type="checkbox"/> Planning Data			
<b>Flow Inputs</b>			
Volume, V	<i>4811</i>	veh/h	Peak-Hour Factor, PHF
AADT		veh/day	%Trucks and Buses, P <sub>T</sub>
Peak-Hr Prop. of AADT, K			%RVs, P <sub>R</sub>
Peak-Hr Direction Prop, D			General Terrain:
DDHV = AADT x K x D		veh/h	Grade % Length
			Up/Down %
<b>Calculate Flow Adjustments</b>			
f <sub>p</sub>	<i>1.00</i>	E <sub>R</sub>	<i>1.2</i>
E <sub>T</sub>	<i>1.5</i>	f <sub>HV</sub> = 1/[1+P <sub>T</sub> (E <sub>T</sub> - 1) + P <sub>R</sub> (E <sub>R</sub> - 1)]	<i>0.976</i>
<b>Speed Inputs</b>		<b>Calc Speed Adj and FFS</b>	
Lane Width	ft	f <sub>LW</sub>	mph
Rt-Side Lat. Clearance	ft	f <sub>LC</sub>	mph
Number of Lanes, N	<i>3</i>	TRD Adjustment	mph
Total Ramp Density, TRD	ramps/mi	FFS	<i>65.0</i>
FFS (measured)	<i>65.0</i>	mph	mph
Base free-flow Speed, BFFS	mph		
<b>LOS and Performance Measures</b>		<b>Design (N)</b>	
<u>Operational (LOS)</u>		<u>Design (N)</u>	
v <sub>p</sub> = (V or DDHV) / (PHF x N x f <sub>HV</sub> )	<i>1787</i>	Design LOS	pc/h/ln
x f <sub>p</sub> )		v <sub>p</sub> = (V or DDHV) / (PHF x N x f <sub>HV</sub> )	pc/h/ln
S	<i>62.9</i>	x f <sub>p</sub> )	
D = v <sub>p</sub> / S	<i>28.4</i>	S	mph
LOS	<i>D</i>	D = v <sub>p</sub> / S	pc/mi/ln
		Required Number of Lanes, N	
<b>Glossary</b>		<b>Factor Location</b>	
N - Number of lanes	S - Speed	E <sub>R</sub> - Exhibits 11-10, 11-12	f <sub>LW</sub> - Exhibit 11-8
V - Hourly volume	D - Density	E <sub>T</sub> - Exhibits 11-10, 11-11, 11-13	f <sub>LC</sub> - Exhibit 11-9
v <sub>p</sub> - Flow rate	FFS - Free-flow speed	f <sub>p</sub> - Page 11-18	TRD - Page 11-11
LOS - Level of service	BFFS - Base free-flow speed	LOS, S, FFS, v <sub>p</sub> - Exhibits 11-2, 11-3	
DDHV - Directional design hour volume			

<b>BASIC FREEWAY SEGMENTS WORKSHEET</b>			
<b>General Information</b>		<b>Site Information</b>	
Analyst	RB	Highway/Direction of Travel	80 WB
Agency or Company	Fehr & Peers	From/To	I-780 Collectors - Georgia St
Date Performed	10/23/2014	Jurisdiction	Sonoma County
Analysis Time Period	AM Peak Hour	Analysis Year	Existing + Both
Project Description <i>Vallejo Marine Terminal</i>			
<input checked="" type="checkbox"/> Oper.(LOS)		<input type="checkbox"/> Des.(N)	<input type="checkbox"/> Planning Data
<b>Flow Inputs</b>			
Volume, V	4164	veh/h	Peak-Hour Factor, PHF
AADT		veh/day	0.92
Peak-Hr Prop. of AADT, K			%Trucks and Buses, P <sub>T</sub>
Peak-Hr Direction Prop, D			5
DDHV = AADT x K x D		veh/h	%RVs, P <sub>R</sub>
			0
			General Terrain: Level
			Grade % Length mi
			Up/Down %
<b>Calculate Flow Adjustments</b>			
f <sub>p</sub>	1.00	E <sub>R</sub>	1.2
E <sub>T</sub>	1.5	f <sub>HV</sub> = 1/[1+P <sub>T</sub> (E <sub>T</sub> - 1) + P <sub>R</sub> (E <sub>R</sub> - 1)]	0.976
<b>Speed Inputs</b>		<b>Calc Speed Adj and FFS</b>	
Lane Width	ft	f <sub>LW</sub> mph	
Rt-Side Lat. Clearance	ft	f <sub>LC</sub> mph	
Number of Lanes, N	3	TRD Adjustment mph	
Total Ramp Density, TRD	ramps/mi	FFS 65.0 mph	
FFS (measured)	65.0	mph	
Base free-flow Speed, BFFS	mph		
<b>LOS and Performance Measures</b>		<b>Design (N)</b>	
<u>Operational (LOS)</u>		<u>Design (N)</u>	
v <sub>p</sub> = (V or DDHV) / (PHF x N x f <sub>HV</sub> )	1546	Design LOS	
x f <sub>p</sub> )		v <sub>p</sub> = (V or DDHV) / (PHF x N x f <sub>HV</sub> )	
S	64.7	x f <sub>p</sub> )	
D = v <sub>p</sub> / S	23.9	S	
LOS	C	D = v <sub>p</sub> / S	
		pc/mi/ln	
		Required Number of Lanes, N	
<b>Glossary</b>		<b>Factor Location</b>	
N - Number of lanes	S - Speed	E <sub>R</sub> - Exhibits 11-10, 11-12	f <sub>LW</sub> - Exhibit 11-8
V - Hourly volume	D - Density	E <sub>T</sub> - Exhibits 11-10, 11-11, 11-13	f <sub>LC</sub> - Exhibit 11-9
v <sub>p</sub> - Flow rate	FFS - Free-flow speed	f <sub>p</sub> - Page 11-18	TRD - Page 11-11
LOS - Level of service	BFFS - Base free-flow speed	LOS, S, FFS, v <sub>p</sub> - Exhibits 11-2, 11-3	
DDHV - Directional design hour volume			

<b>BASIC FREEWAY SEGMENTS WORKSHEET</b>			
<b>General Information</b>		<b>Site Information</b>	
Analyst	RB	Highway/Direction of Travel	80 EB
Agency or Company	Fehr & Peers	From/To	I-780 Collectors - Georgia St
Date Performed	10/23/2014	Jurisdiction	Sonoma County
Analysis Time Period	PM Peak Hour	Analysis Year	Existing + Both
Project Description <i>Vallejo Marine Terminal</i>			
<input checked="" type="checkbox"/> Oper.(LOS) <input type="checkbox"/> Des.(N) <input type="checkbox"/> Planning Data			
<b>Flow Inputs</b>			
Volume, V	4029	veh/h	Peak-Hour Factor, PHF
AADT		veh/day	0.92
Peak-Hr Prop. of AADT, K			%Trucks and Buses, P <sub>T</sub>
Peak-Hr Direction Prop, D			5
DDHV = AADT x K x D		veh/h	%RVs, P <sub>R</sub>
			0
			General Terrain: Level
			Grade % Length mi
			Up/Down %
<b>Calculate Flow Adjustments</b>			
f <sub>p</sub>	1.00	E <sub>R</sub>	1.2
E <sub>T</sub>	1.5	f <sub>HV</sub> = 1/[1+P <sub>T</sub> (E <sub>T</sub> - 1) + P <sub>R</sub> (E <sub>R</sub> - 1)]	0.976
<b>Speed Inputs</b>		<b>Calc Speed Adj and FFS</b>	
Lane Width	ft	f <sub>LW</sub>	mph
Rt-Side Lat. Clearance	ft	f <sub>LC</sub>	mph
Number of Lanes, N	3	TRD Adjustment	mph
Total Ramp Density, TRD	ramps/mi	FFS	65.0
FFS (measured)	65.0	mph	mph
Base free-flow Speed, BFFS	mph		
<b>LOS and Performance Measures</b>		<b>Design (N)</b>	
<u>Operational (LOS)</u>		<u>Design (N)</u>	
v <sub>p</sub> = (V or DDHV) / (PHF x N x f <sub>HV</sub> )	1496	Design LOS	pc/h/ln
x f <sub>p</sub> )		v <sub>p</sub> = (V or DDHV) / (PHF x N x f <sub>HV</sub> )	pc/h/ln
S	64.9	x f <sub>p</sub> )	
D = v <sub>p</sub> / S	23.1	S	mph
LOS	C	D = v <sub>p</sub> / S	pc/mi/ln
		Required Number of Lanes, N	
<b>Glossary</b>		<b>Factor Location</b>	
N - Number of lanes	S - Speed	E <sub>R</sub> - Exhibits 11-10, 11-12	f <sub>LW</sub> - Exhibit 11-8
V - Hourly volume	D - Density	E <sub>T</sub> - Exhibits 11-10, 11-11, 11-13	f <sub>LC</sub> - Exhibit 11-9
v <sub>p</sub> - Flow rate	FFS - Free-flow speed	f <sub>p</sub> - Page 11-18	TRD - Page 11-11
LOS - Level of service	BFFS - Base free-flow speed	LOS, S, FFS, v <sub>p</sub> - Exhibits 11-2, 11-3	
DDHV - Directional design hour volume			

BASIC FREEWAY SEGMENTS WORKSHEET			
<b>General Information</b>		<b>Site Information</b>	
Analyst	RB	Highway/Direction of Travel	80 EB
Agency or Company	Fehr & Peers	From/To	I-780 Collectors - Georgia St
Date Performed	10/23/2014	Jurisdiction	Sonoma County
Analysis Time Period	AM Peak Hour	Analysis Year	Existing + Both
Project Description <i>Vallejo Marine Terminal</i>			
<input checked="" type="checkbox"/> Oper.(LOS)		<input type="checkbox"/> Des.(N)	<input type="checkbox"/> Planning Data
<b>Flow Inputs</b>			
Volume, V	4309	veh/h	Peak-Hour Factor, PHF
AADT		veh/day	%Trucks and Buses, P <sub>T</sub>
Peak-Hr Prop. of AADT, K			%RVs, P <sub>R</sub>
Peak-Hr Direction Prop, D			General Terrain:
DDHV = AADT x K x D		veh/h	Grade % Length
			Up/Down %
			0.92
			5
			0
			Level
			mi
<b>Calculate Flow Adjustments</b>			
f <sub>p</sub>	1.00	E <sub>R</sub>	1.2
E <sub>T</sub>	1.5	f <sub>HV</sub> = 1/[1+P <sub>T</sub> (E <sub>T</sub> - 1) + P <sub>R</sub> (E <sub>R</sub> - 1)]	0.976
<b>Speed Inputs</b>		<b>Calc Speed Adj and FFS</b>	
Lane Width		ft	
Rt-Side Lat. Clearance		ft	
Number of Lanes, N	3		
Total Ramp Density, TRD		ramps/mi	
FFS (measured)	65.0	mph	
Base free-flow Speed, BFFS		mph	
			f <sub>LW</sub>
			mph
			f <sub>LC</sub>
			mph
			TRD Adjustment
			mph
			FFS
			65.0
			mph
<b>LOS and Performance Measures</b>		<b>Design (N)</b>	
<u>Operational (LOS)</u>		<u>Design (N)</u>	
v <sub>p</sub> = (V or DDHV) / (PHF x N x f <sub>HV</sub> )		Design LOS	
x f <sub>p</sub> )	1600	pc/h/ln	v <sub>p</sub> = (V or DDHV) / (PHF x N x f <sub>HV</sub> )
S	64.4	mph	x f <sub>p</sub> )
D = v <sub>p</sub> / S	24.8	pc/mi/ln	S
LOS	C		D = v <sub>p</sub> / S
			pc/mi/ln
			Required Number of Lanes, N
<b>Glossary</b>		<b>Factor Location</b>	
N - Number of lanes	S - Speed	E <sub>R</sub> - Exhibits 11-10, 11-12	f <sub>LW</sub> - Exhibit 11-8
V - Hourly volume	D - Density	E <sub>T</sub> - Exhibits 11-10, 11-11, 11-13	f <sub>LC</sub> - Exhibit 11-9
v <sub>p</sub> - Flow rate	FFS - Free-flow speed	f <sub>p</sub> - Page 11-18	TRD - Page 11-11
LOS - Level of service	BFFS - Base free-flow speed	LOS, S, FFS, v <sub>p</sub> - Exhibits 11-2, 11-3	
DDHV - Directional design hour volume			

<b>BASIC FREEWAY SEGMENTS WORKSHEET</b>			
<b>General Information</b>		<b>Site Information</b>	
Analyst	<i>RB</i>	Highway/Direction of Travel <i>I-80 WB</i>	
Agency or Company	<i>Fehr &amp; Peers</i>	From/To	<i>South of Sonoma Blvd</i>
Date Performed	<i>10/23/2014</i>	Jurisdiction	<i>Sonoma County</i>
Analysis Time Period	<i>AM Peak Hour</i>	Analysis Year	<i>Existing + Both</i>
Project Description <i>Vallejo Marine Terminal</i>			
<input checked="" type="checkbox"/> Oper.(LOS) <input type="checkbox"/> Des.(N) <input type="checkbox"/> Planning Data			
<b>Flow Inputs</b>			
Volume, V	<i>5070</i>	veh/h	Peak-Hour Factor, PHF <i>0.92</i>
AADT		veh/day	%Trucks and Buses, P <sub>T</sub> <i>5</i>
Peak-Hr Prop. of AADT, K			%RVs, P <sub>R</sub> <i>0</i>
Peak-Hr Direction Prop, D			General Terrain: <i>Level</i>
DDHV = AADT x K x D		veh/h	Grade % Length <i>mi</i> Up/Down %
<b>Calculate Flow Adjustments</b>			
f <sub>p</sub>	<i>1.00</i>	E <sub>R</sub>	<i>1.2</i>
E <sub>T</sub>	<i>1.5</i>	f <sub>HV</sub> = 1/[1+P <sub>T</sub> (E <sub>T</sub> - 1) + P <sub>R</sub> (E <sub>R</sub> - 1)] <i>0.976</i>	
<b>Speed Inputs</b>		<b>Calc Speed Adj and FFS</b>	
Lane Width		ft	
Rt-Side Lat. Clearance		ft	
Number of Lanes, N	<i>4</i>		f <sub>LW</sub> mph
Total Ramp Density, TRD		ramps/mi	f <sub>LC</sub> mph
FFS (measured)	<i>65.0</i>	mph	TRD Adjustment mph
Base free-flow Speed, BFFS		mph	FFS <i>65.0</i> mph
<b>LOS and Performance Measures</b>		<b>Design (N)</b>	
<u>Operational (LOS)</u>		<u>Design (N)</u>	
v <sub>p</sub> = (V or DDHV) / (PHF x N x f <sub>HV</sub> x f <sub>p</sub> )	<i>1412</i>	pc/h/ln	Design LOS
S	<i>65.0</i>	mph	v <sub>p</sub> = (V or DDHV) / (PHF x N x f <sub>HV</sub> x f <sub>p</sub> )
D = v <sub>p</sub> / S	<i>21.7</i>	pc/mi/ln	S
LOS	<i>C</i>		D = v <sub>p</sub> / S
			Required Number of Lanes, N
<b>Glossary</b>		<b>Factor Location</b>	
N - Number of lanes	S - Speed	E <sub>R</sub> - Exhibits 11-10, 11-12	f <sub>LW</sub> - Exhibit 11-8
V - Hourly volume	D - Density	E <sub>T</sub> - Exhibits 11-10, 11-11, 11-13	f <sub>LC</sub> - Exhibit 11-9
v <sub>p</sub> - Flow rate	FFS - Free-flow speed	f <sub>p</sub> - Page 11-18	TRD - Page 11-11
LOS - Level of service	BFFS - Base free-flow speed	LOS, S, FFS, v <sub>p</sub> - Exhibits 11-2, 11-3	
DDHV - Directional design hour volume			



<b>BASIC FREEWAY SEGMENTS WORKSHEET</b>			
<b>General Information</b>		<b>Site Information</b>	
Analyst	<i>RB</i>	Highway/Direction of Travel	<i>I-80 EB</i>
Agency or Company	<i>Fehr &amp; Peers</i>	From/To	<i>South of Sonoma Blvd</i>
Date Performed	<i>10/23/2014</i>	Jurisdiction	<i>Sonoma County</i>
Analysis Time Period	<i>PM Peak Hour</i>	Analysis Year	<i>Existing + Both</i>
Project Description <i>Vallejo Marine Terminal</i>			
<input checked="" type="checkbox"/> Oper.(LOS)		<input type="checkbox"/> Des.(N)	
<input type="checkbox"/> Planning Data			
<b>Flow Inputs</b>			
Volume, V	<i>4282</i>	veh/h	Peak-Hour Factor, PHF
AADT		veh/day	<i>0.92</i>
Peak-Hr Prop. of AADT, K			%Trucks and Buses, P <sub>T</sub>
Peak-Hr Direction Prop, D			<i>5</i>
DDHV = AADT x K x D		veh/h	%RVs, P <sub>R</sub>
			<i>0</i>
			General Terrain:
			<i>Level</i>
			Grade % Length
			<i>mi</i>
			Up/Down %
<b>Calculate Flow Adjustments</b>			
f <sub>p</sub>	<i>1.00</i>	E <sub>R</sub>	<i>1.2</i>
E <sub>T</sub>	<i>1.5</i>	f <sub>HV</sub> = 1/[1+P <sub>T</sub> (E <sub>T</sub> - 1) + P <sub>R</sub> (E <sub>R</sub> - 1)]	<i>0.976</i>
<b>Speed Inputs</b>		<b>Calc Speed Adj and FFS</b>	
Lane Width		ft	
Rt-Side Lat. Clearance		ft	
Number of Lanes, N	<i>4</i>		f <sub>LW</sub>
Total Ramp Density, TRD		ramps/mi	mph
FFS (measured)	<i>65.0</i>	mph	f <sub>LC</sub>
Base free-flow Speed, BFFS		mph	mph
			TRD Adjustment
			mph
			FFS
			<i>65.0</i>
			mph
<b>LOS and Performance Measures</b>		<b>Design (N)</b>	
<u>Operational (LOS)</u>		<u>Design (N)</u>	
v <sub>p</sub> = (V or DDHV) / (PHF x N x f <sub>HV</sub> )		Design LOS	
<i>1193</i>	pc/h/ln	v <sub>p</sub> = (V or DDHV) / (PHF x N x f <sub>HV</sub> )	pc/h/ln
x f <sub>p</sub> )		x f <sub>p</sub> )	
S	<i>65.0</i>	mph	mph
D = v <sub>p</sub> / S	<i>18.4</i>	pc/mi/ln	pc/mi/ln
LOS	<i>C</i>		
		Required Number of Lanes, N	
<b>Glossary</b>		<b>Factor Location</b>	
N - Number of lanes	S - Speed	E <sub>R</sub> - Exhibits 11-10, 11-12	f <sub>LW</sub> - Exhibit 11-8
V - Hourly volume	D - Density	E <sub>T</sub> - Exhibits 11-10, 11-11, 11-13	f <sub>LC</sub> - Exhibit 11-9
v <sub>p</sub> - Flow rate	FFS - Free-flow speed	f <sub>p</sub> - Page 11-18	TRD - Page 11-11
LOS - Level of service	BFFS - Base free-flow speed	LOS, S, FFS, v <sub>p</sub> - Exhibits 11-2, 11-3	
DDHV - Directional design hour volume			

<b>BASIC FREEWAY SEGMENTS WORKSHEET</b>			
<b>General Information</b>		<b>Site Information</b>	
Analyst	<i>RB</i>	Highway/Direction of Travel <i>I-80 EB</i>	
Agency or Company	<i>Fehr &amp; Peers</i>	From/To	<i>South of Sonoma Blvd</i>
Date Performed	<i>10/23/2014</i>	Jurisdiction	<i>Sonoma County</i>
Analysis Time Period	<i>AM Peak Hour</i>	Analysis Year	<i>Existing + Both</i>
Project Description <i>Vallejo Marine Terminal</i>			
<input checked="" type="checkbox"/> Oper.(LOS)		<input type="checkbox"/> Des.(N)	
<input type="checkbox"/> Planning Data			
<b>Flow Inputs</b>			
Volume, V	<i>2351</i>	veh/h	Peak-Hour Factor, PHF <i>0.92</i>
AADT		veh/day	%Trucks and Buses, P <sub>T</sub> <i>5</i>
Peak-Hr Prop. of AADT, K			%RVs, P <sub>R</sub> <i>0</i>
Peak-Hr Direction Prop, D			General Terrain: <i>Level</i>
DDHV = AADT x K x D		veh/h	Grade % Length <i>mi</i>
			Up/Down %
<b>Calculate Flow Adjustments</b>			
f <sub>p</sub>	<i>1.00</i>	E <sub>R</sub>	<i>1.2</i>
E <sub>T</sub>	<i>1.5</i>	f <sub>HV</sub> = 1/[1+P <sub>T</sub> (E <sub>T</sub> - 1) + P <sub>R</sub> (E <sub>R</sub> - 1)] <i>0.976</i>	
<b>Speed Inputs</b>		<b>Calc Speed Adj and FFS</b>	
Lane Width	ft		
Rt-Side Lat. Clearance	ft	f <sub>LW</sub>	mph
Number of Lanes, N	<i>4</i>	f <sub>LC</sub>	mph
Total Ramp Density, TRD		TRD Adjustment	mph
FFS (measured)	<i>65.0</i>	FFS	<i>65.0</i>
Base free-flow Speed, BFFS	mph		
<b>LOS and Performance Measures</b>		<b>Design (N)</b>	
<u>Operational (LOS)</u>		<u>Design (N)</u>	
v <sub>p</sub> = (V or DDHV) / (PHF x N x f <sub>HV</sub> x f <sub>p</sub> )		Design LOS	
S	<i>65.0</i>	v <sub>p</sub> = (V or DDHV) / (PHF x N x f <sub>HV</sub> x f <sub>p</sub> )	pc/h/ln
D = v <sub>p</sub> / S	<i>10.1</i>	S	mph
LOS	<i>A</i>	D = v <sub>p</sub> / S	pc/mi/ln
		Required Number of Lanes, N	
<b>Glossary</b>		<b>Factor Location</b>	
N - Number of lanes	S - Speed	E <sub>R</sub> - Exhibits 11-10, 11-12	f <sub>LW</sub> - Exhibit 11-8
V - Hourly volume	D - Density	E <sub>T</sub> - Exhibits 11-10, 11-11, 11-13	f <sub>LC</sub> - Exhibit 11-9
v <sub>p</sub> - Flow rate	FFS - Free-flow speed	f <sub>p</sub> - Page 11-18	TRD - Page 11-11
LOS - Level of service	BFFS - Base free-flow speed	LOS, S, FFS, v <sub>p</sub> - Exhibits 11-2, 11-3	
DDHV - Directional design hour volume			

<b>BASIC FREEWAY SEGMENTS WORKSHEET</b>			
<b>General Information</b>		<b>Site Information</b>	
Analyst	<i>RB</i>	Highway/Direction of Travel <i>I-80 WB</i>	
Agency or Company	<i>Fehr &amp; Peers</i>	From/To	<i>South of Sonoma Blvd</i>
Date Performed	<i>10/23/2014</i>	Jurisdiction	<i>Sonoma County</i>
Analysis Time Period	<i>PM Peak Hour</i>	Analysis Year	<i>Existing + Both</i>
Project Description <i>Vallejo Marine Terminal</i>			
<input checked="" type="checkbox"/> Oper.(LOS)		<input type="checkbox"/> Des.(N)	
<input type="checkbox"/> Planning Data			
<b>Flow Inputs</b>			
Volume, V	<i>2844</i>	veh/h	Peak-Hour Factor, PHF <i>0.92</i>
AADT		veh/day	%Trucks and Buses, P <sub>T</sub> <i>5</i>
Peak-Hr Prop. of AADT, K			%RVs, P <sub>R</sub> <i>0</i>
Peak-Hr Direction Prop, D			General Terrain: <i>Level</i>
DDHV = AADT x K x D		veh/h	Grade % Length <i>mi</i>
			Up/Down %
<b>Calculate Flow Adjustments</b>			
f <sub>p</sub>	<i>1.00</i>	E <sub>R</sub>	<i>1.2</i>
E <sub>T</sub>	<i>1.5</i>	f <sub>HV</sub> = 1/[1+P <sub>T</sub> (E <sub>T</sub> - 1) + P <sub>R</sub> (E <sub>R</sub> - 1)] <i>0.976</i>	
<b>Speed Inputs</b>		<b>Calc Speed Adj and FFS</b>	
Lane Width	ft		
Rt-Side Lat. Clearance	ft	f <sub>LW</sub>	mph
Number of Lanes, N	<i>4</i>	f <sub>LC</sub>	mph
Total Ramp Density, TRD	ramps/mi	TRD Adjustment	mph
FFS (measured)	<i>65.0</i>	FFS	<i>65.0</i>
Base free-flow Speed, BFFS	mph		
<b>LOS and Performance Measures</b>		<b>Design (N)</b>	
<u>Operational (LOS)</u>		<u>Design (N)</u>	
v <sub>p</sub> = (V or DDHV) / (PHF x N x f <sub>HV</sub> ) <i>792</i>		Design LOS	
x f <sub>p</sub> )	pc/h/ln	v <sub>p</sub> = (V or DDHV) / (PHF x N x f <sub>HV</sub> )	
S	<i>65.0</i>	x f <sub>p</sub> )	pc/h/ln
D = v <sub>p</sub> / S	<i>12.2</i>	S	mph
LOS	<i>B</i>	D = v <sub>p</sub> / S	pc/mi/ln
		Required Number of Lanes, N	
<b>Glossary</b>		<b>Factor Location</b>	
N - Number of lanes	S - Speed	E <sub>R</sub> - Exhibits 11-10, 11-12	f <sub>LW</sub> - Exhibit 11-8
V - Hourly volume	D - Density	E <sub>T</sub> - Exhibits 11-10, 11-11, 11-13	f <sub>LC</sub> - Exhibit 11-9
v <sub>p</sub> - Flow rate	FFS - Free-flow speed	f <sub>p</sub> - Page 11-18	TRD - Page 11-11
LOS - Level of service	BFFS - Base free-flow speed	LOS, S, FFS, v <sub>p</sub> - Exhibits 11-2, 11-3	
DDHV - Directional design hour volume			

<b>BASIC FREEWAY SEGMENTS WORKSHEET</b>			
<b>General Information</b>		<b>Site Information</b>	
Analyst	<i>RB</i>	Highway/Direction of Travel <i>I-780 EB</i>	
Agency or Company	<i>Fehr &amp; Peers</i>	From/To	<i>Laurel to Glen Cove</i>
Date Performed	<i>10/23/2014</i>	Jurisdiction	<i>Sonoma County</i>
Analysis Time Period	<i>PM Peak Hour</i>	Analysis Year	<i>Existing + Both</i>
Project Description <i>Vallejo Marine Terminal</i>			
<input checked="" type="checkbox"/> Oper.(LOS) <span style="margin-left: 150px;"><input type="checkbox"/> Des.(N)</span> <span style="margin-left: 150px;"><input type="checkbox"/> Planning Data</span>			
<b>Flow Inputs</b>			
Volume, V	<i>2215</i>	veh/h	Peak-Hour Factor, PHF <i>0.92</i>
AADT		veh/day	%Trucks and Buses, P <sub>T</sub> <i>5</i>
Peak-Hr Prop. of AADT, K			%RVs, P <sub>R</sub> <i>0</i>
Peak-Hr Direction Prop, D			General Terrain: <i>Level</i>
DDHV = AADT x K x D		veh/h	Grade % Length <i>mi</i> Up/Down %
<b>Calculate Flow Adjustments</b>			
f <sub>p</sub>	<i>1.00</i>	E <sub>R</sub>	<i>1.2</i>
E <sub>T</sub>	<i>1.5</i>	f <sub>HV</sub> = 1/[1+P <sub>T</sub> (E <sub>T</sub> - 1) + P <sub>R</sub> (E <sub>R</sub> - 1)] <i>0.976</i>	
<b>Speed Inputs</b>		<b>Calc Speed Adj and FFS</b>	
Lane Width	ft		
Rt-Side Lat. Clearance	ft	f <sub>LW</sub>	mph
Number of Lanes, N	<i>2</i>	f <sub>LC</sub>	mph
Total Ramp Density, TRD	ramps/mi	TRD Adjustment	mph
FFS (measured)	<i>65.0</i>	FFS	<i>65.0</i> mph
Base free-flow Speed, BFFS	mph		
<b>LOS and Performance Measures</b>		<b>Design (N)</b>	
<u>Operational (LOS)</u>		<u>Design (N)</u>	
v <sub>p</sub> = (V or DDHV) / (PHF x N x f <sub>HV</sub> x f <sub>p</sub> )	<i>1234</i> pc/h/ln	Design LOS	
S	<i>65.0</i> mph	v <sub>p</sub> = (V or DDHV) / (PHF x N x f <sub>HV</sub> x f <sub>p</sub> )	pc/h/ln
D = v <sub>p</sub> / S	<i>19.0</i> pc/mi/ln	S	mph
LOS	<i>C</i>	D = v <sub>p</sub> / S	pc/mi/ln
		Required Number of Lanes, N	
<b>Glossary</b>		<b>Factor Location</b>	
N - Number of lanes	S - Speed	E <sub>R</sub> - Exhibits 11-10, 11-12	f <sub>LW</sub> - Exhibit 11-8
V - Hourly volume	D - Density	E <sub>T</sub> - Exhibits 11-10, 11-11, 11-13	f <sub>LC</sub> - Exhibit 11-9
v <sub>p</sub> - Flow rate	FFS - Free-flow speed	f <sub>p</sub> - Page 11-18	TRD - Page 11-11
LOS - Level of service	BFFS - Base free-flow speed	LOS, S, FFS, v <sub>p</sub> - Exhibits 11-2, 11-3	
DDHV - Directional design hour volume			

<b>BASIC FREEWAY SEGMENTS WORKSHEET</b>			
<b>General Information</b>		<b>Site Information</b>	
Analyst	RB	Highway/Direction of Travel <i>I-780 EB</i>	
Agency or Company	Fehr & Peers	From/To	<i>Laurel to Glen Cove</i>
Date Performed	10/23/2014	Jurisdiction	<i>Sonoma County</i>
Analysis Time Period	AM Peak Hour	Analysis Year	<i>Existing + Both</i>
Project Description <i>Vallejo Marine Terminal</i>			
<input checked="" type="checkbox"/> Oper.(LOS) <input type="checkbox"/> Des.(N) <input type="checkbox"/> Planning Data			
<b>Flow Inputs</b>			
Volume, V	2392	veh/h	Peak-Hour Factor, PHF
AADT		veh/day	0.92
Peak-Hr Prop. of AADT, K			%Trucks and Buses, P <sub>T</sub>
Peak-Hr Direction Prop, D			5
DDHV = AADT x K x D		veh/h	%RVs, P <sub>R</sub>
			0
			General Terrain: <i>Level</i>
			Grade % Length <i>mi</i>
			Up/Down %
<b>Calculate Flow Adjustments</b>			
f <sub>p</sub>	1.00	E <sub>R</sub>	1.2
E <sub>T</sub>	1.5	f <sub>HV</sub> = 1/[1+P <sub>T</sub> (E <sub>T</sub> - 1) + P <sub>R</sub> (E <sub>R</sub> - 1)] <b>0.976</b>	
<b>Speed Inputs</b>		<b>Calc Speed Adj and FFS</b>	
Lane Width	ft		
Rt-Side Lat. Clearance	ft	f <sub>LW</sub>	mph
Number of Lanes, N	2	f <sub>LC</sub>	mph
Total Ramp Density, TRD	ramps/mi	TRD Adjustment	mph
FFS (measured)	65.0	FFS	65.0
Base free-flow Speed, BFFS	mph		mph
<b>LOS and Performance Measures</b>		<b>Design (N)</b>	
<u>Operational (LOS)</u>		<u>Design (N)</u>	
v <sub>p</sub> = (V or DDHV) / (PHF x N x f <sub>HV</sub> x f <sub>p</sub> )	1332	Design LOS	
S	65.0	v <sub>p</sub> = (V or DDHV) / (PHF x N x f <sub>HV</sub> x f <sub>p</sub> )	pc/h/ln
D = v <sub>p</sub> / S	20.5	S	mph
LOS	C	D = v <sub>p</sub> / S	pc/mi/ln
		Required Number of Lanes, N	
<b>Glossary</b>		<b>Factor Location</b>	
N - Number of lanes	S - Speed	E <sub>R</sub> - Exhibits 11-10, 11-12	f <sub>LW</sub> - Exhibit 11-8
V - Hourly volume	D - Density	E <sub>T</sub> - Exhibits 11-10, 11-11, 11-13	f <sub>LC</sub> - Exhibit 11-9
v <sub>p</sub> - Flow rate	FFS - Free-flow speed	f <sub>p</sub> - Page 11-18	TRD - Page 11-11
LOS - Level of service	BFFS - Base free-flow speed	LOS, S, FFS, v <sub>p</sub> - Exhibits 11-2, 11-3	
DDHV - Directional design hour volume			

BASIC FREEWAY SEGMENTS WORKSHEET			
<b>General Information</b>		<b>Site Information</b>	
Analyst	<i>RB</i>	Highway/Direction of Travel	<i>I-780 WB</i>
Agency or Company	<i>Fehr &amp; Peers</i>	From/To	<i>Glen Cove to Laurel</i>
Date Performed	<i>10/23/2014</i>	Jurisdiction	<i>Sonoma County</i>
Analysis Time Period	<i>PM Peak Hour</i>	Analysis Year	<i>Existing + Both</i>
Project Description <i>Vallejo Marine Terminal</i>			
<input checked="" type="checkbox"/> Oper.(LOS)		<input type="checkbox"/> Des.(N)	
		<input type="checkbox"/> Planning Data	
<b>Flow Inputs</b>			
Volume, V	<i>2784</i>	veh/h	Peak-Hour Factor, PHF <i>0.92</i>
AADT		veh/day	%Trucks and Buses, P <sub>T</sub> <i>5</i>
Peak-Hr Prop. of AADT, K			%RVs, P <sub>R</sub> <i>0</i>
Peak-Hr Direction Prop, D			General Terrain: <i>Level</i>
DDHV = AADT x K x D		veh/h	Grade % Length <i>mi</i>
			Up/Down %
<b>Calculate Flow Adjustments</b>			
f <sub>p</sub>	<i>1.00</i>	E <sub>R</sub>	<i>1.2</i>
E <sub>T</sub>	<i>1.5</i>	f <sub>HV</sub> = 1/[1+P <sub>T</sub> (E <sub>T</sub> - 1) + P <sub>R</sub> (E <sub>R</sub> - 1)]	<i>0.976</i>
<b>Speed Inputs</b>		<b>Calc Speed Adj and FFS</b>	
Lane Width		ft	
Rt-Side Lat. Clearance		ft	
Number of Lanes, N	<i>2</i>		f <sub>LW</sub> mph
Total Ramp Density, TRD		ramps/mi	f <sub>LC</sub> mph
FFS (measured)	<i>65.0</i>	mph	TRD Adjustment mph
Base free-flow Speed, BFFS		mph	FFS <i>65.0</i> mph
<b>LOS and Performance Measures</b>		<b>Design (N)</b>	
<u>Operational (LOS)</u>		<u>Design (N)</u>	
v <sub>p</sub> = (V or DDHV) / (PHF x N x f <sub>HV</sub> x f <sub>p</sub> )	<i>1551</i>	pc/h/ln	Design LOS
S	<i>64.7</i>	mph	v <sub>p</sub> = (V or DDHV) / (PHF x N x f <sub>HV</sub> x f <sub>p</sub> )
D = v <sub>p</sub> / S	<i>24.0</i>	pc/mi/ln	S
LOS	<i>C</i>		D = v <sub>p</sub> / S
			Required Number of Lanes, N
<b>Glossary</b>		<b>Factor Location</b>	
N - Number of lanes	S - Speed	E <sub>R</sub> - Exhibits 11-10, 11-12	f <sub>LW</sub> - Exhibit 11-8
V - Hourly volume	D - Density	E <sub>T</sub> - Exhibits 11-10, 11-11, 11-13	f <sub>LC</sub> - Exhibit 11-9
v <sub>p</sub> - Flow rate	FFS - Free-flow speed	f <sub>p</sub> - Page 11-18	TRD - Page 11-11
LOS - Level of service	BFFS - Base free-flow speed	LOS, S, FFS, v <sub>p</sub> - Exhibits 11-2, 11-3	
DDHV - Directional design hour volume			

<b>BASIC FREEWAY SEGMENTS WORKSHEET</b>			
<b>General Information</b>		<b>Site Information</b>	
Analyst	<i>RB</i>	Highway/Direction of Travel <i>I-780 WB</i>	
Agency or Company	<i>Fehr &amp; Peers</i>	From/To	<i>Glen Cove to Laurel</i>
Date Performed	<i>10/23/2014</i>	Jurisdiction	<i>Sonoma County</i>
Analysis Time Period	<i>AM Peak Hour</i>	Analysis Year	<i>Existing + Both</i>
Project Description <i>Vallejo Marine Terminal</i>			
<input checked="" type="checkbox"/> Oper.(LOS) <input type="checkbox"/> Des.(N) <input type="checkbox"/> Planning Data			
<b>Flow Inputs</b>			
Volume, V	<i>1911</i>	veh/h	Peak-Hour Factor, PHF <i>0.92</i>
AADT		veh/day	%Trucks and Buses, P <sub>T</sub> <i>5</i>
Peak-Hr Prop. of AADT, K			%RVs, P <sub>R</sub> <i>0</i>
Peak-Hr Direction Prop, D			General Terrain: <i>Level</i>
DDHV = AADT x K x D		veh/h	Grade % Length <i>mi</i> Up/Down %
<b>Calculate Flow Adjustments</b>			
f <sub>p</sub>	<i>1.00</i>	E <sub>R</sub>	<i>1.2</i>
E <sub>T</sub>	<i>1.5</i>	f <sub>HV</sub> = 1/[1+P <sub>T</sub> (E <sub>T</sub> - 1) + P <sub>R</sub> (E <sub>R</sub> - 1)] <i>0.976</i>	
<b>Speed Inputs</b>		<b>Calc Speed Adj and FFS</b>	
Lane Width		ft	
Rt-Side Lat. Clearance		ft	
Number of Lanes, N	<i>2</i>		f <sub>LW</sub> mph
Total Ramp Density, TRD		ramps/mi	f <sub>LC</sub> mph
FFS (measured)	<i>65.0</i>	mph	TRD Adjustment mph
Base free-flow Speed, BFFS		mph	FFS <i>65.0</i> mph
<b>LOS and Performance Measures</b>		<b>Design (N)</b>	
<u>Operational (LOS)</u>		<u>Design (N)</u>	
v <sub>p</sub> = (V or DDHV) / (PHF x N x f <sub>HV</sub> x f <sub>p</sub> )	<i>1065</i>	pc/h/ln	Design LOS
S	<i>65.0</i>	mph	v <sub>p</sub> = (V or DDHV) / (PHF x N x f <sub>HV</sub> x f <sub>p</sub> )
D = v <sub>p</sub> / S	<i>16.4</i>	pc/mi/ln	S
LOS	<i>B</i>		D = v <sub>p</sub> / S
			Required Number of Lanes, N
<b>Glossary</b>		<b>Factor Location</b>	
N - Number of lanes	S - Speed	E <sub>R</sub> - Exhibits 11-10, 11-12	f <sub>LW</sub> - Exhibit 11-8
V - Hourly volume	D - Density	E <sub>T</sub> - Exhibits 11-10, 11-11, 11-13	f <sub>LC</sub> - Exhibit 11-9
v <sub>p</sub> - Flow rate	FFS - Free-flow speed	f <sub>p</sub> - Page 11-18	TRD - Page 11-11
LOS - Level of service	BFFS - Base free-flow speed	LOS, S, FFS, v <sub>p</sub> - Exhibits 11-2, 11-3	
DDHV - Directional design hour volume			

# Leisch Method for Weaving Analysis

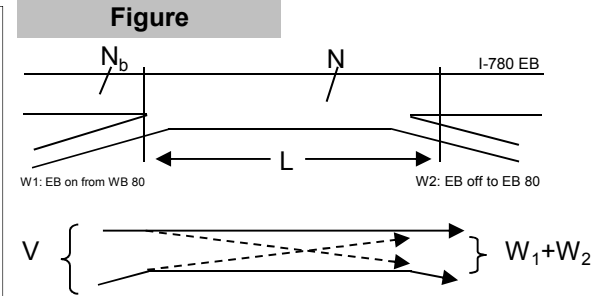
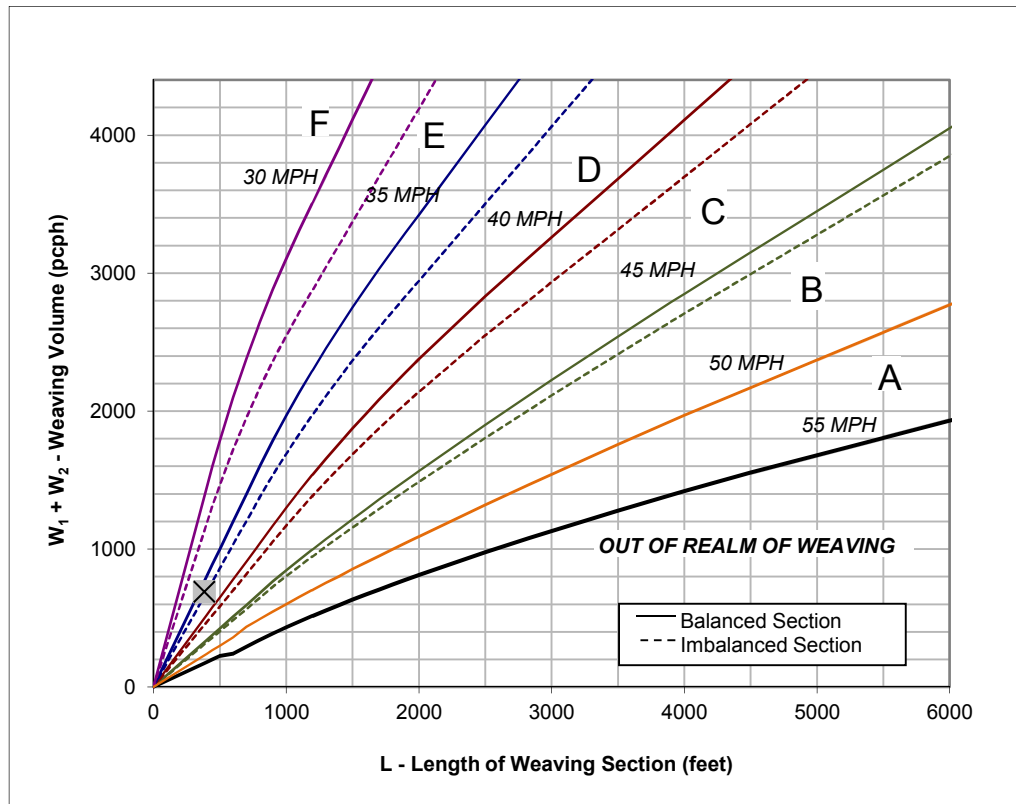
## Data Input

Number of Entering Mainline Lanes	$N_b$	2
Number of Lanes in Weaving Section	$N$	3
Length of Weaving Section (feet)	$L$	385

## Project Information

Project	Vallejo Marine Terminal
Scenario	AM + Cumulative
Freeway	I-780 EB
On-ramp	W1: EB on from WB 80
Off-ramp	W2: EB off to EB 80

Total Weaving Section (V)		On-ramp to Mainline ( $W_1$ )		Mainline to Off-ramp ( $W_2$ )	
Volume (vph)*	1,023	Volume (vph)*	607	Volume (vph)*	67
Truck Percentage	5%	Truck Percentage	5%	Truck Percentage	5%
PCE for Trucks	1.5	PCE for Trucks	1.5	PCE for Trucks	1.5
Volume (pcph)	1,049	Volume (pcph)	622	Volume (pcph)	69



## Capacity Analysis

- Is the weaving section balanced ( $Y / N$ )? N  
[If optional exit lane, then "Y". Otherwise "N".]
- In the Weaving Speed Chart to the left, which two speed curves is the black "x" between?  
30 MPH and 35 MPH  
If below the 55 MPH curve, out of the realm of weaving.  
If left of the 30 MPH curve, LOS is F.
- Interpolated Weaving Speed ( $S_w$ , mph) 34.7
- Weaving Intensity Factor ( $k$ ) 3.00
- Service Volume (SV, pcph)  
 $SV = (1/N) * [V + (k - 1) * \min(W_1, W_2)]$  395
- Level of Service (LOS) A

The LOS in the chart above refers to the capacity of weaving traffic only; through and ramp to ramp traffic is not included.

\* Note: **Do not adjust by a Peak Hour Factor (PHF)**. The methodology incorporates the PHF in the Service Volume tables.

Sources: *Completion of Procedures for Analysis and Design of Traffic Weaving Sections*, Jack E. Leisch & Associates, September 1983 and *Highway Design Manual*, California Department of Transportation, July 24, 2009



# Leisch Method for Weaving Analysis

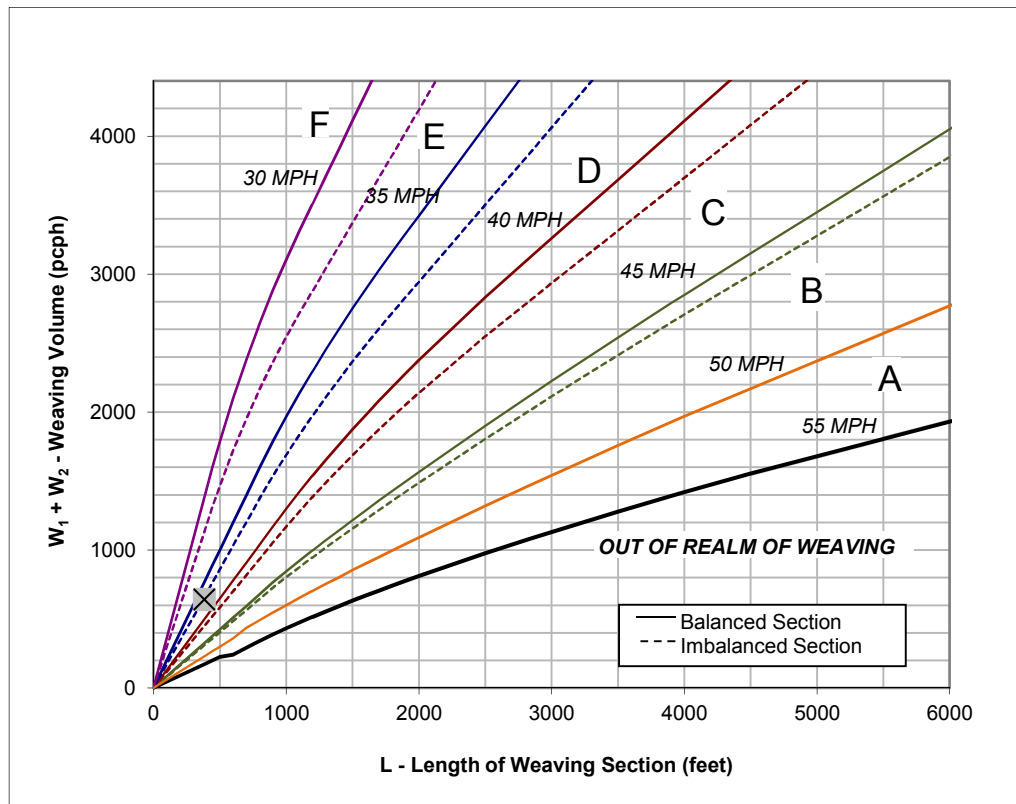
## Data Input

Number of Entering Mainline Lanes	$N_b$	2
Number of Lanes in Weaving Section	N	3
Length of Weaving Section (feet)	L	385

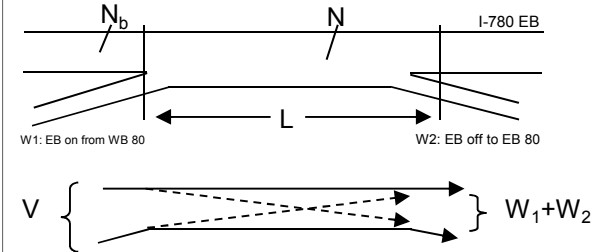
## Project Information

Project	Vallejo Marine Terminal
Scenario	PM + Cumulative
Freeway	I-780 EB
On-ramp	W1: EB on from WB 80
Off-ramp	W2: EB off to EB 80

Total Weaving Section (V)		On-ramp to Mainline ( $W_1$ )		Mainline to Off-ramp ( $W_2$ )	
Volume (vph)*	1,551	Volume (vph)*	426	Volume (vph)*	202
Truck Percentage	5%	Truck Percentage	5%	Truck Percentage	5%
PCE for Trucks	1.5	PCE for Trucks	1.5	PCE for Trucks	1.5
Volume (pcph)	1,589	Volume (pcph)	436	Volume (pcph)	207



## Figure



## Capacity Analysis

- Is the weaving section balanced ( $Y / N$ )? **N**  
[If optional exit lane, then "Y". Otherwise "N".]
- In the Weaving Speed Chart to the left, which two speed curves is the black "x" between?  
**35 MPH** and **40 MPH**

If below the 55 MPH curve, out of the realm of weaving.  
If left of the 30 MPH curve, LOS is F.

- Interpolated Weaving Speed ( $S_w$ , mph) **35.4**
- Weaving Intensity Factor ( $k$ ) **2.87**
- Service Volume (SV, pcph)  
 $SV = (1/N)[V + (k - 1) \cdot \min(W_1, W_2)]$  **659**
- Level of Service (LOS) **A**

The LOS in the chart above refers to the capacity of weaving traffic only; through and ramp to ramp traffic is not included.

\* Note: **Do not adjust by a Peak Hour Factor (PHF)**. The methodology incorporates the PHF in the Service Volume tables.

Sources: *Completion of Procedures for Analysis and Design of Traffic Weaving Sections*, Jack E. Leisch & Associates, September 1983 and *Highway Design Manual*, California Department of Transportation, July 24, 2009

# Leisch Method for Weaving Analysis

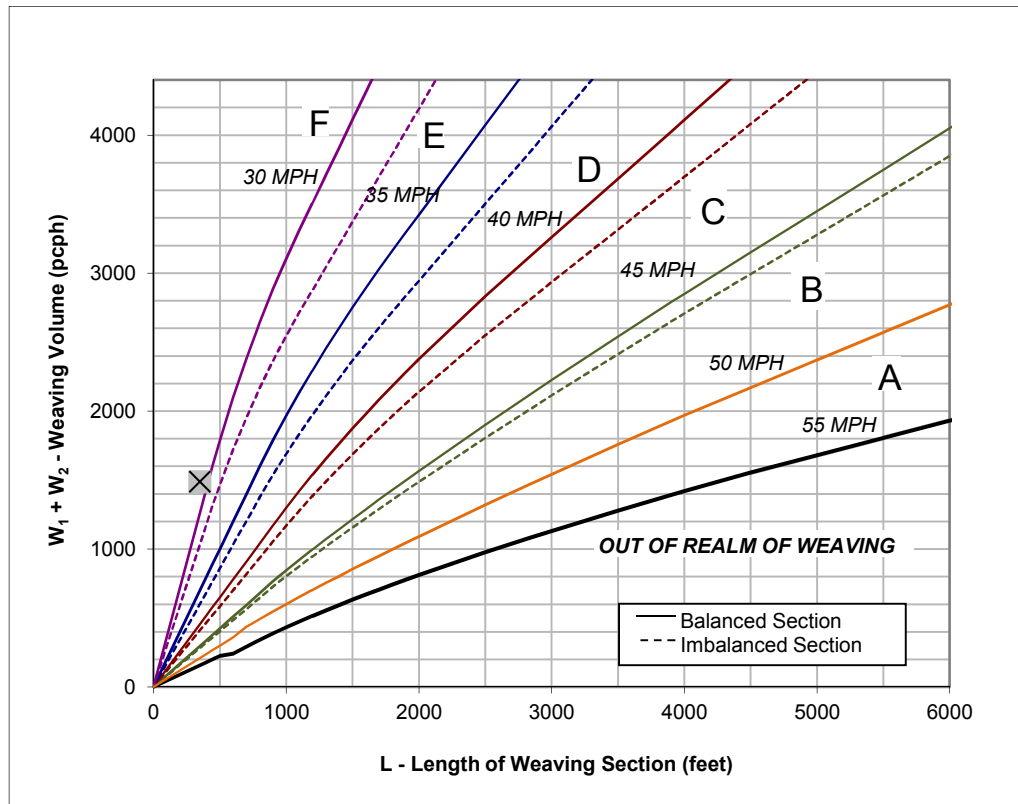
### Data Input

Number of Entering Mainline Lanes	$N_b$	2
Number of Lanes in Weaving Section	$N$	3
Length of Weaving Section (feet)	$L$	350

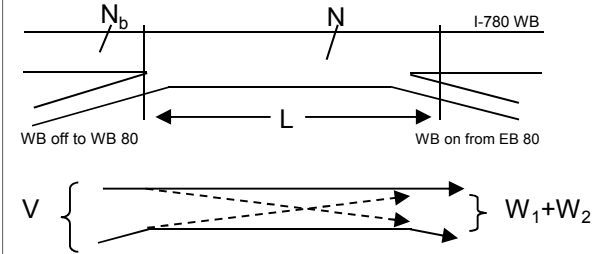
### Project Information

Project	Vallejo Marine Terminal
Scenario	AM + Cumulative
Freeway	I-780 WB
On-ramp	WB off to WB 80
Off-ramp	WB on from EB 80

Total Weaving Section (V)		On-ramp to Mainline ( $W_1$ )		Mainline to Off-ramp ( $W_2$ )	
Volume (vph)*	1,823	Volume (vph)*	1,278	Volume (vph)*	175
Truck Percentage	5%	Truck Percentage	5%	Truck Percentage	5%
PCE for Trucks	1.5	PCE for Trucks	1.5	PCE for Trucks	1.5
Volume (pcph)	1,869	Volume (pcph)	1,310	Volume (pcph)	179



### Figure



### Capacity Analysis

1. Is the weaving section balanced ( $Y / N$ )? [If optional exit lane, then "Y". Otherwise "N".]	N
2. In the Weaving Speed Chart to the left, which two speed curves is the black "x" between?	0 MPH and 30 MPH
If below the 55 MPH curve, out of the realm of weaving. If left of the 30 MPH curve, LOS is F.	
3. Interpolated Weaving Speed ( $S_w$ , mph)	-
4. Weaving Intensity Factor ( $k$ )	-
5. Service Volume (SV, pcph) $SV = (1/N) * [V + (k - 1) * \min(W_1, W_2)]$	-
6. Level of Service (LOS)	F

The LOS in the chart above refers to the capacity of weaving traffic only; through and ramp to ramp traffic is not included.

\* Note: **Do not adjust by a Peak Hour Factor (PHF)**. The methodology incorporates the PHF in the Service Volume tables.

Sources: *Completion of Procedures for Analysis and Design of Traffic Weaving Sections*, Jack E. Leisch & Associates, September 1983 and *Highway Design Manual*, California Department of Transportation, July 24, 2009

# Leisch Method for Weaving Analysis

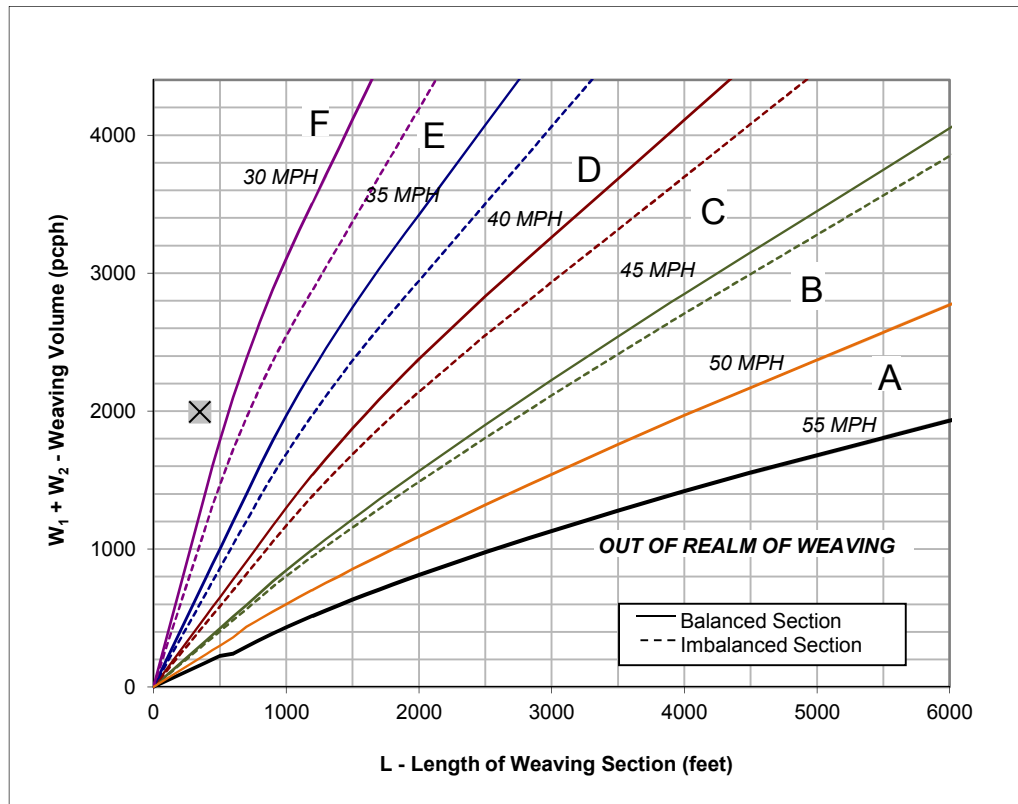
### Data Input

Number of Entering Mainline Lanes	$N_b$	2
Number of Lanes in Weaving Section	$N$	3
Length of Weaving Section (feet)	$L$	350

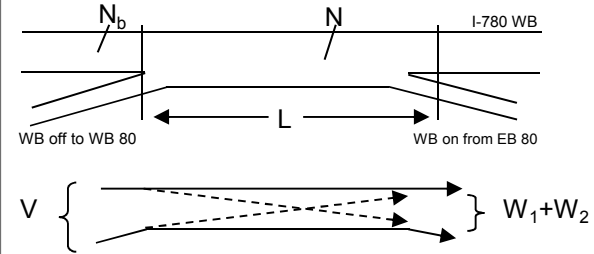
### Project Information

Project	Vallejo Marine Terminal
Scenario	PM + Cumulative
Freeway	I-780 WB
On-ramp	WB off to WB 80
Off-ramp	WB on from EB 80

Total Weaving Section (V)		On-ramp to Mainline ( $W_1$ )		Mainline to Off-ramp ( $W_2$ )	
Volume (vph)*	2,725	Volume (vph)*	1,549	Volume (vph)*	398
Truck Percentage	5%	Truck Percentage	5%	Truck Percentage	5%
PCE for Trucks	1.5	PCE for Trucks	1.5	PCE for Trucks	1.5
Volume (pcph)	2,793	Volume (pcph)	1,588	Volume (pcph)	408



### Figure



### Capacity Analysis

- Is the weaving section balanced ( $Y / N$ )? N  
[If optional exit lane, then "Y". Otherwise "N".]
- In the Weaving Speed Chart to the left, which two speed curves is the black "x" between?  
0 MPH and 30 MPH -
- Interpolated Weaving Speed ( $S_w$ , mph) -
- Weaving Intensity Factor ( $k$ ) -
- Service Volume (SV, pcph)  
 $SV = (1/N) * [V + (k - 1) * \min(W_1, W_2)]$  -
- Level of Service (LOS) F

The LOS in the chart above refers to the capacity of weaving traffic only; through and ramp to ramp traffic is not included.

\* Note: **Do not adjust by a Peak Hour Factor (PHF)**. The methodology incorporates the PHF in the Service Volume tables.

Sources: *Completion of Procedures for Analysis and Design of Traffic Weaving Sections*, Jack E. Leisch & Associates, September 1983 and *Highway Design Manual*, California Department of Transportation, July 24, 2009

**APPENDIX L.5.6 — CUMULATIVE (2040) NO PROJECT**



<b>RAMPS AND RAMP JUNCTIONS WORKSHEET</b>									
<b>General Information</b>					<b>Site Information</b>				
Analyst	RB	Freeway/Dir of Travel	I 80 EB						
Agency or Company	Fehr & Peers	Junction	I-780 Collector						
Date Performed	10/31/2014	Jurisdiction	Sonoma County						
Analysis Time Period	PM Peak	Analysis Year	2040						
Project Description Vallejo Marine Terminal									
<b>Inputs</b>									
Upstream Adj Ramp <input type="checkbox"/> Yes <input type="checkbox"/> On <input checked="" type="checkbox"/> No <input type="checkbox"/> Off	Number of Lanes, N Acceleration Lane Length, L <sub>A</sub> Deceleration Lane Length L <sub>D</sub>	3 150			Downstream Adj Ramp <input checked="" type="checkbox"/> Yes <input type="checkbox"/> On <input type="checkbox"/> No <input checked="" type="checkbox"/> Off				
L <sub>up</sub> = ft	Freeway Volume, V <sub>F</sub>	2877			L <sub>down</sub> = 2100 ft				
V <sub>u</sub> = veh/h	Ramp Volume, V <sub>R</sub>	2160			V <sub>D</sub> = 217 veh/h				
	Freeway Free-Flow Speed, S <sub>FF</sub>	65.0							
	Ramp Free-Flow Speed, S <sub>FR</sub>	65.0							
<b>Conversion to pc/h Under Base Conditions</b>									
(pc/h)	V (Veh/hr)	PHF	Terrain	%Truck	%Rv	f <sub>HV</sub>	f <sub>p</sub>	v = V/PHF x f <sub>HV</sub> x f <sub>p</sub>	
Freeway	2877	0.92	Level	5	0	0.976	1.00	3205	
Ramp	2160	0.92	Level	5	0	0.976	1.00	2407	
UpStream									
DownStream	217	0.90	Level	5	0	0.976	1.00	247	
<b>Merge Areas</b>					<b>Diverge Areas</b>				
<b>Estimation of v<sub>12</sub></b>					<b>Estimation of v<sub>12</sub></b>				
$V_{12} = V_F (P_{FM})$ L <sub>EQ</sub> = 1965.78 (Equation 13-6 or 13-7) P <sub>FM</sub> = 0.582 using Equation (Exhibit 13-6) V <sub>12</sub> = 1864 pc/h V <sub>3</sub> or V <sub>av34</sub> = 1341 pc/h (Equation 13-14 or 13-17) Is V <sub>3</sub> or V <sub>av34</sub> > 2,700 pc/h? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Is V <sub>3</sub> or V <sub>av34</sub> > 1.5 * V <sub>12</sub> /2 <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No If Yes, V <sub>12a</sub> = pc/h (Equation 13-16, 13-18, or 13-19)					$V_{12} = V_R + (V_F - V_R)P_{FD}$ L <sub>EQ</sub> = (Equation 13-12 or 13-13) P <sub>FD</sub> = using Equation (Exhibit 13-7) V <sub>12</sub> = pc/h V <sub>3</sub> or V <sub>av34</sub> = pc/h (Equation 13-14 or 13-17) Is V <sub>3</sub> or V <sub>av34</sub> > 2,700 pc/h? <input type="checkbox"/> Yes <input type="checkbox"/> No Is V <sub>3</sub> or V <sub>av34</sub> > 1.5 * V <sub>12</sub> /2 <input type="checkbox"/> Yes <input type="checkbox"/> No If Yes, V <sub>12a</sub> = pc/h (Equation 13-16, 13-18, or 13-19)				
<b>Capacity Checks</b>					<b>Capacity Checks</b>				
	Actual	Capacity		LOS F?		Actual	Capacity		LOS F?
V <sub>FO</sub>	5612	Exhibit 13-8		No	V <sub>F</sub>		Exhibit 13-8		
					V <sub>FO</sub> = V <sub>F</sub> - V <sub>R</sub>		Exhibit 13-8		
					V <sub>R</sub>		Exhibit 13-10		
<b>Flow Entering Merge Influence Area</b>					<b>Flow Entering Diverge Influence Area</b>				
	Actual	Max Desirable		Violation?		Actual	Max Desirable		Violation?
V <sub>R12</sub>	4271	Exhibit 13-8		No	V <sub>12</sub>		Exhibit 13-8		
<b>Level of Service Determination (if not F)</b>					<b>Level of Service Determination (if not F)</b>				
$D_R = 5.475 + 0.00734 v_R + 0.0078 V_{12} - 0.00627 L_A$ D <sub>R</sub> = 36.7 (pc/mi/ln) LOS = E (Exhibit 13-2)					$D_R = 4.252 + 0.0086 V_{12} - 0.009 L_D$ D <sub>R</sub> = (pc/mi/ln) LOS = (Exhibit 13-2)				
<b>Speed Determination</b>					<b>Speed Determination</b>				
M <sub>S</sub> = 0.581 (Exhibit 13-11)					D <sub>S</sub> = (Exhibit 13-12)				
S <sub>R</sub> = 51.6 mph (Exhibit 13-11)					S <sub>R</sub> = mph (Exhibit 13-12)				
S <sub>0</sub> = 62.0 mph (Exhibit 13-11)					S <sub>0</sub> = mph (Exhibit 13-12)				
S = 53.8 mph (Exhibit 13-13)					S = mph (Exhibit 13-13)				

RAMPS AND RAMP JUNCTIONS WORKSHEET									
General Information					Site Information				
Analyst	RB	Freeway/Dir of Travel	I 80 EB						
Agency or Company	Fehr & Peers	Junction	I-780 Collector						
Date Performed	10/31/2014	Jurisdiction	Sonoma County						
Analysis Time Period	AM Peak	Analysis Year	2040						
Project Description Vallejo Marine Terminal									
Inputs									
Upstream Adj Ramp <input type="checkbox"/> Yes <input type="checkbox"/> On <input checked="" type="checkbox"/> No <input type="checkbox"/> Off	Number of Lanes, N Acceleration Lane Length, L <sub>A</sub> Deceleration Lane Length L <sub>D</sub>	3 150	Downstream Adj Ramp <input checked="" type="checkbox"/> Yes <input type="checkbox"/> On <input type="checkbox"/> No <input checked="" type="checkbox"/> Off	L <sub>down</sub> = 2100 ft					
L <sub>up</sub> = ft	Freeway Volume, V <sub>F</sub>	3274	Ramp Volume, V <sub>R</sub>	2121					
V <sub>u</sub> = veh/h	Freeway Free-Flow Speed, S <sub>FF</sub>	65.0	Ramp Free-Flow Speed, S <sub>FR</sub>	65.0					
			V <sub>D</sub> = 146 veh/h						
Conversion to pc/h Under Base Conditions									
(pc/h)	V (Veh/hr)	PHF	Terrain	%Truck	%Rv	f <sub>HV</sub>	f <sub>p</sub>	v = V/PHF x f <sub>HV</sub> x f <sub>p</sub>	
Freeway	3274	0.92	Level	5	0	0.976	1.00	3648	
Ramp	2121	0.92	Level	5	0	0.976	1.00	2363	
UpStream									
DownStream	146	0.90	Level	5	0	0.976	1.00	166	
Merge Areas					Diverge Areas				
Estimation of v <sub>12</sub>					Estimation of v <sub>12</sub>				
$V_{12} = V_F (P_{FM})$ L <sub>EQ</sub> = 1321.13 (Equation 13-6 or 13-7) P <sub>FM</sub> = 0.582 using Equation (Exhibit 13-6) V <sub>12</sub> = 2122 pc/h V <sub>3</sub> or V <sub>av34</sub> = 1526 pc/h (Equation 13-14 or 13-17) Is V <sub>3</sub> or V <sub>av34</sub> > 2,700 pc/h? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Is V <sub>3</sub> or V <sub>av34</sub> > 1.5 * V <sub>12</sub> /2 <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No If Yes, V <sub>12a</sub> = pc/h (Equation 13-16, 13-18, or 13-19)					$V_{12} = V_R + (V_F - V_R)P_{FD}$ L <sub>EQ</sub> = (Equation 13-12 or 13-13) P <sub>FD</sub> = using Equation (Exhibit 13-7) V <sub>12</sub> = pc/h V <sub>3</sub> or V <sub>av34</sub> = pc/h (Equation 13-14 or 13-17) Is V <sub>3</sub> or V <sub>av34</sub> > 2,700 pc/h? <input type="checkbox"/> Yes <input type="checkbox"/> No Is V <sub>3</sub> or V <sub>av34</sub> > 1.5 * V <sub>12</sub> /2 <input type="checkbox"/> Yes <input type="checkbox"/> No If Yes, V <sub>12a</sub> = pc/h (Equation 13-16, 13-18, or 13-19)				
Capacity Checks					Capacity Checks				
	Actual	Capacity		LOS F?		Actual	Capacity		LOS F?
V <sub>FO</sub>	6011	Exhibit 13-8		No	V <sub>F</sub>		Exhibit 13-8		
					V <sub>FO</sub> = V <sub>F</sub> - V <sub>R</sub>		Exhibit 13-8		
					V <sub>R</sub>		Exhibit 13-10		
Flow Entering Merge Influence Area					Flow Entering Diverge Influence Area				
	Actual	Max Desirable		Violation?		Actual	Max Desirable		Violation?
V <sub>R12</sub>	4485	Exhibit 13-8		No	V <sub>12</sub>		Exhibit 13-8		
Level of Service Determination (if not F)					Level of Service Determination (if not F)				
$D_R = 5.475 + 0.00734 v_R + 0.0078 V_{12} - 0.00627 L_A$ D <sub>R</sub> = 38.4 (pc/mi/ln) LOS = E (Exhibit 13-2)					$D_R = 4.252 + 0.0086 V_{12} - 0.009 L_D$ D <sub>R</sub> = (pc/mi/ln) LOS = (Exhibit 13-2)				
Speed Determination					Speed Determination				
M <sub>S</sub> =	0.647 (Exhibit 13-11)				D <sub>S</sub> =	(Exhibit 13-12)			
S <sub>R</sub> =	50.1 mph (Exhibit 13-11)				S <sub>R</sub> =	mph (Exhibit 13-12)			
S <sub>0</sub> =	61.3 mph (Exhibit 13-11)				S <sub>0</sub> =	mph (Exhibit 13-12)			
S =	52.5 mph (Exhibit 13-13)				S =	mph (Exhibit 13-13)			

RAMPS AND RAMP JUNCTIONS WORKSHEET										
<b>General Information</b>					<b>Site Information</b>					
Analyst	RB		Freeway/Dir of Travel	I 80 WB		Agency or Company	Fehr & Peers		Junction	I-780 Collector
Date Performed	10/31/2014		Jurisdiction	Sonoma County		Analysis Time Period	PM Peak		Analysis Year	2040
Project Description Vallejo Marine Terminal										
<b>Inputs</b>										
Upstream Adj Ramp		Number of Lanes, N			3			Downstream Adj Ramp		
<input checked="" type="checkbox"/> Yes <input checked="" type="checkbox"/> On		Acceleration Lane Length, L <sub>A</sub>						<input type="checkbox"/> Yes <input type="checkbox"/> On		
<input type="checkbox"/> No <input type="checkbox"/> Off		Deceleration Lane Length L <sub>D</sub>			125			<input checked="" type="checkbox"/> No <input type="checkbox"/> Off		
L <sub>up</sub> = 1500 ft		Freeway Volume, V <sub>F</sub>			6040			L <sub>down</sub> = ft		
V <sub>u</sub> = 231 veh/h		Ramp Volume, V <sub>R</sub>			2098			V <sub>D</sub> = veh/h		
		Freeway Free-Flow Speed, S <sub>FF</sub>			65.0					
		Ramp Free-Flow Speed, S <sub>FR</sub>			65.0					
<b>Conversion to pc/h Under Base Conditions</b>										
(pc/h)	V (Veh/hr)	PHF	Terrain	%Truck	%Rv	f <sub>HV</sub>	f <sub>p</sub>	v = V/PHF x f <sub>HV</sub> x f <sub>p</sub>		
Freeway	6040	0.92	Level	5	0	0.976	1.00	6729		
Ramp	2098	0.92	Level	5	0	0.976	1.00	2337		
UpStream	231	0.90	Level	5	0	0.976	1.00	263		
DownStream										
<b>Merge Areas</b>					<b>Diverge Areas</b>					
<b>Estimation of v<sub>12</sub></b>					<b>Estimation of v<sub>12</sub></b>					
$V_{12} = V_F (P_{FM})$ L <sub>EQ</sub> = (Equation 13-6 or 13-7) P <sub>FM</sub> = using Equation (Exhibit 13-6) V <sub>12</sub> = pc/h V <sub>3</sub> or V <sub>av34</sub> pc/h (Equation 13-14 or 13-17) Is V <sub>3</sub> or V <sub>av34</sub> > 2,700 pc/h? <input type="checkbox"/> Yes <input type="checkbox"/> No Is V <sub>3</sub> or V <sub>av34</sub> > 1.5 * V <sub>12</sub> /2 <input type="checkbox"/> Yes <input type="checkbox"/> No If Yes, V <sub>12a</sub> = pc/h (Equation 13-16, 13-18, or 13-19)					$V_{12} = V_R + (V_F - V_R)P_{FD}$ L <sub>EQ</sub> = 5461.53 (Equation 13-12 or 13-13) P <sub>FD</sub> = 0.560 using Equation (Exhibit 13-7) V <sub>12</sub> = 4799 pc/h V <sub>3</sub> or V <sub>av34</sub> 1930 pc/h (Equation 13-14 or 13-17) Is V <sub>3</sub> or V <sub>av34</sub> > 2,700 pc/h? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Is V <sub>3</sub> or V <sub>av34</sub> > 1.5 * V <sub>12</sub> /2 <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No If Yes, V <sub>12a</sub> = pc/h (Equation 13-16, 13-18, or 13-19)					
<b>Capacity Checks</b>					<b>Capacity Checks</b>					
	Actual	Capacity		LOS F?		Actual	Capacity		LOS F?	
V <sub>FO</sub>		Exhibit 13-8			V <sub>F</sub>	6729	Exhibit 13-8	7050	No	
					V <sub>FO</sub> = V <sub>F</sub> - V <sub>R</sub>	4392	Exhibit 13-8	7050	No	
					V <sub>R</sub>	2337	Exhibit 13-10	2200	Yes	
<b>Flow Entering Merge Influence Area</b>					<b>Flow Entering Diverge Influence Area</b>					
	Actual	Max Desirable		Violation?		Actual	Max Desirable		Violation?	
V <sub>R12</sub>		Exhibit 13-8			V <sub>12</sub>	4799	Exhibit 13-8	4400:All	Yes	
<b>Level of Service Determination (if not F)</b>					<b>Level of Service Determination (if not F)</b>					
$D_R = 5.475 + 0.00734 v_R + 0.0078 V_{12} - 0.00627 L_A$ D <sub>R</sub> = (pc/mi/ln) LOS = (Exhibit 13-2)					$D_R = 4.252 + 0.0086 V_{12} - 0.009 L_D$ D <sub>R</sub> = 44.4 (pc/mi/ln) LOS = F (Exhibit 13-2)					
<b>Speed Determination</b>					<b>Speed Determination</b>					
M <sub>S</sub> = (Exhibit 13-11) S <sub>R</sub> = mph (Exhibit 13-11) S <sub>0</sub> = mph (Exhibit 13-11) S = mph (Exhibit 13-13)					D <sub>s</sub> = 0.248 (Exhibit 13-12) S <sub>R</sub> = 59.3 mph (Exhibit 13-12) S <sub>0</sub> = 67.7 mph (Exhibit 13-12) S = 61.5 mph (Exhibit 13-13)					

RAMPS AND RAMP JUNCTIONS WORKSHEET											
<b>General Information</b>					<b>Site Information</b>						
Analyst	RB		Freeway/Dir of Travel	I 80 WB		Agency or Company	Fehr & Peers		Junction	I-780 Collector	
Date Performed	10/31/2014		Jurisdiction	Sonoma County		Analysis Time Period	AM Peak		Analysis Year	2040	
Project Description Vallejo Marine Terminal											
<b>Inputs</b>											
Upstream Adj Ramp		Number of Lanes, N			3			Downstream Adj Ramp			
<input checked="" type="checkbox"/> Yes <input checked="" type="checkbox"/> On		Acceleration Lane Length, L <sub>A</sub>						<input type="checkbox"/> Yes <input type="checkbox"/> On			
<input type="checkbox"/> No <input type="checkbox"/> Off		Deceleration Lane Length L <sub>D</sub>			125			<input checked="" type="checkbox"/> No <input type="checkbox"/> Off			
L <sub>up</sub> = 1500 ft		Freeway Volume, V <sub>F</sub>			5215			L <sub>down</sub> = ft			
V <sub>u</sub> = 183 veh/h		Ramp Volume, V <sub>R</sub>			1786			V <sub>D</sub> = veh/h			
			Freeway Free-Flow Speed, S <sub>FF</sub>			65.0					
			Ramp Free-Flow Speed, S <sub>FR</sub>			65.0					
<b>Conversion to pc/h Under Base Conditions</b>											
(pc/h)	V (Veh/hr)	PHF	Terrain	%Truck	%Rv	f <sub>HV</sub>	f <sub>p</sub>	v = V/PHF x f <sub>HV</sub> x f <sub>p</sub>			
Freeway	5215	0.92	Level	5	0	0.976	1.00	5810			
Ramp	1786	0.92	Level	5	0	0.976	1.00	1990			
UpStream	183	0.90	Level	5	0	0.976	1.00	208			
DownStream											
<b>Merge Areas</b>					<b>Diverge Areas</b>						
<b>Estimation of v<sub>12</sub></b>					<b>Estimation of v<sub>12</sub></b>						
$V_{12} = V_F (P_{FM})$ (Equation 13-6 or 13-7) L <sub>EQ</sub> = P <sub>FM</sub> = using Equation (Exhibit 13-6) V <sub>12</sub> = pc/h V <sub>3</sub> or V <sub>av34</sub> pc/h (Equation 13-14 or 13-17) Is V <sub>3</sub> or V <sub>av34</sub> > 2,700 pc/h? <input type="checkbox"/> Yes <input type="checkbox"/> No Is V <sub>3</sub> or V <sub>av34</sub> > 1.5 * V <sub>12</sub> /2 <input type="checkbox"/> Yes <input type="checkbox"/> No If Yes, V <sub>12a</sub> = pc/h (Equation 13-16, 13-18, or 13-19)					$V_{12} = V_R + (V_F - V_R)P_{FD}$ L <sub>EQ</sub> = 3895.86 (Equation 13-12 or 13-13) P <sub>FD</sub> = 0.574 using Equation (Exhibit 13-7) V <sub>12</sub> = 4183 pc/h V <sub>3</sub> or V <sub>av34</sub> 1627 pc/h (Equation 13-14 or 13-17) Is V <sub>3</sub> or V <sub>av34</sub> > 2,700 pc/h? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Is V <sub>3</sub> or V <sub>av34</sub> > 1.5 * V <sub>12</sub> /2 <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No If Yes, V <sub>12a</sub> = pc/h (Equation 13-16, 13-18, or 13-19)						
<b>Capacity Checks</b>					<b>Capacity Checks</b>						
	Actual	Capacity		LOS F?		Actual	Capacity		LOS F?		
V <sub>FO</sub>		Exhibit 13-8			V <sub>F</sub>	5810	Exhibit 13-8	7050	No		
					V <sub>FO</sub> = V <sub>F</sub> - V <sub>R</sub>	3820	Exhibit 13-8	7050	No		
					V <sub>R</sub>	1990	Exhibit 13-10	2200	No		
<b>Flow Entering Merge Influence Area</b>					<b>Flow Entering Diverge Influence Area</b>						
	Actual	Max Desirable		Violation?		Actual	Max Desirable		Violation?		
V <sub>R12</sub>		Exhibit 13-8			V <sub>12</sub>	4183	Exhibit 13-8	4400:All	No		
<b>Level of Service Determination (if not F)</b>					<b>Level of Service Determination (if not F)</b>						
$D_R = 5.475 + 0.00734 v_R + 0.0078 V_{12} - 0.00627 L_A$ D <sub>R</sub> = (pc/mi/ln) LOS = (Exhibit 13-2)					$D_R = 4.252 + 0.0086 V_{12} - 0.009 L_D$ D <sub>R</sub> = 39.1 (pc/mi/ln) LOS = E (Exhibit 13-2)						
<b>Speed Determination</b>					<b>Speed Determination</b>						
M <sub>S</sub> = (Exhibit 13-11)					D <sub>S</sub> = 0.217 (Exhibit 13-12)						
S <sub>R</sub> = mph (Exhibit 13-11)					S <sub>R</sub> = 60.0 mph (Exhibit 13-12)						
S <sub>0</sub> = mph (Exhibit 13-11)					S <sub>0</sub> = 68.9 mph (Exhibit 13-12)						
S = mph (Exhibit 13-13)					S = 62.2 mph (Exhibit 13-13)						



<b>BASIC FREEWAY SEGMENTS WORKSHEET</b>			
<b>General Information</b>		<b>Site Information</b>	
Analyst	<i>RB</i>	Highway/Direction of Travel	<i>80 WB</i>
Agency or Company	<i>Fehr &amp; Peers</i>	From/To	<i>I-780 Collectors - Georgia St</i>
Date Performed	<i>10/23/2014</i>	Jurisdiction	<i>Sonoma County</i>
Analysis Time Period	<i>PM Peak Hour</i>	Analysis Year	<i>2040</i>
Project Description <i>Vallejo Marine Terminal</i>			
<input checked="" type="checkbox"/> Oper.(LOS) <input type="checkbox"/> Des.(N) <input type="checkbox"/> Planning Data			
<b>Flow Inputs</b>			
Volume, V	<i>6040</i>	veh/h	Peak-Hour Factor, PHF
AADT		veh/day	%Trucks and Buses, P <sub>T</sub>
Peak-Hr Prop. of AADT, K			%RVs, P <sub>R</sub>
Peak-Hr Direction Prop, D			General Terrain:
DDHV = AADT x K x D		veh/h	Grade % Length
			Up/Down %
<b>Calculate Flow Adjustments</b>			
f <sub>p</sub>	<i>1.00</i>	E <sub>R</sub>	<i>1.2</i>
E <sub>T</sub>	<i>1.5</i>	f <sub>HV</sub> = 1/[1+P <sub>T</sub> (E <sub>T</sub> - 1) + P <sub>R</sub> (E <sub>R</sub> - 1)]	<i>0.976</i>
<b>Speed Inputs</b>		<b>Calc Speed Adj and FFS</b>	
Lane Width	ft	f <sub>LW</sub>	mph
Rt-Side Lat. Clearance	ft	f <sub>LC</sub>	mph
Number of Lanes, N	<i>3</i>	TRD Adjustment	mph
Total Ramp Density, TRD	ramps/mi	FFS	<i>65.0</i>
FFS (measured)	<i>65.0</i>	mph	mph
Base free-flow Speed, BFFS	mph		
<b>LOS and Performance Measures</b>		<b>Design (N)</b>	
<u>Operational (LOS)</u>		<u>Design (N)</u>	
v <sub>p</sub> = (V or DDHV) / (PHF x N x f <sub>HV</sub> )	<i>2243</i>	Design LOS	
x f <sub>p</sub> )		v <sub>p</sub> = (V or DDHV) / (PHF x N x f <sub>HV</sub> )	pc/h/ln
S	<i>54.9</i>	x f <sub>p</sub> )	
D = v <sub>p</sub> / S	<i>40.8</i>	S	mph
LOS	<i>E</i>	D = v <sub>p</sub> / S	pc/mi/ln
		Required Number of Lanes, N	
<b>Glossary</b>		<b>Factor Location</b>	
N - Number of lanes	S - Speed	E <sub>R</sub> - Exhibits 11-10, 11-12	f <sub>LW</sub> - Exhibit 11-8
V - Hourly volume	D - Density	E <sub>T</sub> - Exhibits 11-10, 11-11, 11-13	f <sub>LC</sub> - Exhibit 11-9
v <sub>p</sub> - Flow rate	FFS - Free-flow speed	f <sub>p</sub> - Page 11-18	TRD - Page 11-11
LOS - Level of service	BFFS - Base free-flow speed	LOS, S, FFS, v <sub>p</sub> - Exhibits 11-2, 11-3	
DDHV - Directional design hour volume			

BASIC FREEWAY SEGMENTS WORKSHEET			
<b>General Information</b>		<b>Site Information</b>	
Analyst	RB	Highway/Direction of Travel	80 WB
Agency or Company	Fehr & Peers	From/To	I-780 Collectors - Georgia St
Date Performed	10/23/2014	Jurisdiction	Sonoma County
Analysis Time Period	AM Peak Hour	Analysis Year	2040
Project Description <i>Vallejo Marine Terminal</i>			
<input checked="" type="checkbox"/> Oper.(LOS)		<input type="checkbox"/> Des.(N)	<input type="checkbox"/> Planning Data
<b>Flow Inputs</b>			
Volume, V	5215	veh/h	Peak-Hour Factor, PHF
AADT		veh/day	%Trucks and Buses, P <sub>T</sub>
Peak-Hr Prop. of AADT, K			%RVs, P <sub>R</sub>
Peak-Hr Direction Prop, D			General Terrain:
DDHV = AADT x K x D		veh/h	Grade % Length
			Up/Down %
			0.92
			5
			0
			Level
			mi
<b>Calculate Flow Adjustments</b>			
f <sub>p</sub>	1.00	E <sub>R</sub>	1.2
E <sub>T</sub>	1.5	f <sub>HV</sub> = 1/[1+P <sub>T</sub> (E <sub>T</sub> - 1) + P <sub>R</sub> (E <sub>R</sub> - 1)]	0.976
<b>Speed Inputs</b>		<b>Calc Speed Adj and FFS</b>	
Lane Width		ft	
Rt-Side Lat. Clearance		ft	f <sub>LW</sub>
Number of Lanes, N	3		f <sub>LC</sub>
Total Ramp Density, TRD		ramps/mi	TRD Adjustment
FFS (measured)	65.0	mph	FFS
Base free-flow Speed, BFFS		mph	65.0
			mph
<b>LOS and Performance Measures</b>		<b>Design (N)</b>	
<u>Operational (LOS)</u>		<u>Design (N)</u>	
v <sub>p</sub> = (V or DDHV) / (PHF x N x f <sub>HV</sub> )	1937	pc/h/ln	Design LOS
x f <sub>p</sub> )			v <sub>p</sub> = (V or DDHV) / (PHF x N x f <sub>HV</sub> )
S	60.9	mph	x f <sub>p</sub> )
D = v <sub>p</sub> / S	31.8	pc/mi/ln	S
LOS	D		D = v <sub>p</sub> / S
			pc/mi/ln
			Required Number of Lanes, N
<b>Glossary</b>		<b>Factor Location</b>	
N - Number of lanes	S - Speed	E <sub>R</sub> - Exhibits 11-10, 11-12	f <sub>LW</sub> - Exhibit 11-8
V - Hourly volume	D - Density	E <sub>T</sub> - Exhibits 11-10, 11-11, 11-13	f <sub>LC</sub> - Exhibit 11-9
v <sub>p</sub> - Flow rate	FFS - Free-flow speed	f <sub>p</sub> - Page 11-18	TRD - Page 11-11
LOS - Level of service	BFFS - Base free-flow speed	LOS, S, FFS, v <sub>p</sub> - Exhibits 11-2, 11-3	
DDHV - Directional design hour volume			

BASIC FREEWAY SEGMENTS WORKSHEET			
<b>General Information</b>		<b>Site Information</b>	
Analyst	<i>RB</i>	Highway/Direction of Travel	<i>80 EB</i>
Agency or Company	<i>Fehr &amp; Peers</i>	From/To	<i>I-780 Collectors - Georgia St</i>
Date Performed	<i>10/23/2014</i>	Jurisdiction	<i>Sonoma County</i>
Analysis Time Period	<i>PM Peak Hour</i>	Analysis Year	<i>2040</i>
Project Description <i>Vallejo Marine Terminal</i>			
<input checked="" type="checkbox"/> Oper.(LOS)		<input type="checkbox"/> Des.(N)	<input type="checkbox"/> Planning Data
<b>Flow Inputs</b>			
Volume, V	<i>5036</i>	veh/h	Peak-Hour Factor, PHF <i>0.92</i>
AADT		veh/day	%Trucks and Buses, P <sub>T</sub> <i>5</i>
Peak-Hr Prop. of AADT, K			%RVs, P <sub>R</sub> <i>0</i>
Peak-Hr Direction Prop, D			General Terrain: <i>Level</i>
DDHV = AADT x K x D		veh/h	Grade % Length <i>mi</i> Up/Down %
<b>Calculate Flow Adjustments</b>			
f <sub>p</sub>	<i>1.00</i>	E <sub>R</sub>	<i>1.2</i>
E <sub>T</sub>	<i>1.5</i>	f <sub>HV</sub> = 1/[1+P <sub>T</sub> (E <sub>T</sub> - 1) + P <sub>R</sub> (E <sub>R</sub> - 1)]	<i>0.976</i>
<b>Speed Inputs</b>		<b>Calc Speed Adj and FFS</b>	
Lane Width		ft	
Rt-Side Lat. Clearance		ft	f <sub>LW</sub> mph
Number of Lanes, N	<i>3</i>		f <sub>LC</sub> mph
Total Ramp Density, TRD		ramps/mi	TRD Adjustment mph
FFS (measured)	<i>65.0</i>	mph	FFS <i>65.0</i> mph
Base free-flow Speed, BFFS		mph	
<b>LOS and Performance Measures</b>		<b>Design (N)</b>	
<u>Operational (LOS)</u>		<u>Design (N)</u>	
v <sub>p</sub> = (V or DDHV) / (PHF x N x f <sub>HV</sub> )	<i>1870</i>	pc/h/ln	v <sub>p</sub> = (V or DDHV) / (PHF x N x f <sub>HV</sub> )
x f <sub>p</sub> )			x f <sub>p</sub> )
S	<i>61.9</i>	mph	S
D = v <sub>p</sub> / S	<i>30.2</i>	pc/mi/ln	D = v <sub>p</sub> / S
LOS	<i>D</i>		Required Number of Lanes, N
<b>Glossary</b>		<b>Factor Location</b>	
N - Number of lanes	S - Speed	E <sub>R</sub> - Exhibits 11-10, 11-12	f <sub>LW</sub> - Exhibit 11-8
V - Hourly volume	D - Density	E <sub>T</sub> - Exhibits 11-10, 11-11, 11-13	f <sub>LC</sub> - Exhibit 11-9
v <sub>p</sub> - Flow rate	FFS - Free-flow speed	f <sub>p</sub> - Page 11-18	TRD - Page 11-11
LOS - Level of service	BFFS - Base free-flow speed	LOS, S, FFS, v <sub>p</sub> - Exhibits 11-2, 11-3	
DDHV - Directional design hour volume			

<b>BASIC FREEWAY SEGMENTS WORKSHEET</b>			
<b>General Information</b>		<b>Site Information</b>	
Analyst	<i>RB</i>	Highway/Direction of Travel	<i>80 EB</i>
Agency or Company	<i>Fehr &amp; Peers</i>	From/To	<i>I-780 Collectors - Georgia St</i>
Date Performed	<i>10/23/2014</i>	Jurisdiction	<i>Sonoma County</i>
Analysis Time Period	<i>AM Peak Hour</i>	Analysis Year	<i>2040</i>
Project Description <i>Vallejo Marine Terminal</i>			
<input checked="" type="checkbox"/> Oper.(LOS) <input type="checkbox"/> Des.(N) <input type="checkbox"/> Planning Data			
<b>Flow Inputs</b>			
Volume, V	<i>5395</i>	veh/h	Peak-Hour Factor, PHF
AADT		veh/day	%Trucks and Buses, P <sub>T</sub>
Peak-Hr Prop. of AADT, K			%RVs, P <sub>R</sub>
Peak-Hr Direction Prop, D			General Terrain:
DDHV = AADT x K x D		veh/h	Grade %    Length <i>mi</i>
			Up/Down %
<b>Calculate Flow Adjustments</b>			
f <sub>p</sub>	<i>1.00</i>	E <sub>R</sub>	<i>1.2</i>
E <sub>T</sub>	<i>1.5</i>	f <sub>HV</sub> = 1/[1+P <sub>T</sub> (E <sub>T</sub> - 1) + P <sub>R</sub> (E <sub>R</sub> - 1)]	<i>0.976</i>
<b>Speed Inputs</b>		<b>Calc Speed Adj and FFS</b>	
Lane Width		ft	
Rt-Side Lat. Clearance		ft	f <sub>LW</sub>
Number of Lanes, N	<i>3</i>		mph
Total Ramp Density, TRD		ramps/mi	f <sub>LC</sub>
FFS (measured)	<i>65.0</i>	mph	TRD Adjustment
Base free-flow Speed, BFFS		mph	FFS
			<i>65.0</i>
			mph
<b>LOS and Performance Measures</b>		<b>Design (N)</b>	
<u>Operational (LOS)</u>		<u>Design (N)</u>	
v <sub>p</sub> = (V or DDHV) / (PHF x N x f <sub>HV</sub> )	<i>2004</i>	pc/h/ln	Design LOS
x f <sub>p</sub> )			v <sub>p</sub> = (V or DDHV) / (PHF x N x f <sub>HV</sub> )
S	<i>59.8</i>	mph	x f <sub>p</sub> )
D = v <sub>p</sub> / S	<i>33.5</i>	pc/mi/ln	S
LOS	<i>D</i>		D = v <sub>p</sub> / S
			pc/mi/ln
			Required Number of Lanes, N
<b>Glossary</b>		<b>Factor Location</b>	
N - Number of lanes	S - Speed	E <sub>R</sub> - Exhibits 11-10, 11-12	f <sub>LW</sub> - Exhibit 11-8
V - Hourly volume	D - Density	E <sub>T</sub> - Exhibits 11-10, 11-11, 11-13	f <sub>LC</sub> - Exhibit 11-9
v <sub>p</sub> - Flow rate	FFS - Free-flow speed	f <sub>p</sub> - Page 11-18	TRD - Page 11-11
LOS - Level of service	BFFS - Base free-flow speed	LOS, S, FFS, v <sub>p</sub> - Exhibits 11-2, 11-3	
DDHV - Directional design hour volume			

BASIC FREEWAY SEGMENTS WORKSHEET			
<b>General Information</b>		<b>Site Information</b>	
Analyst	<i>RB</i>	Highway/Direction of Travel	<i>I-80 EB</i>
Agency or Company	<i>Fehr &amp; Peers</i>	From/To	<i>South of Sonoma Blvd</i>
Date Performed	<i>10/23/2014</i>	Jurisdiction	<i>Sonoma County</i>
Analysis Time Period	<i>AM Peak Hour</i>	Analysis Year	<i>2040</i>
Project Description <i>Vallejo Marine Terminal</i>			
<input checked="" type="checkbox"/> Oper.(LOS)		<input type="checkbox"/> Des.(N)	
<input type="checkbox"/> Planning Data			
<b>Flow Inputs</b>			
Volume, V	<i>2930</i>	veh/h	Peak-Hour Factor, PHF <i>0.92</i>
AADT		veh/day	%Trucks and Buses, P <sub>T</sub> <i>5</i>
Peak-Hr Prop. of AADT, K			%RVs, P <sub>R</sub> <i>0</i>
Peak-Hr Direction Prop, D			General Terrain: <i>Level</i>
DDHV = AADT x K x D		veh/h	Grade % Length <i>mi</i>
			Up/Down %
<b>Calculate Flow Adjustments</b>			
f <sub>p</sub>	<i>1.00</i>	E <sub>R</sub>	<i>1.2</i>
E <sub>T</sub>	<i>1.5</i>	f <sub>HV</sub> = 1/[1+P <sub>T</sub> (E <sub>T</sub> - 1) + P <sub>R</sub> (E <sub>R</sub> - 1)]	<i>0.976</i>
<b>Speed Inputs</b>		<b>Calc Speed Adj and FFS</b>	
Lane Width		ft	
Rt-Side Lat. Clearance		ft	
Number of Lanes, N	<i>4</i>		f <sub>LW</sub> mph
Total Ramp Density, TRD		ramps/mi	f <sub>LC</sub> mph
FFS (measured)	<i>65.0</i>	mph	TRD Adjustment mph
Base free-flow Speed, BFFS		mph	FFS <i>65.0</i> mph
<b>LOS and Performance Measures</b>		<b>Design (N)</b>	
<u>Operational (LOS)</u>		<u>Design (N)</u>	
v <sub>p</sub> = (V or DDHV) / (PHF x N x f <sub>HV</sub> )	<i>816</i>	pc/h/ln	Design LOS
x f <sub>p</sub> )			v <sub>p</sub> = (V or DDHV) / (PHF x N x f <sub>HV</sub> )
S	<i>65.0</i>	mph	x f <sub>p</sub> )
D = v <sub>p</sub> / S	<i>12.6</i>	pc/mi/ln	S
LOS	<i>B</i>		D = v <sub>p</sub> / S
			pc/mi/ln
			Required Number of Lanes, N
<b>Glossary</b>		<b>Factor Location</b>	
N - Number of lanes	S - Speed	E <sub>R</sub> - Exhibits 11-10, 11-12	f <sub>LW</sub> - Exhibit 11-8
V - Hourly volume	D - Density	E <sub>T</sub> - Exhibits 11-10, 11-11, 11-13	f <sub>LC</sub> - Exhibit 11-9
v <sub>p</sub> - Flow rate	FFS - Free-flow speed	f <sub>p</sub> - Page 11-18	TRD - Page 11-11
LOS - Level of service	BFFS - Base free-flow speed	LOS, S, FFS, v <sub>p</sub> - Exhibits 11-2, 11-3	
DDHV - Directional design hour volume			

BASIC FREEWAY SEGMENTS WORKSHEET			
<b>General Information</b>		<b>Site Information</b>	
Analyst	<i>RB</i>	Highway/Direction of Travel	<i>I-80 WB</i>
Agency or Company	<i>Fehr &amp; Peers</i>	From/To	<i>South of Sonoma Blvd</i>
Date Performed	<i>10/23/2014</i>	Jurisdiction	<i>Sonoma County</i>
Analysis Time Period	<i>PM Peak Hour</i>	Analysis Year	<i>2040</i>
Project Description <i>Vallejo Marine Terminal</i>			
<input checked="" type="checkbox"/> Oper.(LOS)		<input type="checkbox"/> Des.(N)	
<input type="checkbox"/> Planning Data			
<b>Flow Inputs</b>			
Volume, V	<i>3560</i>	veh/h	Peak-Hour Factor, PHF <i>0.92</i>
AADT		veh/day	%Trucks and Buses, P <sub>T</sub> <i>5</i>
Peak-Hr Prop. of AADT, K			%RVs, P <sub>R</sub> <i>0</i>
Peak-Hr Direction Prop, D			General Terrain: <i>Level</i>
DDHV = AADT x K x D		veh/h	Grade % Length <i>mi</i>
			Up/Down %
<b>Calculate Flow Adjustments</b>			
f <sub>p</sub>	<i>1.00</i>	E <sub>R</sub>	<i>1.2</i>
E <sub>T</sub>	<i>1.5</i>	f <sub>HV</sub> = 1/[1+P <sub>T</sub> (E <sub>T</sub> - 1) + P <sub>R</sub> (E <sub>R</sub> - 1)]	<i>0.976</i>
<b>Speed Inputs</b>		<b>Calc Speed Adj and FFS</b>	
Lane Width		ft	
Rt-Side Lat. Clearance		ft	
Number of Lanes, N	<i>4</i>		f <sub>LW</sub> mph
Total Ramp Density, TRD		ramps/mi	f <sub>LC</sub> mph
FFS (measured)	<i>65.0</i>	mph	TRD Adjustment mph
Base free-flow Speed, BFFS		mph	FFS <i>65.0</i> mph
<b>LOS and Performance Measures</b>		<b>Design (N)</b>	
<u>Operational (LOS)</u>		<u>Design (N)</u>	
v <sub>p</sub> = (V or DDHV) / (PHF x N x f <sub>HV</sub> )	<i>992</i>	pc/h/ln	Design LOS
x f <sub>p</sub> )			v <sub>p</sub> = (V or DDHV) / (PHF x N x f <sub>HV</sub> )
S	<i>65.0</i>	mph	x f <sub>p</sub> )
D = v <sub>p</sub> / S	<i>15.3</i>	pc/mi/ln	S
LOS	<i>B</i>		D = v <sub>p</sub> / S
			pc/mi/ln
			Required Number of Lanes, N
<b>Glossary</b>		<b>Factor Location</b>	
N - Number of lanes	S - Speed	E <sub>R</sub> - Exhibits 11-10, 11-12	f <sub>LW</sub> - Exhibit 11-8
V - Hourly volume	D - Density	E <sub>T</sub> - Exhibits 11-10, 11-11, 11-13	f <sub>LC</sub> - Exhibit 11-9
v <sub>p</sub> - Flow rate	FFS - Free-flow speed	f <sub>p</sub> - Page 11-18	TRD - Page 11-11
LOS - Level of service	BFFS - Base free-flow speed	LOS, S, FFS, v <sub>p</sub> - Exhibits 11-2, 11-3	
DDHV - Directional design hour volume			

<b>BASIC FREEWAY SEGMENTS WORKSHEET</b>			
<b>General Information</b>		<b>Site Information</b>	
Analyst	<i>RB</i>	Highway/Direction of Travel <i>I-80 WB</i>	
Agency or Company	<i>Fehr &amp; Peers</i>	From/To	<i>South of Sonoma Blvd</i>
Date Performed	<i>10/23/2014</i>	Jurisdiction	<i>Sonoma County</i>
Analysis Time Period	<i>AM Peak Hour</i>	Analysis Year	<i>2040</i>
Project Description <i>Vallejo Marine Terminal</i>			
<input checked="" type="checkbox"/> Oper.(LOS) <input type="checkbox"/> Des.(N) <input type="checkbox"/> Planning Data			
<b>Flow Inputs</b>			
Volume, V	<i>6346</i>	veh/h	Peak-Hour Factor, PHF <i>0.92</i>
AADT		veh/day	%Trucks and Buses, P <sub>T</sub> <i>5</i>
Peak-Hr Prop. of AADT, K			%RVs, P <sub>R</sub> <i>0</i>
Peak-Hr Direction Prop, D			General Terrain: <i>Level</i>
DDHV = AADT x K x D		veh/h	Grade % Length <i>mi</i> Up/Down %
<b>Calculate Flow Adjustments</b>			
f <sub>p</sub>	<i>1.00</i>	E <sub>R</sub>	<i>1.2</i>
E <sub>T</sub>	<i>1.5</i>	f <sub>HV</sub> = 1/[1+P <sub>T</sub> (E <sub>T</sub> - 1) + P <sub>R</sub> (E <sub>R</sub> - 1)] <i>0.976</i>	
<b>Speed Inputs</b>		<b>Calc Speed Adj and FFS</b>	
Lane Width		ft	
Rt-Side Lat. Clearance		ft	
Number of Lanes, N	<i>4</i>		f <sub>LW</sub> mph
Total Ramp Density, TRD		ramps/mi	f <sub>LC</sub> mph
FFS (measured)	<i>65.0</i>	mph	TRD Adjustment mph
Base free-flow Speed, BFFS		mph	FFS <i>65.0</i> mph
<b>LOS and Performance Measures</b>		<b>Design (N)</b>	
<u>Operational (LOS)</u>		<u>Design (N)</u>	
v <sub>p</sub> = (V or DDHV) / (PHF x N x f <sub>HV</sub> x f <sub>p</sub> )	<i>1768</i>	pc/h/ln	Design LOS
S	<i>63.1</i>	mph	v <sub>p</sub> = (V or DDHV) / (PHF x N x f <sub>HV</sub> x f <sub>p</sub> )
D = v <sub>p</sub> / S	<i>28.0</i>	pc/mi/ln	S
LOS	<i>D</i>		D = v <sub>p</sub> / S
			Required Number of Lanes, N
<b>Glossary</b>		<b>Factor Location</b>	
N - Number of lanes	S - Speed	E <sub>R</sub> - Exhibits 11-10, 11-12	f <sub>LW</sub> - Exhibit 11-8
V - Hourly volume	D - Density	E <sub>T</sub> - Exhibits 11-10, 11-11, 11-13	f <sub>LC</sub> - Exhibit 11-9
v <sub>p</sub> - Flow rate	FFS - Free-flow speed	f <sub>p</sub> - Page 11-18	TRD - Page 11-11
LOS - Level of service	BFFS - Base free-flow speed	LOS, S, FFS, v <sub>p</sub> - Exhibits 11-2, 11-3	
DDHV - Directional design hour volume			

<b>BASIC FREEWAY SEGMENTS WORKSHEET</b>			
<b>General Information</b>		<b>Site Information</b>	
Analyst	<i>RB</i>	Highway/Direction of Travel <i>I-80 EB</i>	
Agency or Company	<i>Fehr &amp; Peers</i>	From/To	<i>South of Sonoma Blvd</i>
Date Performed	<i>10/23/2014</i>	Jurisdiction	<i>Sonoma County</i>
Analysis Time Period	<i>PM Peak Hour</i>	Analysis Year	<i>2040</i>
Project Description <i>Vallejo Marine Terminal</i>			
<input checked="" type="checkbox"/> Oper.(LOS)		<input type="checkbox"/> Des.(N)	
<input type="checkbox"/> Planning Data			
<b>Flow Inputs</b>			
Volume, V	<i>5352</i>	veh/h	Peak-Hour Factor, PHF <i>0.92</i>
AADT		veh/day	%Trucks and Buses, P <sub>T</sub> <i>5</i>
Peak-Hr Prop. of AADT, K			%RVs, P <sub>R</sub> <i>0</i>
Peak-Hr Direction Prop, D			General Terrain: <i>Level</i>
DDHV = AADT x K x D		veh/h	Grade % Length <i>mi</i>
			Up/Down %
<b>Calculate Flow Adjustments</b>			
f <sub>p</sub>	<i>1.00</i>	E <sub>R</sub>	<i>1.2</i>
E <sub>T</sub>	<i>1.5</i>	f <sub>HV</sub> = 1/[1+P <sub>T</sub> (E <sub>T</sub> - 1) + P <sub>R</sub> (E <sub>R</sub> - 1)] <i>0.976</i>	
<b>Speed Inputs</b>		<b>Calc Speed Adj and FFS</b>	
Lane Width		ft	
Rt-Side Lat. Clearance		ft	
Number of Lanes, N	<i>4</i>		f <sub>LW</sub> mph
Total Ramp Density, TRD		ramps/mi	f <sub>LC</sub> mph
FFS (measured)	<i>65.0</i>	mph	TRD Adjustment mph
Base free-flow Speed, BFFS		mph	FFS <i>65.0</i> mph
<b>LOS and Performance Measures</b>		<b>Design (N)</b>	
<u>Operational (LOS)</u>		<u>Design (N)</u>	
v <sub>p</sub> = (V or DDHV) / (PHF x N x f <sub>HV</sub> )		Design LOS	
<i>1491</i>	pc/h/ln	v <sub>p</sub> = (V or DDHV) / (PHF x N x f <sub>HV</sub> )	
x f <sub>p</sub> )		pc/h/ln	
S	<i>64.9</i>	mph	x f <sub>p</sub> )
D = v <sub>p</sub> / S	<i>23.0</i>	pc/mi/ln	S
LOS	<i>C</i>		D = v <sub>p</sub> / S
			pc/mi/ln
			Required Number of Lanes, N
<b>Glossary</b>		<b>Factor Location</b>	
N - Number of lanes	S - Speed	E <sub>R</sub> - Exhibits 11-10, 11-12	f <sub>LW</sub> - Exhibit 11-8
V - Hourly volume	D - Density	E <sub>T</sub> - Exhibits 11-10, 11-11, 11-13	f <sub>LC</sub> - Exhibit 11-9
v <sub>p</sub> - Flow rate	FFS - Free-flow speed	f <sub>p</sub> - Page 11-18	TRD - Page 11-11
LOS - Level of service	BFFS - Base free-flow speed	LOS, S, FFS, v <sub>p</sub> - Exhibits 11-2, 11-3	
DDHV - Directional design hour volume			



<b>BASIC FREEWAY SEGMENTS WORKSHEET</b>			
<b>General Information</b>		<b>Site Information</b>	
Analyst	<i>RB</i>	Highway/Direction of Travel <i>I-780 EB</i>	
Agency or Company	<i>Fehr &amp; Peers</i>	From/To	<i>Laurel to Glen Cove</i>
Date Performed	<i>10/23/2014</i>	Jurisdiction	<i>Sonoma County</i>
Analysis Time Period	<i>PM Peak Hour</i>	Analysis Year	<i>2040</i>
Project Description <i>Vallejo Marine Terminal</i>			
<input checked="" type="checkbox"/> Oper.(LOS) <input type="checkbox"/> Des.(N) <input type="checkbox"/> Planning Data			
<b>Flow Inputs</b>			
Volume, V	<i>2771</i>	veh/h	Peak-Hour Factor, PHF <i>0.92</i>
AADT		veh/day	%Trucks and Buses, P <sub>T</sub> <i>5</i>
Peak-Hr Prop. of AADT, K			%RVs, P <sub>R</sub> <i>0</i>
Peak-Hr Direction Prop, D			General Terrain: <i>Level</i>
DDHV = AADT x K x D		veh/h	Grade % Length <i>mi</i> Up/Down %
<b>Calculate Flow Adjustments</b>			
f <sub>p</sub>	<i>1.00</i>	E <sub>R</sub>	<i>1.2</i>
E <sub>T</sub>	<i>1.5</i>	f <sub>HV</sub> = 1/[1+P <sub>T</sub> (E <sub>T</sub> - 1) + P <sub>R</sub> (E <sub>R</sub> - 1)] <i>0.976</i>	
<b>Speed Inputs</b>		<b>Calc Speed Adj and FFS</b>	
Lane Width		ft	
Rt-Side Lat. Clearance		ft	
Number of Lanes, N	<i>2</i>		f <sub>LW</sub> mph
Total Ramp Density, TRD		ramps/mi	f <sub>LC</sub> mph
FFS (measured)	<i>65.0</i>	mph	TRD Adjustment mph
Base free-flow Speed, BFFS		mph	FFS <i>65.0</i> mph
<b>LOS and Performance Measures</b>		<b>Design (N)</b>	
<u>Operational (LOS)</u>		<u>Design (N)</u>	
v <sub>p</sub> = (V or DDHV) / (PHF x N x f <sub>HV</sub> x f <sub>p</sub> )		Design LOS	
<i>1544</i>	pc/h/ln	v <sub>p</sub> = (V or DDHV) / (PHF x N x f <sub>HV</sub> x f <sub>p</sub> )	
S	<i>64.7</i>	mph	pc/h/ln
D = v <sub>p</sub> / S	<i>23.9</i>	pc/mi/ln	S mph
LOS	<i>C</i>		D = v <sub>p</sub> / S pc/mi/ln
		Required Number of Lanes, N	
<b>Glossary</b>		<b>Factor Location</b>	
N - Number of lanes	S - Speed	E <sub>R</sub> - Exhibits 11-10, 11-12	f <sub>LW</sub> - Exhibit 11-8
V - Hourly volume	D - Density	E <sub>T</sub> - Exhibits 11-10, 11-11, 11-13	f <sub>LC</sub> - Exhibit 11-9
v <sub>p</sub> - Flow rate	FFS - Free-flow speed	f <sub>p</sub> - Page 11-18	TRD - Page 11-11
LOS - Level of service	BFFS - Base free-flow speed	LOS, S, FFS, v <sub>p</sub> - Exhibits 11-2, 11-3	
DDHV - Directional design hour volume			

BASIC FREEWAY SEGMENTS WORKSHEET			
<b>General Information</b>		<b>Site Information</b>	
Analyst	<i>RB</i>	Highway/Direction of Travel	<i>I-780 EB</i>
Agency or Company	<i>Fehr &amp; Peers</i>	From/To	<i>Laurel to Glen Cove</i>
Date Performed	<i>10/23/2014</i>	Jurisdiction	<i>Sonoma County</i>
Analysis Time Period	<i>AM Peak Hour</i>	Analysis Year	<i>2040</i>
Project Description <i>Vallejo Marine Terminal</i>			
<input checked="" type="checkbox"/> Oper.(LOS)		<input type="checkbox"/> Des.(N)	
<input type="checkbox"/> Planning Data			
<b>Flow Inputs</b>			
Volume, V	<i>2997</i>	veh/h	Peak-Hour Factor, PHF <i>0.92</i>
AADT		veh/day	%Trucks and Buses, P <sub>T</sub> <i>5</i>
Peak-Hr Prop. of AADT, K			%RVs, P <sub>R</sub> <i>0</i>
Peak-Hr Direction Prop, D			General Terrain: <i>Level</i>
DDHV = AADT x K x D		veh/h	Grade % Length <i>mi</i>
			Up/Down %
<b>Calculate Flow Adjustments</b>			
f <sub>p</sub>	<i>1.00</i>	E <sub>R</sub>	<i>1.2</i>
E <sub>T</sub>	<i>1.5</i>	f <sub>HV</sub> = 1/[1+P <sub>T</sub> (E <sub>T</sub> - 1) + P <sub>R</sub> (E <sub>R</sub> - 1)]	<i>0.976</i>
<b>Speed Inputs</b>		<b>Calc Speed Adj and FFS</b>	
Lane Width		ft	
Rt-Side Lat. Clearance		ft	
Number of Lanes, N	<i>2</i>		f <sub>LW</sub> mph
Total Ramp Density, TRD		ramps/mi	f <sub>LC</sub> mph
FFS (measured)	<i>65.0</i>	mph	TRD Adjustment mph
Base free-flow Speed, BFFS		mph	FFS <i>65.0</i> mph
<b>LOS and Performance Measures</b>		<b>Design (N)</b>	
<u>Operational (LOS)</u>		<u>Design (N)</u>	
v <sub>p</sub> = (V or DDHV) / (PHF x N x f <sub>HV</sub> )	<i>1670</i>	pc/h/ln	Design LOS
x f <sub>p</sub> )			v <sub>p</sub> = (V or DDHV) / (PHF x N x f <sub>HV</sub> )
S	<i>64.0</i>	mph	x f <sub>p</sub> )
D = v <sub>p</sub> / S	<i>26.1</i>	pc/mi/ln	S
LOS	<i>D</i>		D = v <sub>p</sub> / S
			pc/mi/ln
			Required Number of Lanes, N
<b>Glossary</b>		<b>Factor Location</b>	
N - Number of lanes	S - Speed	E <sub>R</sub> - Exhibits 11-10, 11-12	f <sub>LW</sub> - Exhibit 11-8
V - Hourly volume	D - Density	E <sub>T</sub> - Exhibits 11-10, 11-11, 11-13	f <sub>LC</sub> - Exhibit 11-9
v <sub>p</sub> - Flow rate	FFS - Free-flow speed	f <sub>p</sub> - Page 11-18	TRD - Page 11-11
LOS - Level of service	BFFS - Base free-flow speed	LOS, S, FFS, v <sub>p</sub> - Exhibits 11-2, 11-3	
DDHV - Directional design hour volume			

<b>BASIC FREEWAY SEGMENTS WORKSHEET</b>			
<b>General Information</b>		<b>Site Information</b>	
Analyst	<i>RB</i>	Highway/Direction of Travel <i>I-780 WB</i>	
Agency or Company	<i>Fehr &amp; Peers</i>	From/To	<i>Glen Cove to Laurel</i>
Date Performed	<i>10/23/2014</i>	Jurisdiction	<i>Sonoma County</i>
Analysis Time Period	<i>PM Peak Hour</i>	Analysis Year	<i>2040</i>
Project Description <i>Vallejo Marine Terminal</i>			
<input checked="" type="checkbox"/> Oper.(LOS) <input type="checkbox"/> Des.(N) <input type="checkbox"/> Planning Data			
<b>Flow Inputs</b>			
Volume, V	<i>3497</i>	veh/h	Peak-Hour Factor, PHF <i>0.92</i>
AADT		veh/day	%Trucks and Buses, P <sub>T</sub> <i>5</i>
Peak-Hr Prop. of AADT, K			%RVs, P <sub>R</sub> <i>0</i>
Peak-Hr Direction Prop, D			General Terrain: <i>Level</i>
DDHV = AADT x K x D		veh/h	Grade % Length <i>mi</i> Up/Down %
<b>Calculate Flow Adjustments</b>			
f <sub>p</sub>	<i>1.00</i>	E <sub>R</sub>	<i>1.2</i>
E <sub>T</sub>	<i>1.5</i>	f <sub>HV</sub> = 1/[1+P <sub>T</sub> (E <sub>T</sub> - 1) + P <sub>R</sub> (E <sub>R</sub> - 1)] <i>0.976</i>	
<b>Speed Inputs</b>		<b>Calc Speed Adj and FFS</b>	
Lane Width		ft	
Rt-Side Lat. Clearance		ft	
Number of Lanes, N	<i>2</i>		f <sub>LW</sub> mph
Total Ramp Density, TRD		ramps/mi	f <sub>LC</sub> mph
FFS (measured)	<i>65.0</i>	mph	TRD Adjustment mph
Base free-flow Speed, BFFS		mph	FFS <i>65.0</i> mph
<b>LOS and Performance Measures</b>		<b>Design (N)</b>	
<u>Operational (LOS)</u>		<u>Design (N)</u>	
v <sub>p</sub> = (V or DDHV) / (PHF x N x f <sub>HV</sub> ) <i>1948</i>		Design LOS	
x f <sub>p</sub> )		pc/h/ln	v <sub>p</sub> = (V or DDHV) / (PHF x N x f <sub>HV</sub> )
S	<i>60.7</i>	mph	x f <sub>p</sub> )
D = v <sub>p</sub> / S	<i>32.1</i>	pc/mi/ln	S
LOS	<i>D</i>		D = v <sub>p</sub> / S
			pc/mi/ln
			Required Number of Lanes, N
<b>Glossary</b>		<b>Factor Location</b>	
N - Number of lanes	S - Speed	E <sub>R</sub> - Exhibits 11-10, 11-12	f <sub>LW</sub> - Exhibit 11-8
V - Hourly volume	D - Density	E <sub>T</sub> - Exhibits 11-10, 11-11, 11-13	f <sub>LC</sub> - Exhibit 11-9
v <sub>p</sub> - Flow rate	FFS - Free-flow speed	f <sub>p</sub> - Page 11-18	TRD - Page 11-11
LOS - Level of service	BFFS - Base free-flow speed	LOS, S, FFS, v <sub>p</sub> - Exhibits 11-2, 11-3	
DDHV - Directional design hour volume			

<b>BASIC FREEWAY SEGMENTS WORKSHEET</b>			
<b>General Information</b>		<b>Site Information</b>	
Analyst	<i>RB</i>	Highway/Direction of Travel <i>I-780 WB</i>	
Agency or Company	<i>Fehr &amp; Peers</i>	From/To	<i>Glen Cove to Laurel</i>
Date Performed	<i>10/23/2014</i>	Jurisdiction	<i>Sonoma County</i>
Analysis Time Period	<i>AM Peak Hour</i>	Analysis Year	<i>2040</i>
Project Description <i>Vallejo Marine Terminal</i>			
<input checked="" type="checkbox"/> Oper.(LOS) <input type="checkbox"/> Des.(N) <input type="checkbox"/> Planning Data			
<b>Flow Inputs</b>			
Volume, V	<i>2386</i>	veh/h	Peak-Hour Factor, PHF <i>0.92</i>
AADT		veh/day	%Trucks and Buses, P <sub>T</sub> <i>5</i>
Peak-Hr Prop. of AADT, K			%RVs, P <sub>R</sub> <i>0</i>
Peak-Hr Direction Prop, D			General Terrain: <i>Level</i>
DDHV = AADT x K x D		veh/h	Grade % Length <i>mi</i> Up/Down %
<b>Calculate Flow Adjustments</b>			
f <sub>p</sub>	<i>1.00</i>	E <sub>R</sub>	<i>1.2</i>
E <sub>T</sub>	<i>1.5</i>	f <sub>HV</sub> = 1/[1+P <sub>T</sub> (E <sub>T</sub> - 1) + P <sub>R</sub> (E <sub>R</sub> - 1)] <i>0.976</i>	
<b>Speed Inputs</b>		<b>Calc Speed Adj and FFS</b>	
Lane Width		ft	
Rt-Side Lat. Clearance		ft	
Number of Lanes, N	<i>2</i>		f <sub>LW</sub> mph
Total Ramp Density, TRD		ramps/mi	f <sub>LC</sub> mph
FFS (measured)	<i>65.0</i>	mph	TRD Adjustment mph
Base free-flow Speed, BFFS		mph	FFS <i>65.0</i> mph
<b>LOS and Performance Measures</b>		<b>Design (N)</b>	
<u>Operational (LOS)</u>		<u>Design (N)</u>	
v <sub>p</sub> = (V or DDHV) / (PHF x N x f <sub>HV</sub> )		Design LOS	
<i>1329</i>	pc/h/ln	v <sub>p</sub> = (V or DDHV) / (PHF x N x f <sub>HV</sub> )	pc/h/ln
x f <sub>p</sub> )		x f <sub>p</sub> )	
S	<i>65.0</i>	mph	mph
D = v <sub>p</sub> / S	<i>20.4</i>	pc/mi/ln	pc/mi/ln
LOS	<i>C</i>		Required Number of Lanes, N
<b>Glossary</b>		<b>Factor Location</b>	
N - Number of lanes	S - Speed	E <sub>R</sub> - Exhibits 11-10, 11-12	f <sub>LW</sub> - Exhibit 11-8
V - Hourly volume	D - Density	E <sub>T</sub> - Exhibits 11-10, 11-11, 11-13	f <sub>LC</sub> - Exhibit 11-9
v <sub>p</sub> - Flow rate	FFS - Free-flow speed	f <sub>p</sub> - Page 11-18	TRD - Page 11-11
LOS - Level of service	BFFS - Base free-flow speed	LOS, S, FFS, v <sub>p</sub> - Exhibits 11-2, 11-3	
DDHV - Directional design hour volume			

# Leisch Method for Weaving Analysis

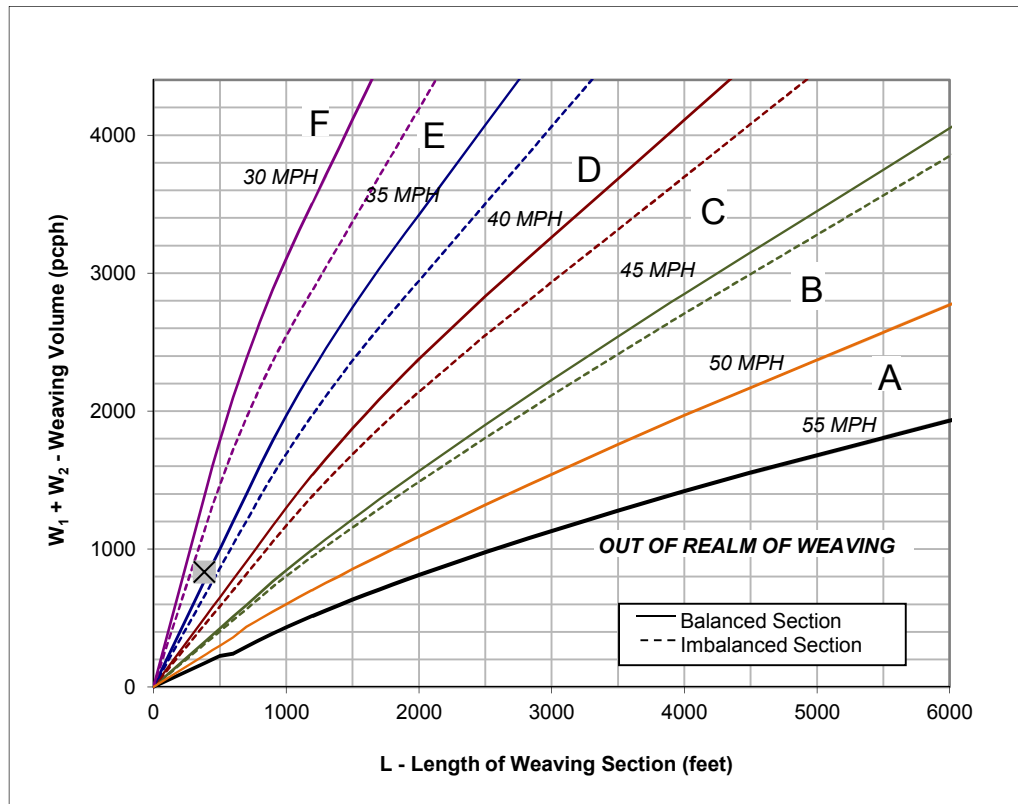
## Data Input

Number of Entering Mainline Lanes	$N_b$	2
Number of Lanes in Weaving Section	N	3
Length of Weaving Section (feet)	L	385

## Project Information

Project	Vallejo Marine Terminal
Scenario	AM + No Project
Freeway	I-780 EB
On-ramp	W1: EB on from WB 80
Off-ramp	W2: EB off to EB 80

Total Weaving Section (V)		On-ramp to Mainline ( $W_1$ )		Mainline to Off-ramp ( $W_2$ )	
Volume (vph)*	1,240	Volume (vph)*	731	Volume (vph)*	84
Truck Percentage	5%	Truck Percentage	5%	Truck Percentage	5%
PCE for Trucks	1.5	PCE for Trucks	1.5	PCE for Trucks	1.5
Volume (pcph)	1,271	Volume (pcph)	749	Volume (pcph)	87

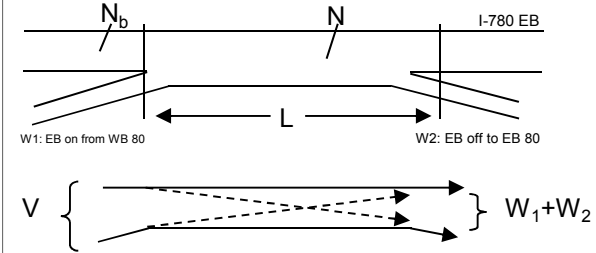


The LOS in the chart above refers to the capacity of weaving traffic only; through and ramp to ramp traffic is not included.

\* Note: **Do not adjust by a Peak Hour Factor (PHF)**. The methodology incorporates the PHF in the Service Volume tables.

Sources: *Completion of Procedures for Analysis and Design of Traffic Weaving Sections*, Jack E. Leisch & Associates, September 1983 and *Highway Design Manual*, California Department of Transportation, July 24, 2009

## Figure



## Capacity Analysis

- Is the weaving section balanced ( $Y / N$ )? **N**  
[If optional exit lane, then "Y". Otherwise "N".]
- In the Weaving Speed Chart to the left, which two speed curves is the black "x" between?

**30 MPH** and **35 MPH**

If below the 55 MPH curve, out of the realm of weaving.  
If left of the 30 MPH curve, LOS is F.

- Interpolated Weaving Speed ( $S_w$ , mph) **33.2**
- Weaving Intensity Factor ( $k$ ) **3.00**
- Service Volume (SV, pcph)  
 $SV = (1/N)[V + (k - 1) \cdot \min(W_1, W_2)]$  **481**
- Level of Service (LOS) **A**

# Leisch Method for Weaving Analysis

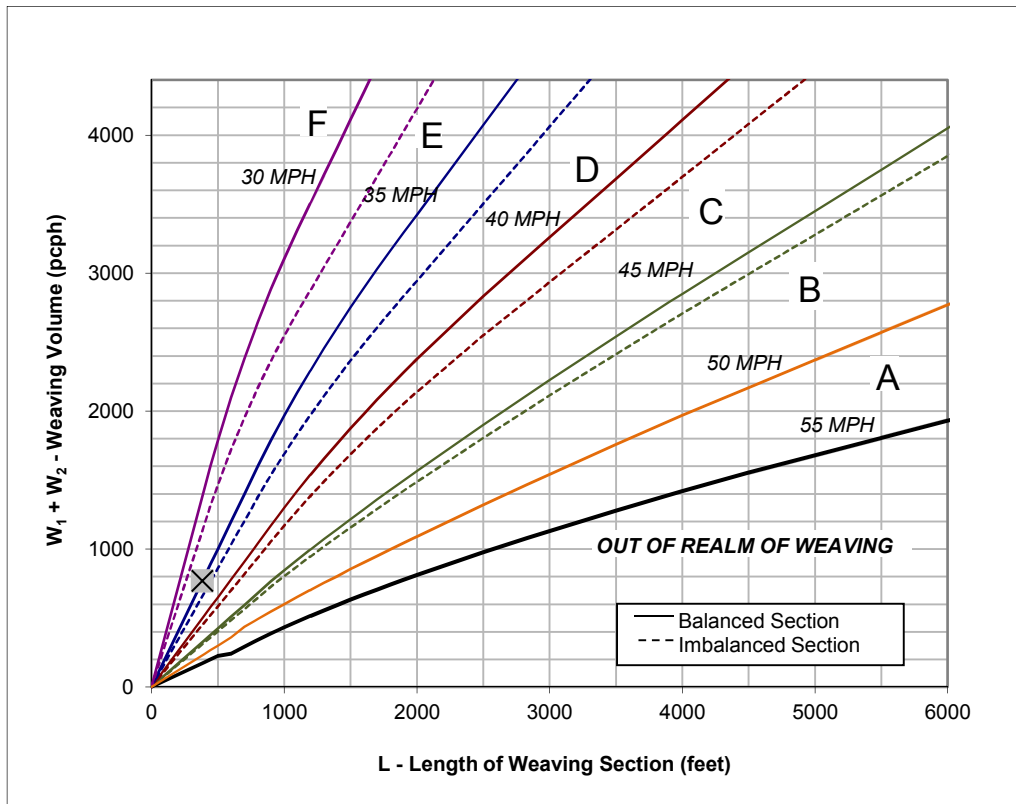
## Data Input

Number of Entering Mainline Lanes	$N_b$	2
Number of Lanes in Weaving Section	N	3
Length of Weaving Section (feet)	L	385

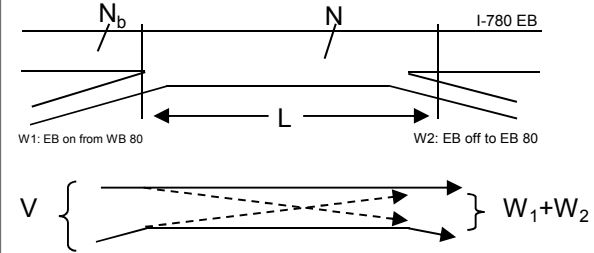
## Project Information

Project	Vallejo Marine Terminal
Scenario	PM + No Project
Freeway	I-780 EB
On-ramp	W1: EB on from WB 80
Off-ramp	W2: EB off to EB 80

Total Weaving Section (V)		On-ramp to Mainline ( $W_1$ )		Mainline to Off-ramp ( $W_2$ )	
Volume (vph)*	1,894	Volume (vph)*	496	Volume (vph)*	255
Truck Percentage	5%	Truck Percentage	5%	Truck Percentage	5%
PCE for Trucks	1.5	PCE for Trucks	1.5	PCE for Trucks	1.5
Volume (pcph)	1,942	Volume (pcph)	508	Volume (pcph)	261



## Figure



## Capacity Analysis

- Is the weaving section balanced ( $Y / N$ )? N  
[If optional exit lane, then "Y". Otherwise "N".]
- In the Weaving Speed Chart to the left, which two speed curves is the black "x" between?  
30 MPH and 35 MPH
- If below the 55 MPH curve, out of the realm of weaving.  
If left of the 30 MPH curve, LOS is F.
- Interpolated Weaving Speed ( $S_w$ , mph) 33.9
- Weaving Intensity Factor ( $k$ ) 2.94
- Service Volume (SV, pcph)  
 $SV = (1/N) * [V + (k - 1) * \min(W_1, W_2)]$  816
- Level of Service (LOS) B

The LOS in the chart above refers to the capacity of weaving traffic only; through and ramp to ramp traffic is not included.

\* Note: **Do not adjust by a Peak Hour Factor (PHF)**. The methodology incorporates the PHF in the Service Volume tables.

Sources: *Completion of Procedures for Analysis and Design of Traffic Weaving Sections*, Jack E. Leisch & Associates, September 1983 and *Highway Design Manual*, California Department of Transportation, July 24, 2009

# Leisch Method for Weaving Analysis

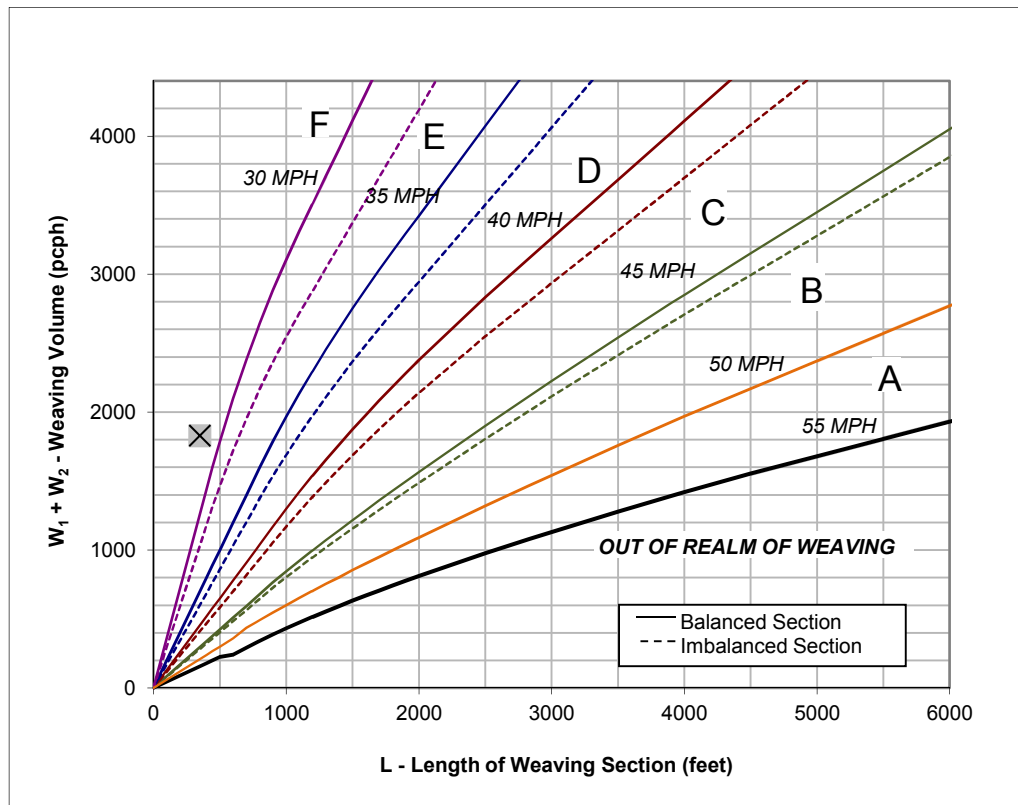
## Data Input

Number of Entering Mainline Lanes	$N_b$	2
Number of Lanes in Weaving Section	N	3
Length of Weaving Section (feet)	L	350

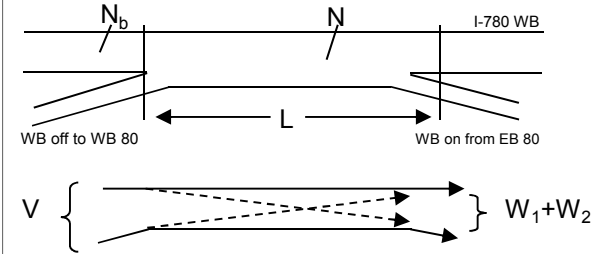
## Project Information

Project	Vallejo Marine Terminal
Scenario	AM + No Project
Freeway	I-780 WB
On-ramp	WB off to WB 80
Off-ramp	WB on from EB 80

Total Weaving Section (V)		On-ramp to Mainline ( $W_1$ )		Mainline to Off-ramp ( $W_2$ )	
Volume (vph)*	2,233	Volume (vph)*	1,610	Volume (vph)*	176
Truck Percentage	5%	Truck Percentage	5%	Truck Percentage	5%
PCE for Trucks	1.5	PCE for Trucks	1.5	PCE for Trucks	1.5
Volume (pcph)	2,289	Volume (pcph)	1,650	Volume (pcph)	180



## Figure



## Capacity Analysis

1. Is the weaving section balanced ( $Y / N$ )? [If optional exit lane, then "Y". Otherwise "N".]	N
2. In the Weaving Speed Chart to the left, which two speed curves is the black "x" between? <b>0 MPH</b> and <b>30 MPH</b>	-
If below the 55 MPH curve, out of the realm of weaving. If left of the 30 MPH curve, LOS is F.	
3. Interpolated Weaving Speed ( $S_w$ , mph)	-
4. Weaving Intensity Factor ( $k$ )	-
5. Service Volume (SV, pcph) $SV = (1/N) * [V + (k - 1) * \min(W_1, W_2)]$	-
6. Level of Service (LOS)	F

The LOS in the chart above refers to the capacity of weaving traffic only; through and ramp to ramp traffic is not included.

\* Note: **Do not adjust by a Peak Hour Factor (PHF)**. The methodology incorporates the PHF in the Service Volume tables.

Sources: *Completion of Procedures for Analysis and Design of Traffic Weaving Sections*, Jack E. Leisch & Associates, September 1983 and *Highway Design Manual*, California Department of Transportation, July 24, 2009

# Leisch Method for Weaving Analysis

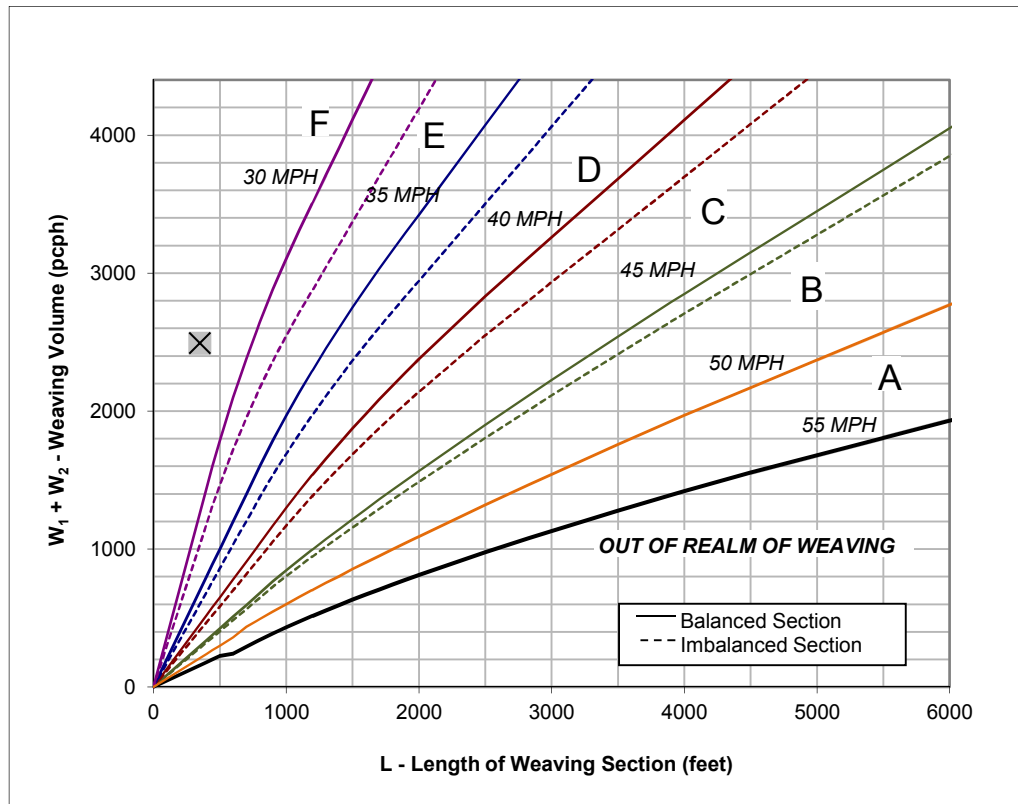
## Data Input

Number of Entering Mainline Lanes	$N_b$	2
Number of Lanes in Weaving Section	$N$	3
Length of Weaving Section (feet)	$L$	350

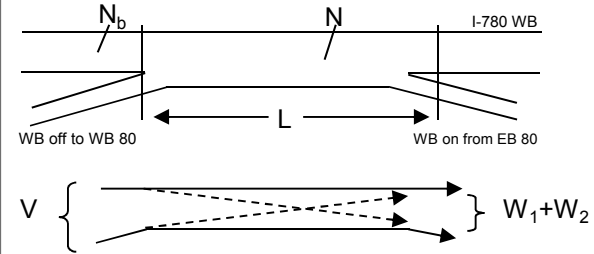
## Project Information

Project	Vallejo Marine Terminal
Scenario	PM + No Project
Freeway	I-780 WB
On-ramp	WB off to WB 80
Off-ramp	WB on from EB 80

Total Weaving Section (V)		On-ramp to Mainline ( $W_1$ )		Mainline to Off-ramp ( $W_2$ )	
Volume (vph)*	3,404	Volume (vph)*	1,952	Volume (vph)*	480
Truck Percentage	5%	Truck Percentage	5%	Truck Percentage	5%
PCE for Trucks	1.5	PCE for Trucks	1.5	PCE for Trucks	1.5
Volume (pcph)	3,489	Volume (pcph)	2,000	Volume (pcph)	492



## Figure



## Capacity Analysis

- Is the weaving section balanced ( $Y / N$ )? N  
[If optional exit lane, then "Y". Otherwise "N".]
- In the Weaving Speed Chart to the left, which two speed curves is the black "x" between?

**0 MPH** and **30 MPH**

If below the 55 MPH curve, out of the realm of weaving.  
If left of the 30 MPH curve, LOS is F.

- Interpolated Weaving Speed ( $S_w$ , mph) -
- Weaving Intensity Factor ( $k$ ) -
- Service Volume (SV, pcph)  
 $SV = (1/N) * [V + (k - 1) * \min(W_1, W_2)]$  -
- Level of Service (LOS) F

The LOS in the chart above refers to the capacity of weaving traffic only; through and ramp to ramp traffic is not included.

\* Note: **Do not adjust by a Peak Hour Factor (PHF)**. The methodology incorporates the PHF in the Service Volume tables.

Sources: *Completion of Procedures for Analysis and Design of Traffic Weaving Sections*, Jack E. Leisch & Associates, September 1983 and *Highway Design Manual*, California Department of Transportation, July 24, 2009



**APPENDIX L.5.7 — CUMULATIVE PLUS VMT PROJECT**



RAMPS AND RAMP JUNCTIONS WORKSHEET										
General Information					Site Information					
Analyst	RB	Freeway/Dir of Travel	I 80 EB							
Agency or Company	Fehr & Peers	Junction	I-780 Collector							
Date Performed	10/31/2014	Jurisdiction	Sonoma County							
Analysis Time Period	AM Peak	Analysis Year	2040 + VMT							
Project Description Vallejo Marine Terminal										
Inputs										
Upstream Adj Ramp <input type="checkbox"/> Yes <input type="checkbox"/> On <input checked="" type="checkbox"/> No <input type="checkbox"/> Off	Number of Lanes, N Acceleration Lane Length, L <sub>A</sub> Deceleration Lane Length L <sub>D</sub>	3 150	Downstream Adj Ramp <input checked="" type="checkbox"/> Yes <input type="checkbox"/> On <input type="checkbox"/> No <input checked="" type="checkbox"/> Off	L <sub>down</sub> = 2100 ft						
L <sub>up</sub> = ft	Freeway Volume, V <sub>F</sub>	3274	Ramp Volume, V <sub>R</sub>	2130						
V <sub>u</sub> = veh/h	Freeway Free-Flow Speed, S <sub>FF</sub>	65.0	Ramp Free-Flow Speed, S <sub>FR</sub>	65.0						
			V <sub>D</sub> = 146 veh/h							
Conversion to pc/h Under Base Conditions										
(pc/h)	V (Veh/hr)	PHF	Terrain	%Truck	%Rv	f <sub>HV</sub>	f <sub>p</sub>	v = V/PHF x f <sub>HV</sub> x f <sub>p</sub>		
Freeway	3274	0.92	Level	5	0	0.976	1.00	3648		
Ramp	2130	0.92	Level	5	0	0.976	1.00	2373		
UpStream										
DownStream	146	0.90	Level	5	0	0.976	1.00	166		
Merge Areas					Diverge Areas					
Estimation of v <sub>12</sub>					Estimation of v <sub>12</sub>					
$V_{12} = V_F (P_{FM})$ L <sub>EQ</sub> = 1321.13 (Equation 13-6 or 13-7) P <sub>FM</sub> = 0.582 using Equation (Exhibit 13-6) V <sub>12</sub> = 2122 pc/h V <sub>3</sub> or V <sub>av34</sub> = 1526 pc/h (Equation 13-14 or 13-17) Is V <sub>3</sub> or V <sub>av34</sub> > 2,700 pc/h? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Is V <sub>3</sub> or V <sub>av34</sub> > 1.5 * V <sub>12</sub> /2 <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No If Yes, V <sub>12a</sub> = pc/h (Equation 13-16, 13-18, or 13-19)					$V_{12} = V_R + (V_F - V_R)P_{FD}$ L <sub>EQ</sub> = (Equation 13-12 or 13-13) P <sub>FD</sub> = using Equation (Exhibit 13-7) V <sub>12</sub> = pc/h V <sub>3</sub> or V <sub>av34</sub> = pc/h (Equation 13-14 or 13-17) Is V <sub>3</sub> or V <sub>av34</sub> > 2,700 pc/h? <input type="checkbox"/> Yes <input type="checkbox"/> No Is V <sub>3</sub> or V <sub>av34</sub> > 1.5 * V <sub>12</sub> /2 <input type="checkbox"/> Yes <input type="checkbox"/> No If Yes, V <sub>12a</sub> = pc/h (Equation 13-16, 13-18, or 13-19)					
Capacity Checks					Capacity Checks					
	Actual	Capacity		LOS F?		Actual	Capacity		LOS F?	
V <sub>FO</sub>	6021	Exhibit 13-8		No	V <sub>F</sub>		Exhibit 13-8			
					V <sub>FO</sub> = V <sub>F</sub> - V <sub>R</sub>		Exhibit 13-8			
					V <sub>R</sub>		Exhibit 13-10			
Flow Entering Merge Influence Area					Flow Entering Diverge Influence Area					
	Actual	Max Desirable		Violation?		Actual	Max Desirable		Violation?	
V <sub>R12</sub>	4495	Exhibit 13-8		4600:All	No	V <sub>12</sub>	Exhibit 13-8			
Level of Service Determination (if not F)					Level of Service Determination (if not F)					
$D_R = 5.475 + 0.00734 v_R + 0.0078 V_{12} - 0.00627 L_A$ D <sub>R</sub> = 38.5 (pc/mi/ln) LOS = E (Exhibit 13-2)					$D_R = 4.252 + 0.0086 V_{12} - 0.009 L_D$ D <sub>R</sub> = (pc/mi/ln) LOS = (Exhibit 13-2)					
Speed Determination					Speed Determination					
M <sub>S</sub> = 0.651 (Exhibit 13-11)	S <sub>R</sub> = 50.0 mph (Exhibit 13-11)	S <sub>0</sub> = 61.3 mph (Exhibit 13-11)			S = 52.5 mph (Exhibit 13-13)	D <sub>s</sub> = (Exhibit 13-12)	S <sub>R</sub> = mph (Exhibit 13-12)			S <sub>0</sub> = mph (Exhibit 13-12)
							S = mph (Exhibit 13-13)			

RAMPS AND RAMP JUNCTIONS WORKSHEET										
<b>General Information</b>					<b>Site Information</b>					
Analyst	RB		Freeway/Dir of Travel	I 80 WB		Agency or Company	Fehr & Peers		Junction	I-780 Collector
Date Performed	10/31/2014		Jurisdiction	Sonoma County		Analysis Time Period	PM Peak		Analysis Year	2040 + VMT
Project Description Vallejo Marine Terminal										
<b>Inputs</b>										
Upstream Adj Ramp		Number of Lanes, N			Downstream Adj Ramp					
<input checked="" type="checkbox"/> Yes <input checked="" type="checkbox"/> On		Acceleration Lane Length, L <sub>A</sub>			<input type="checkbox"/> Yes <input type="checkbox"/> On					
<input type="checkbox"/> No <input type="checkbox"/> Off		Deceleration Lane Length L <sub>D</sub>			<input checked="" type="checkbox"/> No <input type="checkbox"/> Off					
L <sub>up</sub> =	1500 ft	Freeway Volume, V <sub>F</sub>			Ramp Volume, V <sub>R</sub>			L <sub>down</sub> =		
V <sub>u</sub> =	231 veh/h	Freeway Free-Flow Speed, S <sub>FF</sub>			Ramp Free-Flow Speed, S <sub>FR</sub>			ft		
		6040			2103			veh/h		
		65.0			65.0					
<b>Conversion to pc/h Under Base Conditions</b>										
(pc/h)	V (Veh/hr)	PHF	Terrain	%Truck	%Rv	f <sub>HV</sub>	f <sub>p</sub>	v = V/PHF x f <sub>HV</sub> x f <sub>p</sub>		
Freeway	6040	0.92	Level	5	0	0.976	1.00	6729		
Ramp	2103	0.92	Level	5	0	0.976	1.00	2343		
UpStream	231	0.90	Level	5	0	0.976	1.00	263		
DownStream										
<b>Merge Areas</b>					<b>Diverge Areas</b>					
<b>Estimation of v<sub>12</sub></b>					<b>Estimation of v<sub>12</sub></b>					
$V_{12} = V_F (P_{FM})$ L <sub>EQ</sub> = (Equation 13-6 or 13-7) P <sub>FM</sub> = using Equation (Exhibit 13-6) V <sub>12</sub> = pc/h V <sub>3</sub> or V <sub>av34</sub> pc/h (Equation 13-14 or 13-17) Is V <sub>3</sub> or V <sub>av34</sub> > 2,700 pc/h? <input type="checkbox"/> Yes <input type="checkbox"/> No Is V <sub>3</sub> or V <sub>av34</sub> > 1.5 * V <sub>12</sub> /2 <input type="checkbox"/> Yes <input type="checkbox"/> No If Yes, V <sub>12a</sub> = pc/h (Equation 13-16, 13-18, or 13-19)					$V_{12} = V_R + (V_F - V_R)P_{FD}$ L <sub>EQ</sub> = 5513.74 (Equation 13-12 or 13-13) P <sub>FD</sub> = 0.560 using Equation (Exhibit 13-7) V <sub>12</sub> = 4801 pc/h V <sub>3</sub> or V <sub>av34</sub> 1928 pc/h (Equation 13-14 or 13-17) Is V <sub>3</sub> or V <sub>av34</sub> > 2,700 pc/h? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Is V <sub>3</sub> or V <sub>av34</sub> > 1.5 * V <sub>12</sub> /2 <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No If Yes, V <sub>12a</sub> = pc/h (Equation 13-16, 13-18, or 13-19)					
<b>Capacity Checks</b>					<b>Capacity Checks</b>					
	Actual	Capacity		LOS F?		Actual	Capacity		LOS F?	
V <sub>FO</sub>		Exhibit 13-8			V <sub>F</sub>	6729	Exhibit 13-8	7050	No	
					V <sub>FO</sub> = V <sub>F</sub> - V <sub>R</sub>	4386	Exhibit 13-8	7050	No	
					V <sub>R</sub>	2343	Exhibit 13-10	2200	Yes	
<b>Flow Entering Merge Influence Area</b>					<b>Flow Entering Diverge Influence Area</b>					
	Actual	Max Desirable		Violation?		Actual	Max Desirable		Violation?	
V <sub>R12</sub>		Exhibit 13-8			V <sub>12</sub>	4801	Exhibit 13-8	4400:All	Yes	
<b>Level of Service Determination (if not F)</b>					<b>Level of Service Determination (if not F)</b>					
$D_R = 5.475 + 0.00734 v_R + 0.0078 V_{12} - 0.00627 L_A$ D <sub>R</sub> = (pc/mi/ln) LOS = (Exhibit 13-2)					$D_R = 4.252 + 0.0086 V_{12} - 0.009 L_D$ D <sub>R</sub> = 44.4 (pc/mi/ln) LOS = F (Exhibit 13-2)					
<b>Speed Determination</b>					<b>Speed Determination</b>					
M <sub>S</sub> = (Exhibit 13-11) S <sub>R</sub> = mph (Exhibit 13-11) S <sub>0</sub> = mph (Exhibit 13-11) S = mph (Exhibit 13-13)					D <sub>s</sub> = 0.249 (Exhibit 13-12) S <sub>R</sub> = 59.3 mph (Exhibit 13-12) S <sub>0</sub> = 67.7 mph (Exhibit 13-12) S = 61.5 mph (Exhibit 13-13)					

RAMPS AND RAMP JUNCTIONS WORKSHEET										
<b>General Information</b>					<b>Site Information</b>					
Analyst	RB		Freeway/Dir of Travel	I 80 WB		Agency or Company	Fehr & Peers		Junction	I-780 Collector
Date Performed	10/31/2014		Jurisdiction	Sonoma County		Analysis Time Period	AM Peak		Analysis Year	2040 + VMT
Project Description Vallejo Marine Terminal										
<b>Inputs</b>										
Upstream Adj Ramp		Number of Lanes, N			3			Downstream Adj Ramp		
<input checked="" type="checkbox"/> Yes <input checked="" type="checkbox"/> On		Acceleration Lane Length, L <sub>A</sub>						<input type="checkbox"/> Yes <input type="checkbox"/> On		
<input type="checkbox"/> No <input type="checkbox"/> Off		Deceleration Lane Length L <sub>D</sub>			125			<input checked="" type="checkbox"/> No <input type="checkbox"/> Off		
L <sub>up</sub> = 1500 ft		Freeway Volume, V <sub>F</sub>			5215			L <sub>down</sub> = ft		
V <sub>u</sub> = 183 veh/h		Ramp Volume, V <sub>R</sub>			1795			V <sub>D</sub> = veh/h		
		Freeway Free-Flow Speed, S <sub>FF</sub>			65.0					
		Ramp Free-Flow Speed, S <sub>FR</sub>			65.0					
<b>Conversion to pc/h Under Base Conditions</b>										
(pc/h)	V (Veh/hr)	PHF	Terrain	%Truck	%Rv	f <sub>HV</sub>	f <sub>p</sub>	v = V/PHF x f <sub>HV</sub> x f <sub>p</sub>		
Freeway	5215	0.92	Level	5	0	0.976	1.00	5810		
Ramp	1795	0.92	Level	5	0	0.976	1.00	2000		
UpStream	183	0.90	Level	5	0	0.976	1.00	208		
DownStream										
<b>Merge Areas</b>					<b>Diverge Areas</b>					
<b>Estimation of v<sub>12</sub></b>					<b>Estimation of v<sub>12</sub></b>					
$V_{12} = V_F (P_{FM})$ (Equation 13-6 or 13-7) L <sub>EQ</sub> = P <sub>FM</sub> = using Equation (Exhibit 13-6) V <sub>12</sub> = pc/h V <sub>3</sub> or V <sub>av34</sub> pc/h (Equation 13-14 or 13-17) Is V <sub>3</sub> or V <sub>av34</sub> > 2,700 pc/h? <input type="checkbox"/> Yes <input type="checkbox"/> No Is V <sub>3</sub> or V <sub>av34</sub> > 1.5 * V <sub>12</sub> /2 <input type="checkbox"/> Yes <input type="checkbox"/> No If Yes, V <sub>12a</sub> = pc/h (Equation 13-16, 13-18, or 13-19)					$V_{12} = V_R + (V_F - V_R)P_{FD}$ L <sub>EQ</sub> = 3952.12 (Equation 13-12 or 13-13) P <sub>FD</sub> = 0.574 using Equation (Exhibit 13-7) V <sub>12</sub> = 4188 pc/h V <sub>3</sub> or V <sub>av34</sub> 1622 pc/h (Equation 13-14 or 13-17) Is V <sub>3</sub> or V <sub>av34</sub> > 2,700 pc/h? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Is V <sub>3</sub> or V <sub>av34</sub> > 1.5 * V <sub>12</sub> /2 <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No If Yes, V <sub>12a</sub> = pc/h (Equation 13-16, 13-18, or 13-19)					
<b>Capacity Checks</b>					<b>Capacity Checks</b>					
	Actual	Capacity		LOS F?		Actual	Capacity		LOS F?	
V <sub>FO</sub>		Exhibit 13-8			V <sub>F</sub>	5810	Exhibit 13-8	7050	No	
			V <sub>FO</sub> = V <sub>F</sub> - V <sub>R</sub>	3810	Exhibit 13-8	7050	No			
			V <sub>R</sub>	2000	Exhibit 13-10	2200	No			
<b>Flow Entering Merge Influence Area</b>					<b>Flow Entering Diverge Influence Area</b>					
	Actual	Max Desirable		Violation?		Actual	Max Desirable		Violation?	
V <sub>R12</sub>		Exhibit 13-8			V <sub>12</sub>	4188	Exhibit 13-8	4400:All	No	
<b>Level of Service Determination (if not F)</b>					<b>Level of Service Determination (if not F)</b>					
$D_R = 5.475 + 0.00734 v_R + 0.0078 V_{12} - 0.00627 L_A$ D <sub>R</sub> = (pc/mi/ln) LOS = (Exhibit 13-2)					$D_R = 4.252 + 0.0086 V_{12} - 0.009 L_D$ D <sub>R</sub> = 39.1 (pc/mi/ln) LOS = E (Exhibit 13-2)					
<b>Speed Determination</b>					<b>Speed Determination</b>					
M <sub>S</sub> = (Exhibit 13-11) S <sub>R</sub> = mph (Exhibit 13-11) S <sub>0</sub> = mph (Exhibit 13-11) S = mph (Exhibit 13-13)					D <sub>s</sub> = 0.218 (Exhibit 13-12) S <sub>R</sub> = 60.0 mph (Exhibit 13-12) S <sub>0</sub> = 68.9 mph (Exhibit 13-12) S = 62.2 mph (Exhibit 13-13)					

BASIC FREEWAY SEGMENTS WORKSHEET			
<b>General Information</b>		<b>Site Information</b>	
Analyst	RB	Highway/Direction of Travel	80 WB
Agency or Company	Fehr & Peers	From/To	I-780 Collectors - Georgia St
Date Performed	10/23/2014	Jurisdiction	Sonoma County
Analysis Time Period	PM Peak Hour	Analysis Year	2040 + VMT
Project Description <i>Vallejo Marine Terminal</i>			
<input checked="" type="checkbox"/> Oper.(LOS)		<input type="checkbox"/> Des.(N)	<input type="checkbox"/> Planning Data
<b>Flow Inputs</b>			
Volume, V	6045	veh/h	Peak-Hour Factor, PHF
AADT		veh/day	%Trucks and Buses, P <sub>T</sub>
Peak-Hr Prop. of AADT, K			%RVs, P <sub>R</sub>
Peak-Hr Direction Prop, D			General Terrain:
DDHV = AADT x K x D		veh/h	Grade % Length
			Up/Down %
			0.92
			5
			0
			Level
			mi
<b>Calculate Flow Adjustments</b>			
f <sub>p</sub>	1.00	E <sub>R</sub>	1.2
E <sub>T</sub>	1.5	f <sub>HV</sub> = 1/[1+P <sub>T</sub> (E <sub>T</sub> - 1) + P <sub>R</sub> (E <sub>R</sub> - 1)]	0.976
<b>Speed Inputs</b>		<b>Calc Speed Adj and FFS</b>	
Lane Width		ft	
Rt-Side Lat. Clearance		ft	
Number of Lanes, N	3		
Total Ramp Density, TRD		ramps/mi	
FFS (measured)	65.0	mph	
Base free-flow Speed, BFFS		mph	
			f <sub>LW</sub> mph
			f <sub>LC</sub> mph
			TRD Adjustment mph
			FFS 65.0 mph
<b>LOS and Performance Measures</b>		<b>Design (N)</b>	
<u>Operational (LOS)</u>		<u>Design (N)</u>	
v <sub>p</sub> = (V or DDHV) / (PHF x N x f <sub>HV</sub> )	2245	pc/h/ln	
x f <sub>p</sub> )			v <sub>p</sub> = (V or DDHV) / (PHF x N x f <sub>HV</sub> )
S	54.9	mph	x f <sub>p</sub> )
D = v <sub>p</sub> / S	40.9	pc/mi/ln	S
LOS	E		D = v <sub>p</sub> / S
			Required Number of Lanes, N
<b>Glossary</b>		<b>Factor Location</b>	
N - Number of lanes	S - Speed	E <sub>R</sub> - Exhibits 11-10, 11-12	f <sub>LW</sub> - Exhibit 11-8
V - Hourly volume	D - Density	E <sub>T</sub> - Exhibits 11-10, 11-11, 11-13	f <sub>LC</sub> - Exhibit 11-9
v <sub>p</sub> - Flow rate	FFS - Free-flow speed	f <sub>p</sub> - Page 11-18	TRD - Page 11-11
LOS - Level of service	BFFS - Base free-flow speed	LOS, S, FFS, v <sub>p</sub> - Exhibits 11-2, 11-3	
DDHV - Directional design hour volume			

BASIC FREEWAY SEGMENTS WORKSHEET			
<b>General Information</b>		<b>Site Information</b>	
Analyst	RB	Highway/Direction of Travel	80 WB
Agency or Company	Fehr & Peers	From/To	I-780 Collectors - Georgia St
Date Performed	10/23/2014	Jurisdiction	Sonoma County
Analysis Time Period	AM Peak Hour	Analysis Year	2040 + VMT
Project Description <i>Vallejo Marine Terminal</i>			
<input checked="" type="checkbox"/> Oper.(LOS)		<input type="checkbox"/> Des.(N)	<input type="checkbox"/> Planning Data
<b>Flow Inputs</b>			
Volume, V	5224	veh/h	Peak-Hour Factor, PHF
AADT		veh/day	%Trucks and Buses, P <sub>T</sub>
Peak-Hr Prop. of AADT, K			%RVs, P <sub>R</sub>
Peak-Hr Direction Prop, D			General Terrain:
DDHV = AADT x K x D		veh/h	Grade % Length
			Up/Down %
			0.92
			5
			0
			Level
			mi
<b>Calculate Flow Adjustments</b>			
f <sub>p</sub>	1.00	E <sub>R</sub>	1.2
E <sub>T</sub>	1.5	f <sub>HV</sub> = 1/[1+P <sub>T</sub> (E <sub>T</sub> - 1) + P <sub>R</sub> (E <sub>R</sub> - 1)]	0.976
<b>Speed Inputs</b>		<b>Calc Speed Adj and FFS</b>	
Lane Width		ft	
Rt-Side Lat. Clearance		ft	
Number of Lanes, N	3		
Total Ramp Density, TRD		ramps/mi	
FFS (measured)	65.0	mph	
Base free-flow Speed, BFFS		mph	
			f <sub>LW</sub> mph
			f <sub>LC</sub> mph
			TRD Adjustment mph
			FFS 65.0 mph
<b>LOS and Performance Measures</b>		<b>Design (N)</b>	
<u>Operational (LOS)</u>		<u>Design (N)</u>	
v <sub>p</sub> = (V or DDHV) / (PHF x N x f <sub>HV</sub> )	1940	pc/h/ln	
x f <sub>p</sub> )			
S	60.9	mph	
D = v <sub>p</sub> / S	31.9	pc/mi/ln	
LOS	D		
			v <sub>p</sub> = (V or DDHV) / (PHF x N x f <sub>HV</sub> )
			x f <sub>p</sub> )
			S
			D = v <sub>p</sub> / S
			Required Number of Lanes, N
<b>Glossary</b>		<b>Factor Location</b>	
N - Number of lanes	S - Speed	E <sub>R</sub> - Exhibits 11-10, 11-12	f <sub>LW</sub> - Exhibit 11-8
V - Hourly volume	D - Density	E <sub>T</sub> - Exhibits 11-10, 11-11, 11-13	f <sub>LC</sub> - Exhibit 11-9
v <sub>p</sub> - Flow rate	FFS - Free-flow speed	f <sub>p</sub> - Page 11-18	TRD - Page 11-11
LOS - Level of service	BFFS - Base free-flow speed	LOS, S, FFS, v <sub>p</sub> - Exhibits 11-2, 11-3	
DDHV - Directional design hour volume			

<b>BASIC FREEWAY SEGMENTS WORKSHEET</b>			
<b>General Information</b>		<b>Site Information</b>	
Analyst	<i>RB</i>	Highway/Direction of Travel	<i>80 EB</i>
Agency or Company	<i>Fehr &amp; Peers</i>	From/To	<i>I-780 Collectors - Georgia St</i>
Date Performed	<i>10/23/2014</i>	Jurisdiction	<i>Sonoma County</i>
Analysis Time Period	<i>PM Peak Hour</i>	Analysis Year	<i>2040 + VMT</i>
Project Description <i>Vallejo Marine Terminal</i>			
<input checked="" type="checkbox"/> Oper.(LOS) <input type="checkbox"/> Des.(N) <input type="checkbox"/> Planning Data			
<b>Flow Inputs</b>			
Volume, V	<i>5045</i>	veh/h	Peak-Hour Factor, PHF
AADT		veh/day	<i>0.92</i>
Peak-Hr Prop. of AADT, K			%Trucks and Buses, P <sub>T</sub>
Peak-Hr Direction Prop, D			<i>5</i>
DDHV = AADT x K x D		veh/h	%RVs, P <sub>R</sub>
			<i>0</i>
			General Terrain:
			<i>Level</i>
			Grade % Length
			<i>mi</i>
			Up/Down %
<b>Calculate Flow Adjustments</b>			
f <sub>p</sub>	<i>1.00</i>	E <sub>R</sub>	<i>1.2</i>
E <sub>T</sub>	<i>1.5</i>	f <sub>HV</sub> = 1/[1+P <sub>T</sub> (E <sub>T</sub> - 1) + P <sub>R</sub> (E <sub>R</sub> - 1)]	<i>0.976</i>
<b>Speed Inputs</b>		<b>Calc Speed Adj and FFS</b>	
Lane Width	ft	f <sub>LW</sub>	mph
Rt-Side Lat. Clearance	ft	f <sub>LC</sub>	mph
Number of Lanes, N	<i>3</i>	TRD Adjustment	mph
Total Ramp Density, TRD	ramps/mi	FFS	<i>65.0</i>
FFS (measured)	<i>65.0</i>	mph	mph
Base free-flow Speed, BFFS	mph		
<b>LOS and Performance Measures</b>		<b>Design (N)</b>	
<u>Operational (LOS)</u>		<u>Design (N)</u>	
v <sub>p</sub> = (V or DDHV) / (PHF x N x f <sub>HV</sub> )	<i>1874</i>	Design LOS	pc/h/ln
x f <sub>p</sub> )		v <sub>p</sub> = (V or DDHV) / (PHF x N x f <sub>HV</sub> )	pc/h/ln
S	<i>61.8</i>	x f <sub>p</sub> )	
D = v <sub>p</sub> / S	<i>30.3</i>	S	mph
LOS	<i>D</i>	D = v <sub>p</sub> / S	pc/mi/ln
		Required Number of Lanes, N	
<b>Glossary</b>		<b>Factor Location</b>	
N - Number of lanes	S - Speed	E <sub>R</sub> - Exhibits 11-10, 11-12	f <sub>LW</sub> - Exhibit 11-8
V - Hourly volume	D - Density	E <sub>T</sub> - Exhibits 11-10, 11-11, 11-13	f <sub>LC</sub> - Exhibit 11-9
v <sub>p</sub> - Flow rate	FFS - Free-flow speed	f <sub>p</sub> - Page 11-18	TRD - Page 11-11
LOS - Level of service	BFFS - Base free-flow speed	LOS, S, FFS, v <sub>p</sub> - Exhibits 11-2, 11-3	
DDHV - Directional design hour volume			

<b>BASIC FREEWAY SEGMENTS WORKSHEET</b>			
<b>General Information</b>		<b>Site Information</b>	
Analyst	<i>RB</i>	Highway/Direction of Travel	<i>80 EB</i>
Agency or Company	<i>Fehr &amp; Peers</i>	From/To	<i>I-780 Collectors - Georgia St</i>
Date Performed	<i>10/23/2014</i>	Jurisdiction	<i>Sonoma County</i>
Analysis Time Period	<i>AM Peak Hour</i>	Analysis Year	<i>2040 + VMT</i>
Project Description <i>Vallejo Marine Terminal</i>			
<input checked="" type="checkbox"/> Oper.(LOS) <input type="checkbox"/> Des.(N) <input type="checkbox"/> Planning Data			
<b>Flow Inputs</b>			
Volume, V	<i>5404</i>	veh/h	Peak-Hour Factor, PHF
AADT		veh/day	%Trucks and Buses, P <sub>T</sub>
Peak-Hr Prop. of AADT, K			%RVs, P <sub>R</sub>
Peak-Hr Direction Prop, D			General Terrain:
DDHV = AADT x K x D		veh/h	Grade % Length
			Up/Down %
<b>Calculate Flow Adjustments</b>			
f <sub>p</sub>	<i>1.00</i>	E <sub>R</sub>	<i>1.2</i>
E <sub>T</sub>	<i>1.5</i>	f <sub>HV</sub> = 1/[1+P <sub>T</sub> (E <sub>T</sub> - 1) + P <sub>R</sub> (E <sub>R</sub> - 1)]	<i>0.976</i>
<b>Speed Inputs</b>		<b>Calc Speed Adj and FFS</b>	
Lane Width	ft	f <sub>LW</sub>	mph
Rt-Side Lat. Clearance	ft	f <sub>LC</sub>	mph
Number of Lanes, N	<i>3</i>	TRD Adjustment	mph
Total Ramp Density, TRD	ramps/mi	FFS	<i>65.0</i>
FFS (measured)	<i>65.0</i>	mph	mph
Base free-flow Speed, BFFS	mph		
<b>LOS and Performance Measures</b>		<b>Design (N)</b>	
<u>Operational (LOS)</u>		<u>Design (N)</u>	
v <sub>p</sub> = (V or DDHV) / (PHF x N x f <sub>HV</sub> )	<i>2007</i>	Design LOS	pc/h/ln
x f <sub>p</sub> )		v <sub>p</sub> = (V or DDHV) / (PHF x N x f <sub>HV</sub> )	pc/h/ln
S	<i>59.8</i>	x f <sub>p</sub> )	
D = v <sub>p</sub> / S	<i>33.6</i>	S	mph
LOS	<i>D</i>	D = v <sub>p</sub> / S	pc/mi/ln
		Required Number of Lanes, N	
<b>Glossary</b>		<b>Factor Location</b>	
N - Number of lanes	S - Speed	E <sub>R</sub> - Exhibits 11-10, 11-12	f <sub>LW</sub> - Exhibit 11-8
V - Hourly volume	D - Density	E <sub>T</sub> - Exhibits 11-10, 11-11, 11-13	f <sub>LC</sub> - Exhibit 11-9
v <sub>p</sub> - Flow rate	FFS - Free-flow speed	f <sub>p</sub> - Page 11-18	TRD - Page 11-11
LOS - Level of service	BFFS - Base free-flow speed	LOS, S, FFS, v <sub>p</sub> - Exhibits 11-2, 11-3	
DDHV - Directional design hour volume			



<b>RAMPS AND RAMP JUNCTIONS WORKSHEET</b>									
<b>General Information</b>					<b>Site Information</b>				
Analyst	RB	Freeway/Dir of Travel	I 80 EB		Agency or Company	Fehr & Peers	Junction	I-780 Collector	
Date Performed	10/31/2014	Jurisdiction	Sonoma County		Analysis Time Period	PM Peak	Analysis Year	2040 + VMT	
Project Description Vallejo Marine Terminal									
<b>Inputs</b>									
Upstream Adj Ramp <input type="checkbox"/> Yes <input type="checkbox"/> On <input checked="" type="checkbox"/> No <input type="checkbox"/> Off		Number of Lanes, N Acceleration Lane Length, L <sub>A</sub> Deceleration Lane Length L <sub>D</sub>			3 150			Downstream Adj Ramp <input checked="" type="checkbox"/> Yes <input type="checkbox"/> On <input type="checkbox"/> No <input checked="" type="checkbox"/> Off	
L <sub>up</sub> = ft		Freeway Volume, V <sub>F</sub>			2877			L <sub>down</sub> = 2100 ft	
V <sub>u</sub> = veh/h		Ramp Volume, V <sub>R</sub>			2169			V <sub>D</sub> = 217 veh/h	
		Freeway Free-Flow Speed, S <sub>FF</sub>			65.0				
		Ramp Free-Flow Speed, S <sub>FR</sub>			65.0				
<b>Conversion to pc/h Under Base Conditions</b>									
(pc/h)	V (Veh/hr)	PHF	Terrain	%Truck	%Rv	f <sub>HV</sub>	f <sub>p</sub>	v = V/PHF x f <sub>HV</sub> x f <sub>p</sub>	
Freeway	2877	0.92	Level	5	0	0.976	1.00	3205	
Ramp	2169	0.92	Level	5	0	0.976	1.00	2417	
UpStream									
DownStream	217	0.90	Level	5	0	0.976	1.00	247	
<b>Merge Areas</b>					<b>Diverge Areas</b>				
<b>Estimation of v<sub>12</sub></b>					<b>Estimation of v<sub>12</sub></b>				
$V_{12} = V_F (P_{FM})$ L <sub>EQ</sub> = 1965.78 (Equation 13-6 or 13-7) P <sub>FM</sub> = 0.582 using Equation (Exhibit 13-6) V <sub>12</sub> = 1864 pc/h V <sub>3</sub> or V <sub>av34</sub> = 1341 pc/h (Equation 13-14 or 13-17) Is V <sub>3</sub> or V <sub>av34</sub> > 2,700 pc/h? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Is V <sub>3</sub> or V <sub>av34</sub> > 1.5 * V <sub>12</sub> /2 <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No If Yes, V <sub>12a</sub> = pc/h (Equation 13-16, 13-18, or 13-19)					$V_{12} = V_R + (V_F - V_R)P_{FD}$ L <sub>EQ</sub> = (Equation 13-12 or 13-13) P <sub>FD</sub> = using Equation (Exhibit 13-7) V <sub>12</sub> = pc/h V <sub>3</sub> or V <sub>av34</sub> = pc/h (Equation 13-14 or 13-17) Is V <sub>3</sub> or V <sub>av34</sub> > 2,700 pc/h? <input type="checkbox"/> Yes <input type="checkbox"/> No Is V <sub>3</sub> or V <sub>av34</sub> > 1.5 * V <sub>12</sub> /2 <input type="checkbox"/> Yes <input type="checkbox"/> No If Yes, V <sub>12a</sub> = pc/h (Equation 13-16, 13-18, or 13-19)				
<b>Capacity Checks</b>					<b>Capacity Checks</b>				
	Actual	Capacity		LOS F?		Actual	Capacity		LOS F?
V <sub>FO</sub>	5622	Exhibit 13-8		No	V <sub>F</sub>		Exhibit 13-8		
					V <sub>FO</sub> = V <sub>F</sub> - V <sub>R</sub>		Exhibit 13-8		
					V <sub>R</sub>		Exhibit 13-10		
<b>Flow Entering Merge Influence Area</b>					<b>Flow Entering Diverge Influence Area</b>				
	Actual	Max Desirable		Violation?		Actual	Max Desirable		Violation?
V <sub>R12</sub>	4281	Exhibit 13-8		No	V <sub>12</sub>		Exhibit 13-8		
<b>Level of Service Determination (if not F)</b>					<b>Level of Service Determination (if not F)</b>				
$D_R = 5.475 + 0.00734 v_R + 0.0078 V_{12} - 0.00627 L_A$ D <sub>R</sub> = 36.8 (pc/mi/ln) LOS = E (Exhibit 13-2)					$D_R = 4.252 + 0.0086 V_{12} - 0.009 L_D$ D <sub>R</sub> = (pc/mi/ln) LOS = (Exhibit 13-2)				
<b>Speed Determination</b>					<b>Speed Determination</b>				
M <sub>S</sub> = 0.584 (Exhibit 13-11) S <sub>R</sub> = 51.6 mph (Exhibit 13-11) S <sub>0</sub> = 62.0 mph (Exhibit 13-11) S = 53.7 mph (Exhibit 13-13)					D <sub>S</sub> = (Exhibit 13-12) S <sub>R</sub> = mph (Exhibit 13-12) S <sub>0</sub> = mph (Exhibit 13-12) S = mph (Exhibit 13-13)				

BASIC FREEWAY SEGMENTS WORKSHEET			
<b>General Information</b>		<b>Site Information</b>	
Analyst	<i>RB</i>	Highway/Direction of Travel	<i>I-80 EB</i>
Agency or Company	<i>Fehr &amp; Peers</i>	From/To	<i>South of Sonoma Blvd</i>
Date Performed	<i>10/23/2014</i>	Jurisdiction	<i>Sonoma County</i>
Analysis Time Period	<i>PM Peak Hour</i>	Analysis Year	<i>2040 + VMT</i>
Project Description <i>Vallejo Marine Terminal</i>			
<input checked="" type="checkbox"/> Oper.(LOS)		<input type="checkbox"/> Des.(N)	
<input type="checkbox"/> Planning Data			
<b>Flow Inputs</b>			
Volume, V	<i>5361</i>	veh/h	Peak-Hour Factor, PHF <i>0.92</i>
AADT		veh/day	%Trucks and Buses, P <sub>T</sub> <i>5</i>
Peak-Hr Prop. of AADT, K			%RVs, P <sub>R</sub> <i>0</i>
Peak-Hr Direction Prop, D			General Terrain: <i>Level</i>
DDHV = AADT x K x D		veh/h	Grade % Length <i>mi</i>
			Up/Down %
<b>Calculate Flow Adjustments</b>			
f <sub>p</sub>	<i>1.00</i>	E <sub>R</sub>	<i>1.2</i>
E <sub>T</sub>	<i>1.5</i>	f <sub>HV</sub> = 1/[1+P <sub>T</sub> (E <sub>T</sub> - 1) + P <sub>R</sub> (E <sub>R</sub> - 1)]	<i>0.976</i>
<b>Speed Inputs</b>		<b>Calc Speed Adj and FFS</b>	
Lane Width		ft	
Rt-Side Lat. Clearance		ft	
Number of Lanes, N	<i>4</i>		f <sub>LW</sub> mph
Total Ramp Density, TRD		ramps/mi	f <sub>LC</sub> mph
FFS (measured)	<i>65.0</i>	mph	TRD Adjustment mph
Base free-flow Speed, BFFS		mph	FFS <i>65.0</i> mph
<b>LOS and Performance Measures</b>		<b>Design (N)</b>	
<u>Operational (LOS)</u>		<u>Design (N)</u>	
v <sub>p</sub> = (V or DDHV) / (PHF x N x f <sub>HV</sub> )	<i>1493</i>	pc/h/ln	Design LOS
x f <sub>p</sub> )			v <sub>p</sub> = (V or DDHV) / (PHF x N x f <sub>HV</sub> )
S	<i>64.9</i>	mph	x f <sub>p</sub> )
D = v <sub>p</sub> / S	<i>23.0</i>	pc/mi/ln	S
LOS	<i>C</i>		D = v <sub>p</sub> / S
			pc/mi/ln
			Required Number of Lanes, N
<b>Glossary</b>		<b>Factor Location</b>	
N - Number of lanes	S - Speed	E <sub>R</sub> - Exhibits 11-10, 11-12	f <sub>LW</sub> - Exhibit 11-8
V - Hourly volume	D - Density	E <sub>T</sub> - Exhibits 11-10, 11-11, 11-13	f <sub>LC</sub> - Exhibit 11-9
v <sub>p</sub> - Flow rate	FFS - Free-flow speed	f <sub>p</sub> - Page 11-18	TRD - Page 11-11
LOS - Level of service	BFFS - Base free-flow speed	LOS, S, FFS, v <sub>p</sub> - Exhibits 11-2, 11-3	
DDHV - Directional design hour volume			

<b>BASIC FREEWAY SEGMENTS WORKSHEET</b>			
<b>General Information</b>		<b>Site Information</b>	
Analyst	<i>RB</i>	Highway/Direction of Travel <i>I-80 EB</i>	
Agency or Company	<i>Fehr &amp; Peers</i>	From/To	<i>South of Sonoma Blvd</i>
Date Performed	<i>10/23/2014</i>	Jurisdiction	<i>Sonoma County</i>
Analysis Time Period	<i>AM Peak Hour</i>	Analysis Year	<i>2040 + VMT</i>
Project Description <i>Vallejo Marine Terminal</i>			
<input checked="" type="checkbox"/> Oper.(LOS)		<input type="checkbox"/> Des.(N)	
<input type="checkbox"/> Planning Data			
<b>Flow Inputs</b>			
Volume, V	<i>2939</i>	veh/h	Peak-Hour Factor, PHF <i>0.92</i>
AADT		veh/day	%Trucks and Buses, P <sub>T</sub> <i>5</i>
Peak-Hr Prop. of AADT, K			%RVs, P <sub>R</sub> <i>0</i>
Peak-Hr Direction Prop, D			General Terrain: <i>Level</i>
DDHV = AADT x K x D		veh/h	Grade % Length <i>mi</i>
			Up/Down %
<b>Calculate Flow Adjustments</b>			
f <sub>p</sub>	<i>1.00</i>	E <sub>R</sub>	<i>1.2</i>
E <sub>T</sub>	<i>1.5</i>	f <sub>HV</sub> = 1/[1+P <sub>T</sub> (E <sub>T</sub> - 1) + P <sub>R</sub> (E <sub>R</sub> - 1)] <i>0.976</i>	
<b>Speed Inputs</b>		<b>Calc Speed Adj and FFS</b>	
Lane Width	ft		
Rt-Side Lat. Clearance	ft	f <sub>LW</sub>	mph
Number of Lanes, N	<i>4</i>	f <sub>LC</sub>	mph
Total Ramp Density, TRD	ramps/mi	TRD Adjustment	mph
FFS (measured)	<i>65.0</i>	FFS	<i>65.0</i>
Base free-flow Speed, BFFS	mph		
<b>LOS and Performance Measures</b>		<b>Design (N)</b>	
<u>Operational (LOS)</u>		<u>Design (N)</u>	
v <sub>p</sub> = (V or DDHV) / (PHF x N x f <sub>HV</sub> ) <i>819</i>		Design LOS	
x f <sub>p</sub> )	pc/h/ln	v <sub>p</sub> = (V or DDHV) / (PHF x N x f <sub>HV</sub> )	
S	<i>65.0</i>	x f <sub>p</sub> )	pc/h/ln
D = v <sub>p</sub> / S	<i>12.6</i>	S	mph
LOS	<i>B</i>	D = v <sub>p</sub> / S	pc/mi/ln
		Required Number of Lanes, N	
<b>Glossary</b>		<b>Factor Location</b>	
N - Number of lanes	S - Speed	E <sub>R</sub> - Exhibits 11-10, 11-12	f <sub>LW</sub> - Exhibit 11-8
V - Hourly volume	D - Density	E <sub>T</sub> - Exhibits 11-10, 11-11, 11-13	f <sub>LC</sub> - Exhibit 11-9
v <sub>p</sub> - Flow rate	FFS - Free-flow speed	f <sub>p</sub> - Page 11-18	TRD - Page 11-11
LOS - Level of service	BFFS - Base free-flow speed	LOS, S, FFS, v <sub>p</sub> - Exhibits 11-2, 11-3	
DDHV - Directional design hour volume			

BASIC FREEWAY SEGMENTS WORKSHEET			
<b>General Information</b>		<b>Site Information</b>	
Analyst	<i>RB</i>	Highway/Direction of Travel	<i>I-80 WB</i>
Agency or Company	<i>Fehr &amp; Peers</i>	From/To	<i>South of Sonoma Blvd</i>
Date Performed	<i>10/23/2014</i>	Jurisdiction	<i>Sonoma County</i>
Analysis Time Period	<i>PM Peak Hour</i>	Analysis Year	<i>2040 + VMT</i>
Project Description <i>Vallejo Marine Terminal</i>			
<input checked="" type="checkbox"/> Oper.(LOS)		<input type="checkbox"/> Des.(N)	<input type="checkbox"/> Planning Data
<b>Flow Inputs</b>			
Volume, V	<i>3564</i>	veh/h	Peak-Hour Factor, PHF <i>0.92</i>
AADT		veh/day	%Trucks and Buses, P <sub>T</sub> <i>5</i>
Peak-Hr Prop. of AADT, K			%RVs, P <sub>R</sub> <i>0</i>
Peak-Hr Direction Prop, D			General Terrain: <i>Level</i>
DDHV = AADT x K x D		veh/h	Grade % Length <i>mi</i> Up/Down %
<b>Calculate Flow Adjustments</b>			
f <sub>p</sub>	<i>1.00</i>	E <sub>R</sub>	<i>1.2</i>
E <sub>T</sub>	<i>1.5</i>	f <sub>HV</sub> = 1/[1+P <sub>T</sub> (E <sub>T</sub> - 1) + P <sub>R</sub> (E <sub>R</sub> - 1)]	<i>0.976</i>
<b>Speed Inputs</b>		<b>Calc Speed Adj and FFS</b>	
Lane Width		ft	
Rt-Side Lat. Clearance		ft	f <sub>LW</sub>
Number of Lanes, N	<i>4</i>		mph
Total Ramp Density, TRD		ramps/mi	f <sub>LC</sub>
FFS (measured)	<i>65.0</i>	mph	TRD Adjustment
Base free-flow Speed, BFFS		mph	FFS
			<i>65.0</i>
			mph
<b>LOS and Performance Measures</b>		<b>Design (N)</b>	
<u>Operational (LOS)</u>		<u>Design (N)</u>	
v <sub>p</sub> = (V or DDHV) / (PHF x N x f <sub>HV</sub> )	<i>993</i>	pc/h/ln	Design LOS
x f <sub>p</sub> )			v <sub>p</sub> = (V or DDHV) / (PHF x N x f <sub>HV</sub> )
S	<i>65.0</i>	mph	x f <sub>p</sub> )
D = v <sub>p</sub> / S	<i>15.3</i>	pc/mi/ln	S
LOS	<i>B</i>		D = v <sub>p</sub> / S
			pc/mi/ln
			Required Number of Lanes, N
<b>Glossary</b>		<b>Factor Location</b>	
N - Number of lanes	S - Speed	E <sub>R</sub> - Exhibits 11-10, 11-12	f <sub>LW</sub> - Exhibit 11-8
V - Hourly volume	D - Density	E <sub>T</sub> - Exhibits 11-10, 11-11, 11-13	f <sub>LC</sub> - Exhibit 11-9
v <sub>p</sub> - Flow rate	FFS - Free-flow speed	f <sub>p</sub> - Page 11-18	TRD - Page 11-11
LOS - Level of service	BFFS - Base free-flow speed	LOS, S, FFS, v <sub>p</sub> - Exhibits 11-2, 11-3	
DDHV - Directional design hour volume			

<b>BASIC FREEWAY SEGMENTS WORKSHEET</b>			
<b>General Information</b>		<b>Site Information</b>	
Analyst	<i>RB</i>	Highway/Direction of Travel <i>I-80 WB</i>	
Agency or Company	<i>Fehr &amp; Peers</i>	From/To	<i>South of Sonoma Blvd</i>
Date Performed	<i>10/23/2014</i>	Jurisdiction	<i>Sonoma County</i>
Analysis Time Period	<i>AM Peak Hour</i>	Analysis Year	<i>2040 + VMT</i>
Project Description <i>Vallejo Marine Terminal</i>			
<input checked="" type="checkbox"/> Oper.(LOS)		<input type="checkbox"/> Des.(N)	
<input type="checkbox"/> Planning Data			
<b>Flow Inputs</b>			
Volume, V	<i>6355</i>	veh/h	Peak-Hour Factor, PHF <i>0.92</i>
AADT		veh/day	%Trucks and Buses, P <sub>T</sub> <i>5</i>
Peak-Hr Prop. of AADT, K			%RVs, P <sub>R</sub> <i>0</i>
Peak-Hr Direction Prop, D			General Terrain: <i>Level</i>
DDHV = AADT x K x D		veh/h	Grade % Length <i>mi</i>
			Up/Down %
<b>Calculate Flow Adjustments</b>			
f <sub>p</sub>	<i>1.00</i>	E <sub>R</sub>	<i>1.2</i>
E <sub>T</sub>	<i>1.5</i>	f <sub>HV</sub> = 1/[1+P <sub>T</sub> (E <sub>T</sub> - 1) + P <sub>R</sub> (E <sub>R</sub> - 1)] <i>0.976</i>	
<b>Speed Inputs</b>		<b>Calc Speed Adj and FFS</b>	
Lane Width		ft	
Rt-Side Lat. Clearance		ft	
Number of Lanes, N	<i>4</i>		f <sub>LW</sub> mph
Total Ramp Density, TRD		ramps/mi	f <sub>LC</sub> mph
FFS (measured)	<i>65.0</i>	mph	TRD Adjustment mph
Base free-flow Speed, BFFS		mph	FFS <i>65.0</i> mph
<b>LOS and Performance Measures</b>		<b>Design (N)</b>	
<u>Operational (LOS)</u>		<u>Design (N)</u>	
v <sub>p</sub> = (V or DDHV) / (PHF x N x f <sub>HV</sub> )		Design LOS	
<i>1770</i>	pc/h/ln	v <sub>p</sub> = (V or DDHV) / (PHF x N x f <sub>HV</sub> )	
x f <sub>p</sub> )		pc/h/ln	
S	<i>63.1</i>	mph	x f <sub>p</sub> )
D = v <sub>p</sub> / S	<i>28.1</i>	pc/mi/ln	S
LOS	<i>D</i>		D = v <sub>p</sub> / S
			pc/mi/ln
			Required Number of Lanes, N
<b>Glossary</b>		<b>Factor Location</b>	
N - Number of lanes	S - Speed	E <sub>R</sub> - Exhibits 11-10, 11-12	f <sub>LW</sub> - Exhibit 11-8
V - Hourly volume	D - Density	E <sub>T</sub> - Exhibits 11-10, 11-11, 11-13	f <sub>LC</sub> - Exhibit 11-9
v <sub>p</sub> - Flow rate	FFS - Free-flow speed	f <sub>p</sub> - Page 11-18	TRD - Page 11-11
LOS - Level of service	BFFS - Base free-flow speed	LOS, S, FFS, v <sub>p</sub> - Exhibits 11-2, 11-3	
DDHV - Directional design hour volume			

<b>BASIC FREEWAY SEGMENTS WORKSHEET</b>			
<b>General Information</b>		<b>Site Information</b>	
Analyst	<i>RB</i>	Highway/Direction of Travel <i>I-780 WB</i>	
Agency or Company	<i>Fehr &amp; Peers</i>	From/To	<i>Glen Cove to Laurel</i>
Date Performed	<i>10/23/2014</i>	Jurisdiction	<i>Sonoma County</i>
Analysis Time Period	<i>PM Peak Hour</i>	Analysis Year	<i>2040 + VMT</i>
Project Description <i>Vallejo Marine Terminal</i>			
<input checked="" type="checkbox"/> Oper.(LOS) <input type="checkbox"/> Des.(N) <input type="checkbox"/> Planning Data			
<b>Flow Inputs</b>			
Volume, V	<i>3500</i>	veh/h	Peak-Hour Factor, PHF <i>0.92</i>
AADT		veh/day	%Trucks and Buses, P <sub>T</sub> <i>5</i>
Peak-Hr Prop. of AADT, K			%RVs, P <sub>R</sub> <i>0</i>
Peak-Hr Direction Prop, D			General Terrain: <i>Level</i>
DDHV = AADT x K x D		veh/h	Grade % Length <i>mi</i> Up/Down %
<b>Calculate Flow Adjustments</b>			
f <sub>p</sub>	<i>1.00</i>	E <sub>R</sub>	<i>1.2</i>
E <sub>T</sub>	<i>1.5</i>	f <sub>HV</sub> = 1/[1+P <sub>T</sub> (E <sub>T</sub> - 1) + P <sub>R</sub> (E <sub>R</sub> - 1)] <i>0.976</i>	
<b>Speed Inputs</b>		<b>Calc Speed Adj and FFS</b>	
Lane Width	ft		
Rt-Side Lat. Clearance	ft	f <sub>LW</sub>	mph
Number of Lanes, N	<i>2</i>	f <sub>LC</sub>	mph
Total Ramp Density, TRD	ramps/mi	TRD Adjustment	mph
FFS (measured)	<i>65.0</i>	FFS	<i>65.0</i> mph
Base free-flow Speed, BFFS	mph		
<b>LOS and Performance Measures</b>		<b>Design (N)</b>	
<u>Operational (LOS)</u>		<u>Design (N)</u>	
v <sub>p</sub> = (V or DDHV) / (PHF x N x f <sub>HV</sub> x f <sub>p</sub> )	<i>1950</i> pc/h/ln	Design LOS	
S	<i>60.7</i> mph	v <sub>p</sub> = (V or DDHV) / (PHF x N x f <sub>HV</sub> x f <sub>p</sub> )	pc/h/ln
D = v <sub>p</sub> / S	<i>32.1</i> pc/mi/ln	S	mph
LOS	<i>D</i>	D = v <sub>p</sub> / S	pc/mi/ln
		Required Number of Lanes, N	
<b>Glossary</b>		<b>Factor Location</b>	
N - Number of lanes	S - Speed	E <sub>R</sub> - Exhibits 11-10, 11-12	f <sub>LW</sub> - Exhibit 11-8
V - Hourly volume	D - Density	E <sub>T</sub> - Exhibits 11-10, 11-11, 11-13	f <sub>LC</sub> - Exhibit 11-9
v <sub>p</sub> - Flow rate	FFS - Free-flow speed	f <sub>p</sub> - Page 11-18	TRD - Page 11-11
LOS - Level of service	BFFS - Base free-flow speed	LOS, S, FFS, v <sub>p</sub> - Exhibits 11-2, 11-3	
DDHV - Directional design hour volume			

<b>BASIC FREEWAY SEGMENTS WORKSHEET</b>			
<b>General Information</b>		<b>Site Information</b>	
Analyst	<i>RB</i>	Highway/Direction of Travel <i>I-780 WB</i>	
Agency or Company	<i>Fehr &amp; Peers</i>	From/To	<i>Glen Cove to Laurel</i>
Date Performed	<i>10/23/2014</i>	Jurisdiction	<i>Sonoma County</i>
Analysis Time Period	<i>AM Peak Hour</i>	Analysis Year	<i>2040 + VMT</i>
Project Description <i>Vallejo Marine Terminal</i>			
<input checked="" type="checkbox"/> Oper.(LOS) <input type="checkbox"/> Des.(N) <input type="checkbox"/> Planning Data			
<b>Flow Inputs</b>			
Volume, V	<i>2391</i>	veh/h	Peak-Hour Factor, PHF <i>0.92</i>
AADT		veh/day	%Trucks and Buses, P <sub>T</sub> <i>5</i>
Peak-Hr Prop. of AADT, K			%RVs, P <sub>R</sub> <i>0</i>
Peak-Hr Direction Prop, D			General Terrain: <i>Level</i>
DDHV = AADT x K x D		veh/h	Grade % Length <i>mi</i> Up/Down %
<b>Calculate Flow Adjustments</b>			
f <sub>p</sub>	<i>1.00</i>	E <sub>R</sub>	<i>1.2</i>
E <sub>T</sub>	<i>1.5</i>	f <sub>HV</sub> = 1/[1+P <sub>T</sub> (E <sub>T</sub> - 1) + P <sub>R</sub> (E <sub>R</sub> - 1)] <i>0.976</i>	
<b>Speed Inputs</b>		<b>Calc Speed Adj and FFS</b>	
Lane Width		ft	
Rt-Side Lat. Clearance		ft	
Number of Lanes, N	<i>2</i>		f <sub>LW</sub> mph
Total Ramp Density, TRD		ramps/mi	f <sub>LC</sub> mph
FFS (measured)	<i>65.0</i>	mph	TRD Adjustment mph
Base free-flow Speed, BFFS		mph	FFS <i>65.0</i> mph
<b>LOS and Performance Measures</b>		<b>Design (N)</b>	
<u>Operational (LOS)</u>		<u>Design (N)</u>	
v <sub>p</sub> = (V or DDHV) / (PHF x N x f <sub>HV</sub> x f <sub>p</sub> )	<i>1332</i>	pc/h/ln	Design LOS
S	<i>65.0</i>	mph	v <sub>p</sub> = (V or DDHV) / (PHF x N x f <sub>HV</sub> x f <sub>p</sub> )
D = v <sub>p</sub> / S	<i>20.5</i>	pc/mi/ln	S
LOS	<i>C</i>		D = v <sub>p</sub> / S
			Required Number of Lanes, N
<b>Glossary</b>		<b>Factor Location</b>	
N - Number of lanes	S - Speed	E <sub>R</sub> - Exhibits 11-10, 11-12	f <sub>LW</sub> - Exhibit 11-8
V - Hourly volume	D - Density	E <sub>T</sub> - Exhibits 11-10, 11-11, 11-13	f <sub>LC</sub> - Exhibit 11-9
v <sub>p</sub> - Flow rate	FFS - Free-flow speed	f <sub>p</sub> - Page 11-18	TRD - Page 11-11
LOS - Level of service	BFFS - Base free-flow speed	LOS, S, FFS, v <sub>p</sub> - Exhibits 11-2, 11-3	
DDHV - Directional design hour volume			

<b>BASIC FREEWAY SEGMENTS WORKSHEET</b>			
<b>General Information</b>		<b>Site Information</b>	
Analyst	<i>RB</i>	Highway/Direction of Travel <i>I-780 EB</i>	
Agency or Company	<i>Fehr &amp; Peers</i>	From/To	<i>Laurel to Glen Cove</i>
Date Performed	<i>10/23/2014</i>	Jurisdiction	<i>Sonoma County</i>
Analysis Time Period	<i>PM Peak Hour</i>	Analysis Year	<i>2040 + VMT</i>
Project Description <i>Vallejo Marine Terminal</i>			
<input checked="" type="checkbox"/> Oper.(LOS)		<input type="checkbox"/> Des.(N)	
<input type="checkbox"/> Planning Data			
<b>Flow Inputs</b>			
Volume, V	<i>2776</i>	veh/h	Peak-Hour Factor, PHF <i>0.92</i>
AADT		veh/day	%Trucks and Buses, P <sub>T</sub> <i>5</i>
Peak-Hr Prop. of AADT, K			%RVs, P <sub>R</sub> <i>0</i>
Peak-Hr Direction Prop, D			General Terrain: <i>Level</i>
DDHV = AADT x K x D		veh/h	Grade % Length <i>mi</i>
			Up/Down %
<b>Calculate Flow Adjustments</b>			
f <sub>p</sub>	<i>1.00</i>	E <sub>R</sub>	<i>1.2</i>
E <sub>T</sub>	<i>1.5</i>	f <sub>HV</sub> = 1/[1+P <sub>T</sub> (E <sub>T</sub> - 1) + P <sub>R</sub> (E <sub>R</sub> - 1)] <i>0.976</i>	
<b>Speed Inputs</b>		<b>Calc Speed Adj and FFS</b>	
Lane Width	ft		
Rt-Side Lat. Clearance	ft	f <sub>LW</sub>	mph
Number of Lanes, N	<i>2</i>	f <sub>LC</sub>	mph
Total Ramp Density, TRD	ramps/mi	TRD Adjustment	mph
FFS (measured)	<i>65.0</i>	FFS	<i>65.0</i>
Base free-flow Speed, BFFS	mph		
<b>LOS and Performance Measures</b>		<b>Design (N)</b>	
<u>Operational (LOS)</u>		<u>Design (N)</u>	
v <sub>p</sub> = (V or DDHV) / (PHF x N x f <sub>HV</sub> )	<i>1546</i>	Design LOS	
x f <sub>p</sub> )		v <sub>p</sub> = (V or DDHV) / (PHF x N x f <sub>HV</sub> )	pc/h/ln
S	<i>64.7</i>	x f <sub>p</sub> )	
D = v <sub>p</sub> / S	<i>23.9</i>	S	mph
LOS	<i>C</i>	D = v <sub>p</sub> / S	pc/mi/ln
		Required Number of Lanes, N	
<b>Glossary</b>		<b>Factor Location</b>	
N - Number of lanes	S - Speed	E <sub>R</sub> - Exhibits 11-10, 11-12	f <sub>LW</sub> - Exhibit 11-8
V - Hourly volume	D - Density	E <sub>T</sub> - Exhibits 11-10, 11-11, 11-13	f <sub>LC</sub> - Exhibit 11-9
v <sub>p</sub> - Flow rate	FFS - Free-flow speed	f <sub>p</sub> - Page 11-18	TRD - Page 11-11
LOS - Level of service	BFFS - Base free-flow speed	LOS, S, FFS, v <sub>p</sub> - Exhibits 11-2, 11-3	
DDHV - Directional design hour volume			



<b>BASIC FREEWAY SEGMENTS WORKSHEET</b>			
<b>General Information</b>		<b>Site Information</b>	
Analyst	<i>RB</i>	Highway/Direction of Travel <i>I-780 EB</i>	
Agency or Company	<i>Fehr &amp; Peers</i>	From/To	<i>Laurel to Glen Cove</i>
Date Performed	<i>10/23/2014</i>	Jurisdiction	<i>Sonoma County</i>
Analysis Time Period	<i>AM Peak Hour</i>	Analysis Year	<i>2040 + VMT</i>
Project Description <i>Vallejo Marine Terminal</i>			
<input checked="" type="checkbox"/> Oper.(LOS)		<input type="checkbox"/> Des.(N)	
<input type="checkbox"/> Planning Data			
<b>Flow Inputs</b>			
Volume, V	<i>3003</i>	veh/h	Peak-Hour Factor, PHF <i>0.92</i>
AADT		veh/day	%Trucks and Buses, P <sub>T</sub> <i>5</i>
Peak-Hr Prop. of AADT, K			%RVs, P <sub>R</sub> <i>0</i>
Peak-Hr Direction Prop, D			General Terrain: <i>Level</i>
DDHV = AADT x K x D		veh/h	Grade % Length <i>mi</i>
			Up/Down %
<b>Calculate Flow Adjustments</b>			
f <sub>p</sub>	<i>1.00</i>	E <sub>R</sub>	<i>1.2</i>
E <sub>T</sub>	<i>1.5</i>	f <sub>HV</sub> = 1/[1+P <sub>T</sub> (E <sub>T</sub> - 1) + P <sub>R</sub> (E <sub>R</sub> - 1)] <i>0.976</i>	
<b>Speed Inputs</b>		<b>Calc Speed Adj and FFS</b>	
Lane Width	ft		
Rt-Side Lat. Clearance	ft	f <sub>LW</sub>	mph
Number of Lanes, N	<i>2</i>	f <sub>LC</sub>	mph
Total Ramp Density, TRD	ramps/mi	TRD Adjustment	mph
FFS (measured)	<i>65.0</i>	FFS	<i>65.0</i>
Base free-flow Speed, BFFS	mph		
<b>LOS and Performance Measures</b>		<b>Design (N)</b>	
<u>Operational (LOS)</u>		<u>Design (N)</u>	
v <sub>p</sub> = (V or DDHV) / (PHF x N x f <sub>HV</sub> x f <sub>p</sub> )		Design LOS	
S	<i>63.9</i>	v <sub>p</sub> = (V or DDHV) / (PHF x N x f <sub>HV</sub> x f <sub>p</sub> )	pc/h/ln
D = v <sub>p</sub> / S	<i>26.2</i>	S	mph
LOS	<i>D</i>	D = v <sub>p</sub> / S	pc/mi/ln
		Required Number of Lanes, N	
<b>Glossary</b>		<b>Factor Location</b>	
N - Number of lanes	S - Speed	E <sub>R</sub> - Exhibits 11-10, 11-12	f <sub>LW</sub> - Exhibit 11-8
V - Hourly volume	D - Density	E <sub>T</sub> - Exhibits 11-10, 11-11, 11-13	f <sub>LC</sub> - Exhibit 11-9
v <sub>p</sub> - Flow rate	FFS - Free-flow speed	f <sub>p</sub> - Page 11-18	TRD - Page 11-11
LOS - Level of service	BFFS - Base free-flow speed	LOS, S, FFS, v <sub>p</sub> - Exhibits 11-2, 11-3	
DDHV - Directional design hour volume			

# Leisch Method for Weaving Analysis

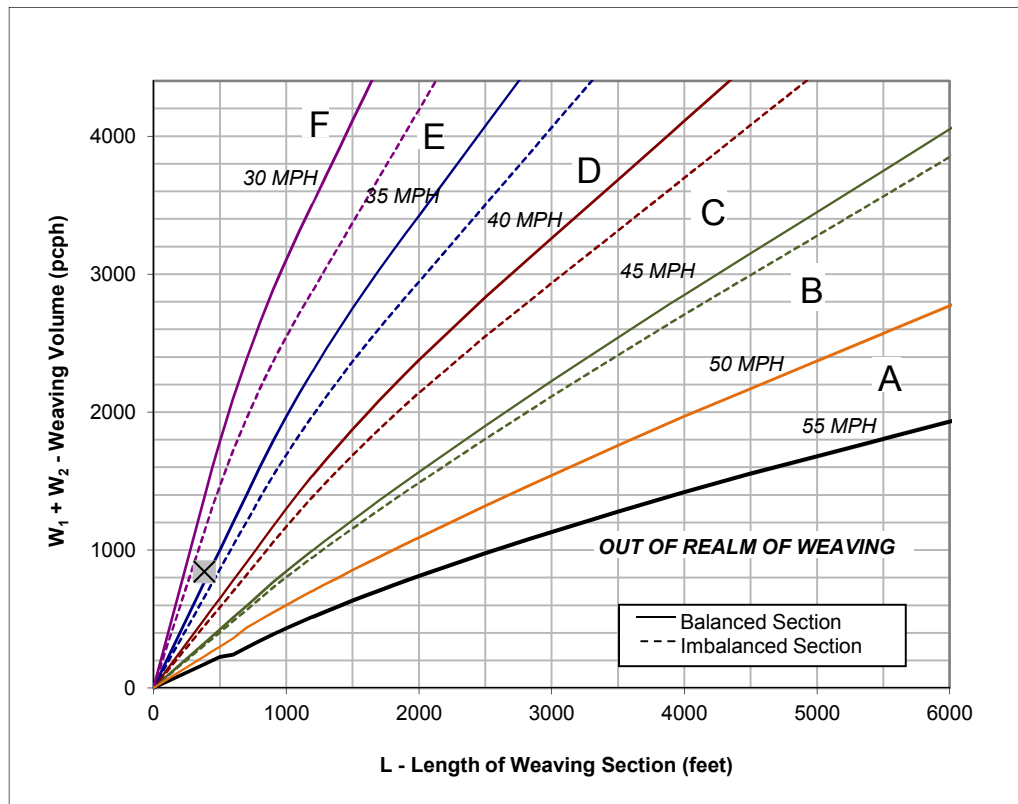
## Data Input

Number of Entering Mainline Lanes	$N_b$	2
Number of Lanes in Weaving Section	$N$	3
Length of Weaving Section (feet)	$L$	385

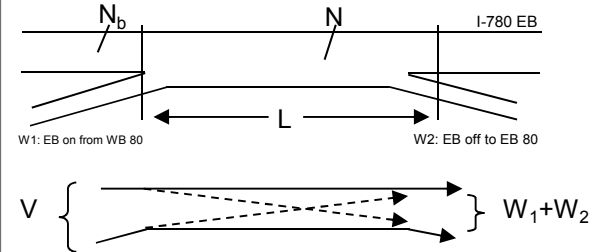
## Project Information

Project	Vallejo Marine Terminal
Scenario	AM + VMT
Freeway	I-780 EB
On-ramp	W1: EB on from WB 80
Off-ramp	W2: EB off to EB 80

Total Weaving Section (V)		On-ramp to Mainline ( $W_1$ )		Mainline to Off-ramp ( $W_2$ )	
Volume (vph)*	1,253	Volume (vph)*	740	Volume (vph)*	84
Truck Percentage	5%	Truck Percentage	5%	Truck Percentage	5%
PCE for Trucks	1.5	PCE for Trucks	1.5	PCE for Trucks	1.5
Volume (pcph)	1,285	Volume (pcph)	758	Volume (pcph)	87



## Figure



## Capacity Analysis

- Is the weaving section balanced ( $Y / N$ )? N  
[If optional exit lane, then "Y". Otherwise "N".]
- In the Weaving Speed Chart to the left, which two speed curves is the black "x" between?

30 MPH and 35 MPH

If below the 55 MPH curve, out of the realm of weaving.  
If left of the 30 MPH curve, LOS is F.

- Interpolated Weaving Speed ( $S_w$ , mph) 33.1
- Weaving Intensity Factor ( $k$ ) 3.00
- Service Volume (SV, pcph)  
 $SV = (1/N) * [V + (k - 1) * \min(W_1, W_2)]$  486
- Level of Service (LOS) A

The LOS in the chart above refers to the capacity of weaving traffic only; through and ramp to ramp traffic is not included.

\* Note: **Do not adjust by a Peak Hour Factor (PHF)**. The methodology incorporates the PHF in the Service Volume tables.

Sources: *Completion of Procedures for Analysis and Design of Traffic Weaving Sections*, Jack E. Leisch & Associates, September 1983 and *Highway Design Manual*, California Department of Transportation, July 24, 2009

# Leisch Method for Weaving Analysis

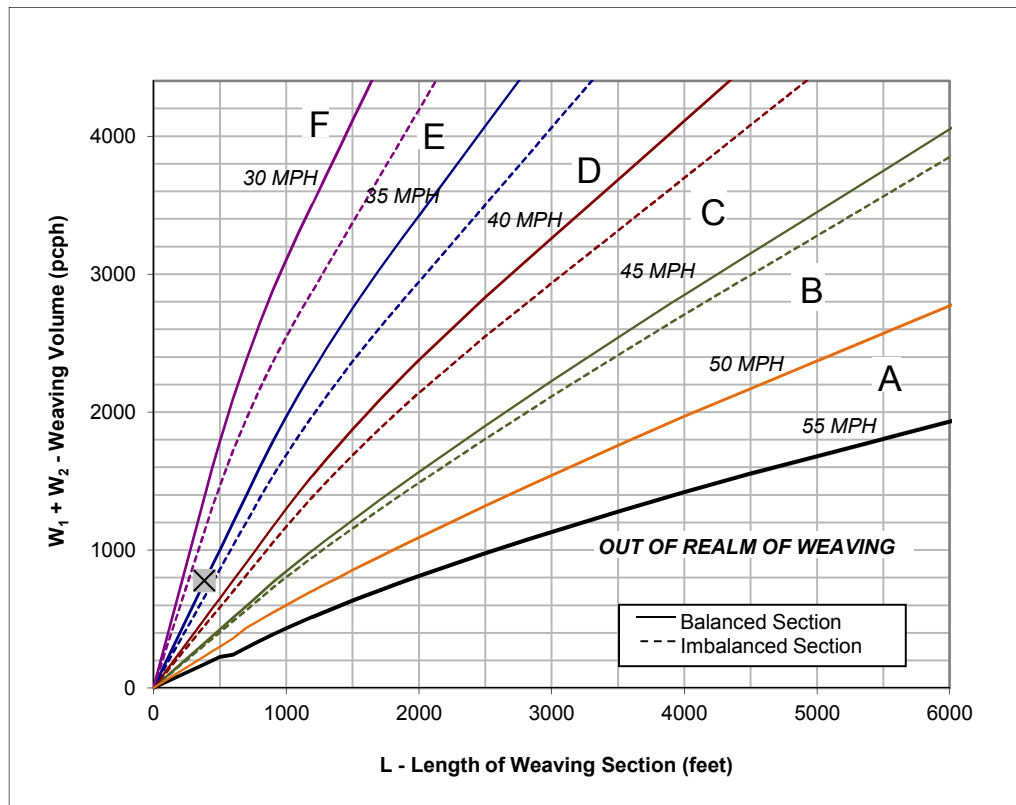
## Data Input

Number of Entering Mainline Lanes	$N_b$	2
Number of Lanes in Weaving Section	N	3
Length of Weaving Section (feet)	L	385

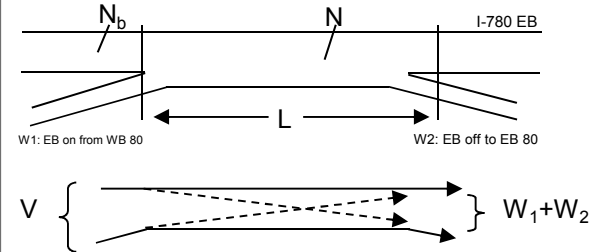
## Project Information

Project	Vallejo Marine Terminal
Scenario	PM + VMT
Freeway	I-780 EB
On-ramp	W1: EB on from WB 80
Off-ramp	W2: EB off to EB 80

Total Weaving Section (V)		On-ramp to Mainline ( $W_1$ )		Mainline to Off-ramp ( $W_2$ )	
Volume (vph)*	1,907	Volume (vph)*	505	Volume (vph)*	255
Truck Percentage	5%	Truck Percentage	5%	Truck Percentage	5%
PCE for Trucks	1.5	PCE for Trucks	1.5	PCE for Trucks	1.5
Volume (pcph)	1,955	Volume (pcph)	517	Volume (pcph)	261



## Figure



## Capacity Analysis

1. Is the weaving section balanced ( $Y / N$ )? **N**  
[If optional exit lane, then "Y". Otherwise "N".]
2. In the Weaving Speed Chart to the left, which two speed curves is the black "x" between?

**30 MPH** and **35 MPH**

If below the 55 MPH curve, out of the realm of weaving.  
If left of the 30 MPH curve, LOS is F.

3. Interpolated Weaving Speed ( $S_w$ , mph) **33.8**
4. Weaving Intensity Factor (k) **2.95**
5. Service Volume (SV, pcph)  
 $SV = (1/N) * [V + (k - 1) * \min(W_1, W_2)]$  **821**
6. Level of Service (LOS) **B**

The LOS in the chart above refers to the capacity of weaving traffic only; through and ramp to ramp traffic is not included.

\* Note: **Do not adjust by a Peak Hour Factor (PHF)**. The methodology incorporates the PHF in the Service Volume tables.

Sources: *Completion of Procedures for Analysis and Design of Traffic Weaving Sections*, Jack E. Leisch & Associates, September 1983 and *Highway Design Manual*, California Department of Transportation, July 24, 2009

# Leisch Method for Weaving Analysis

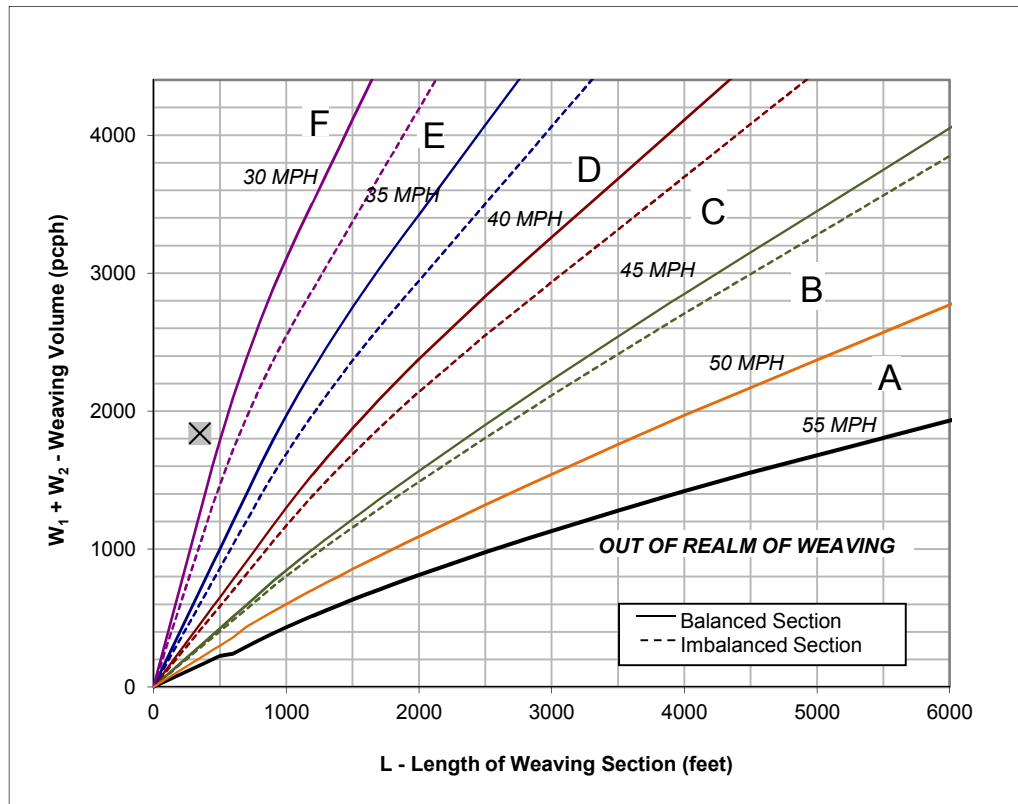
## Data Input

Number of Entering Mainline Lanes	$N_b$	2
Number of Lanes in Weaving Section	N	3
Length of Weaving Section (feet)	L	350

## Project Information

Project	Vallejo Marine Terminal
Scenario	AM + VMT
Freeway	I-780 WB
On-ramp	WB off to WB 80
Off-ramp	WB on from EB 80

Total Weaving Section (V)		On-ramp to Mainline ( $W_1$ )		Mainline to Off-ramp ( $W_2$ )	
Volume (vph)*	2,246	Volume (vph)*	1,610	Volume (vph)*	185
Truck Percentage	5%	Truck Percentage	5%	Truck Percentage	5%
PCE for Trucks	1.5	PCE for Trucks	1.5	PCE for Trucks	1.5
Volume (pcph)	2,302	Volume (pcph)	1,650	Volume (pcph)	190

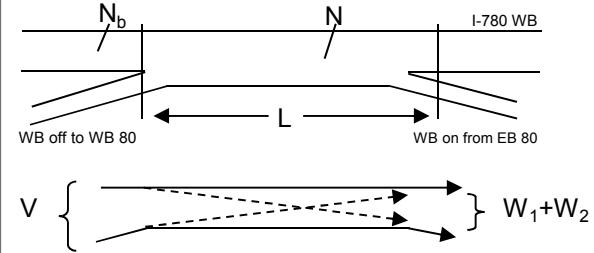


The LOS in the chart above refers to the capacity of weaving traffic only; through and ramp to ramp traffic is not included.

\* Note: **Do not adjust by a Peak Hour Factor (PHF)**. The methodology incorporates the PHF in the Service Volume tables.

Sources: *Completion of Procedures for Analysis and Design of Traffic Weaving Sections*, Jack E. Leisch & Associates, September 1983 and *Highway Design Manual*, California Department of Transportation, July 24, 2009

## Figure



## Capacity Analysis

1. Is the weaving section balanced ( $Y / N$ )? **N**  
[If optional exit lane, then "Y". Otherwise "N".]
2. In the Weaving Speed Chart to the left, which two speed curves is the black "x" between?

**0 MPH** and **30 MPH** -

If below the 55 MPH curve, out of the realm of weaving.  
If left of the 30 MPH curve, LOS is F.

3. Interpolated Weaving Speed ( $S_w$ , mph) -
4. Weaving Intensity Factor ( $k$ ) -
5. Service Volume (SV, pcph)  
 $SV = (1/N) * [V + (k - 1) * \min(W_1, W_2)]$  -
6. Level of Service (LOS) **F**

# Leisch Method for Weaving Analysis

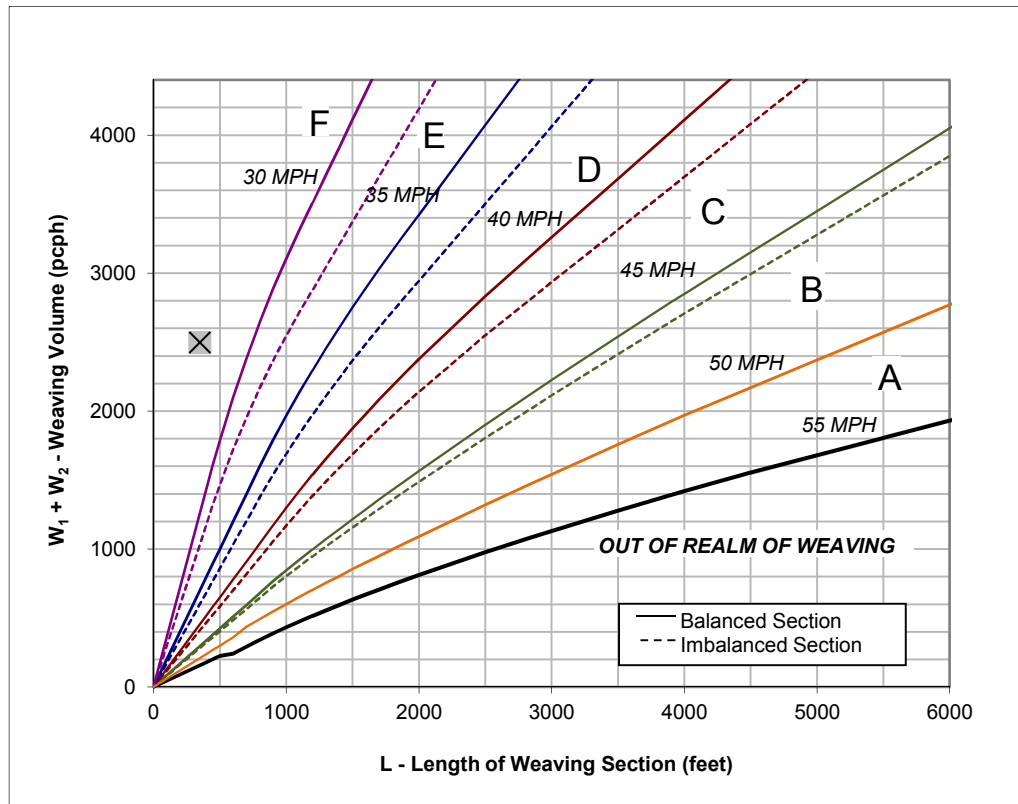
## Data Input

Number of Entering Mainline Lanes	$N_b$	2
Number of Lanes in Weaving Section	N	3
Length of Weaving Section (feet)	L	350

## Project Information

Project	Vallejo Marine Terminal
Scenario	PM + VMT
Freeway	I-780 WB
On-ramp	WB off to WB 80
Off-ramp	WB on from EB 80

Total Weaving Section (V)		On-ramp to Mainline ( $W_1$ )		Mainline to Off-ramp ( $W_2$ )	
Volume (vph)*	3,410	Volume (vph)*	1,952	Volume (vph)*	485
Truck Percentage	5%	Truck Percentage	5%	Truck Percentage	5%
PCE for Trucks	1.5	PCE for Trucks	1.5	PCE for Trucks	1.5
Volume (pcph)	3,495	Volume (pcph)	2,000	Volume (pcph)	498

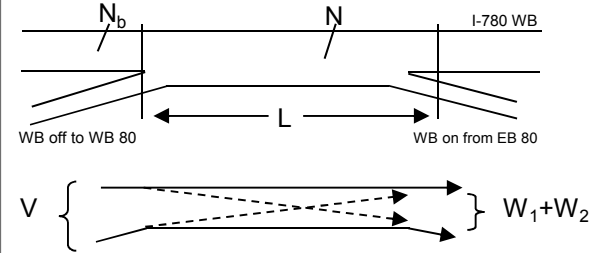


The LOS in the chart above refers to the capacity of weaving traffic only; through and ramp to ramp traffic is not included.

\* Note: **Do not adjust by a Peak Hour Factor (PHF)**. The methodology incorporates the PHF in the Service Volume tables.

Sources: *Completion of Procedures for Analysis and Design of Traffic Weaving Sections*, Jack E. Leisch & Associates, September 1983 and *Highway Design Manual*, California Department of Transportation, July 24, 2009

## Figure



## Capacity Analysis

1. Is the weaving section balanced ( $Y / N$ )? **N**  
[If optional exit lane, then "Y". Otherwise "N".]
2. In the Weaving Speed Chart to the left, which two speed curves is the black "x" between?  
**0 MPH** and **30 MPH**

If below the 55 MPH curve, out of the realm of weaving.  
If left of the 30 MPH curve, LOS is F.

3. Interpolated Weaving Speed ( $S_w$ , mph) -
4. Weaving Intensity Factor ( $k$ ) -
5. Service Volume (SV, pcph)  
 $SV = (1/N) * [V + (k - 1) * \min(W_1, W_2)]$  -
6. Level of Service (LOS) **F**

**APPENDIX L.5.8 — CUMULATIVE PLUS ORCEM PROJECT**



RAMPS AND RAMP JUNCTIONS WORKSHEET									
General Information					Site Information				
Analyst	RB	Freeway/Dir of Travel	I 80 EB						
Agency or Company	Fehr & Peers	Junction	I-780 Collector						
Date Performed	10/31/2014	Jurisdiction	Sonoma County						
Analysis Time Period	AM Peak	Analysis Year	2040 + ORCEM						
Project Description Vallejo Marine Terminal									
Inputs									
Upstream Adj Ramp <input type="checkbox"/> Yes <input type="checkbox"/> On <input checked="" type="checkbox"/> No <input type="checkbox"/> Off	Number of Lanes, N Acceleration Lane Length, L <sub>A</sub> Deceleration Lane Length L <sub>D</sub>	3 150	Downstream Adj Ramp <input checked="" type="checkbox"/> Yes <input type="checkbox"/> On <input type="checkbox"/> No <input checked="" type="checkbox"/> Off						
L <sub>up</sub> = ft	Freeway Volume, V <sub>F</sub> Ramp Volume, V <sub>R</sub>	3274 2139	L <sub>down</sub> = 2100 ft						
V <sub>u</sub> = veh/h	Freeway Free-Flow Speed, S <sub>FF</sub> Ramp Free-Flow Speed, S <sub>FR</sub>	65.0 65.0	V <sub>D</sub> = 146 veh/h						
Conversion to pc/h Under Base Conditions									
(pc/h)	V (Veh/hr)	PHF	Terrain	%Truck	%Rv	f <sub>HV</sub>	f <sub>p</sub>	v = V/PHF x f <sub>HV</sub> x f <sub>p</sub>	
Freeway	3274	0.92	Level	5	0	0.976	1.00	3648	
Ramp	2139	0.92	Level	5	0	0.976	1.00	2383	
UpStream									
DownStream	146	0.90	Level	5	0	0.976	1.00	166	
Merge Areas					Diverge Areas				
Estimation of v <sub>12</sub>					Estimation of v <sub>12</sub>				
$V_{12} = V_F (P_{FM})$ L <sub>EQ</sub> = 1321.13 (Equation 13-6 or 13-7) P <sub>FM</sub> = 0.582 using Equation (Exhibit 13-6) V <sub>12</sub> = 2122 pc/h V <sub>3</sub> or V <sub>av34</sub> = 1526 pc/h (Equation 13-14 or 13-17) Is V <sub>3</sub> or V <sub>av34</sub> > 2,700 pc/h? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Is V <sub>3</sub> or V <sub>av34</sub> > 1.5 * V <sub>12</sub> /2 <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No If Yes, V <sub>12a</sub> = pc/h (Equation 13-16, 13-18, or 13-19)					$V_{12} = V_R + (V_F - V_R)P_{FD}$ L <sub>EQ</sub> = (Equation 13-12 or 13-13) P <sub>FD</sub> = using Equation (Exhibit 13-7) V <sub>12</sub> = pc/h V <sub>3</sub> or V <sub>av34</sub> = pc/h (Equation 13-14 or 13-17) Is V <sub>3</sub> or V <sub>av34</sub> > 2,700 pc/h? <input type="checkbox"/> Yes <input type="checkbox"/> No Is V <sub>3</sub> or V <sub>av34</sub> > 1.5 * V <sub>12</sub> /2 <input type="checkbox"/> Yes <input type="checkbox"/> No If Yes, V <sub>12a</sub> = pc/h (Equation 13-16, 13-18, or 13-19)				
Capacity Checks					Capacity Checks				
	Actual	Capacity		LOS F?		Actual	Capacity		LOS F?
V <sub>FO</sub>	6031	Exhibit 13-8		No	V <sub>F</sub>		Exhibit 13-8		
					V <sub>FO</sub> = V <sub>F</sub> - V <sub>R</sub>		Exhibit 13-8		
					V <sub>R</sub>		Exhibit 13-10		
Flow Entering Merge Influence Area					Flow Entering Diverge Influence Area				
	Actual	Max Desirable		Violation?		Actual	Max Desirable		Violation?
V <sub>R12</sub>	4505	Exhibit 13-8		No	V <sub>12</sub>		Exhibit 13-8		
Level of Service Determination (if not F)					Level of Service Determination (if not F)				
$D_R = 5.475 + 0.00734 v_R + 0.0078 V_{12} - 0.00627 L_A$ D <sub>R</sub> = 38.6 (pc/mi/ln) LOS = E (Exhibit 13-2)					$D_R = 4.252 + 0.0086 V_{12} - 0.009 L_D$ D <sub>R</sub> = (pc/mi/ln) LOS = (Exhibit 13-2)				
Speed Determination					Speed Determination				
M <sub>S</sub> =	0.654 (Exhibit 13-11)				D <sub>S</sub> =	(Exhibit 13-12)			
S <sub>R</sub> =	50.0 mph (Exhibit 13-11)				S <sub>R</sub> =	mph (Exhibit 13-12)			
S <sub>0</sub> =	61.3 mph (Exhibit 13-11)				S <sub>0</sub> =	mph (Exhibit 13-12)			
S =	52.4 mph (Exhibit 13-13)				S =	mph (Exhibit 13-13)			

RAMPS AND RAMP JUNCTIONS WORKSHEET										
<b>General Information</b>					<b>Site Information</b>					
Analyst	RB		Freeway/Dir of Travel	I 80 WB		Agency or Company	Fehr & Peers		Junction	I-780 Collector
Date Performed	10/31/2014		Jurisdiction	Sonoma County		Analysis Time Period	PM Peak		Analysis Year	2040 + ORCEM
Project Description Vallejo Marine Terminal										
<b>Inputs</b>										
Upstream Adj Ramp		Number of Lanes, N			3			Downstream Adj Ramp		
<input checked="" type="checkbox"/> Yes <input checked="" type="checkbox"/> On		Acceleration Lane Length, L <sub>A</sub>						<input type="checkbox"/> Yes <input type="checkbox"/> On		
<input type="checkbox"/> No <input type="checkbox"/> Off		Deceleration Lane Length L <sub>D</sub>			125			<input checked="" type="checkbox"/> No <input type="checkbox"/> Off		
L <sub>up</sub> = 1500 ft		Freeway Volume, V <sub>F</sub>			6040			L <sub>down</sub> = ft		
V <sub>u</sub> = 231 veh/h		Ramp Volume, V <sub>R</sub>			2110			V <sub>D</sub> = veh/h		
		Freeway Free-Flow Speed, S <sub>FF</sub>			65.0					
		Ramp Free-Flow Speed, S <sub>FR</sub>			65.0					
<b>Conversion to pc/h Under Base Conditions</b>										
(pc/h)	V (Veh/hr)	PHF	Terrain	%Truck	%Rv	f <sub>HV</sub>	f <sub>p</sub>	v = V/PHF x f <sub>HV</sub> x f <sub>p</sub>		
Freeway	6040	0.92	Level	5	0	0.976	1.00	6729		
Ramp	2110	0.92	Level	5	0	0.976	1.00	2351		
UpStream	231	0.90	Level	5	0	0.976	1.00	263		
DownStream										
<b>Merge Areas</b>					<b>Diverge Areas</b>					
<b>Estimation of v<sub>12</sub></b>					<b>Estimation of v<sub>12</sub></b>					
$V_{12} = V_F (P_{FM})$ L <sub>EQ</sub> = (Equation 13-6 or 13-7) P <sub>FM</sub> = using Equation (Exhibit 13-6) V <sub>12</sub> = pc/h V <sub>3</sub> or V <sub>av34</sub> pc/h (Equation 13-14 or 13-17) Is V <sub>3</sub> or V <sub>av34</sub> > 2,700 pc/h? <input type="checkbox"/> Yes <input type="checkbox"/> No Is V <sub>3</sub> or V <sub>av34</sub> > 1.5 * V <sub>12</sub> /2 <input type="checkbox"/> Yes <input type="checkbox"/> No If Yes, V <sub>12a</sub> = pc/h (Equation 13-16, 13-18, or 13-19)					$V_{12} = V_R + (V_F - V_R)P_{FD}$ L <sub>EQ</sub> = 5584.93 (Equation 13-12 or 13-13) P <sub>FD</sub> = 0.560 using Equation (Exhibit 13-7) V <sub>12</sub> = 4805 pc/h V <sub>3</sub> or V <sub>av34</sub> 1924 pc/h (Equation 13-14 or 13-17) Is V <sub>3</sub> or V <sub>av34</sub> > 2,700 pc/h? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Is V <sub>3</sub> or V <sub>av34</sub> > 1.5 * V <sub>12</sub> /2 <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No If Yes, V <sub>12a</sub> = pc/h (Equation 13-16, 13-18, or 13-19)					
<b>Capacity Checks</b>					<b>Capacity Checks</b>					
	Actual	Capacity		LOS F?		Actual	Capacity		LOS F?	
V <sub>FO</sub>		Exhibit 13-8			V <sub>F</sub>	6729	Exhibit 13-8	7050	No	
					V <sub>FO</sub> = V <sub>F</sub> - V <sub>R</sub>	4378	Exhibit 13-8	7050	No	
					V <sub>R</sub>	2351	Exhibit 13-10	2200	Yes	
<b>Flow Entering Merge Influence Area</b>					<b>Flow Entering Diverge Influence Area</b>					
	Actual	Max Desirable		Violation?		Actual	Max Desirable		Violation?	
V <sub>R12</sub>		Exhibit 13-8			V <sub>12</sub>	4805	Exhibit 13-8	4400:All	Yes	
<b>Level of Service Determination (if not F)</b>					<b>Level of Service Determination (if not F)</b>					
$D_R = 5.475 + 0.00734 v_R + 0.0078 V_{12} - 0.00627 L_A$ D <sub>R</sub> = (pc/mi/ln) LOS = (Exhibit 13-2)					$D_R = 4.252 + 0.0086 V_{12} - 0.009 L_D$ D <sub>R</sub> = 44.5 (pc/mi/ln) LOS = F (Exhibit 13-2)					
<b>Speed Determination</b>					<b>Speed Determination</b>					
M <sub>S</sub> = (Exhibit 13-11)					D <sub>S</sub> = 0.250 (Exhibit 13-12)					
S <sub>R</sub> = mph (Exhibit 13-11)					S <sub>R</sub> = 59.3 mph (Exhibit 13-12)					
S <sub>0</sub> = mph (Exhibit 13-11)					S <sub>0</sub> = 67.7 mph (Exhibit 13-12)					
S = mph (Exhibit 13-13)					S = 61.5 mph (Exhibit 13-13)					



RAMPS AND RAMP JUNCTIONS WORKSHEET										
<b>General Information</b>					<b>Site Information</b>					
Analyst	RB		Freeway/Dir of Travel	I 80 WB		Agency or Company	Fehr & Peers		Junction	I-780 Collector
Date Performed	10/31/2014		Jurisdiction	Sonoma County		Analysis Time Period	AM Peak		Analysis Year	2040 + ORCEM
Project Description Vallejo Marine Terminal										
<b>Inputs</b>										
Upstream Adj Ramp		Number of Lanes, N			3			Downstream Adj Ramp		
<input checked="" type="checkbox"/> Yes <input checked="" type="checkbox"/> On		Acceleration Lane Length, L <sub>A</sub>						<input type="checkbox"/> Yes <input type="checkbox"/> On		
<input type="checkbox"/> No <input type="checkbox"/> Off		Deceleration Lane Length L <sub>D</sub>			125			<input checked="" type="checkbox"/> No <input type="checkbox"/> Off		
L <sub>up</sub> = 1500 ft		Freeway Volume, V <sub>F</sub>			5215			L <sub>down</sub> = ft		
V <sub>u</sub> = 183 veh/h		Ramp Volume, V <sub>R</sub>			1812			V <sub>D</sub> = veh/h		
		Freeway Free-Flow Speed, S <sub>FF</sub>			65.0					
		Ramp Free-Flow Speed, S <sub>FR</sub>			65.0					
<b>Conversion to pc/h Under Base Conditions</b>										
(pc/h)	V (Veh/hr)	PHF	Terrain	%Truck	%Rv	f <sub>HV</sub>	f <sub>p</sub>	v = V/PHF x f <sub>HV</sub> x f <sub>p</sub>		
Freeway	5215	0.92	Level	5	0	0.976	1.00	5810		
Ramp	1812	0.92	Level	5	0	0.976	1.00	2019		
UpStream	183	0.90	Level	5	0	0.976	1.00	208		
DownStream										
<b>Merge Areas</b>					<b>Diverge Areas</b>					
<b>Estimation of v<sub>12</sub></b>					<b>Estimation of v<sub>12</sub></b>					
$V_{12} = V_F (P_{FM})$ (Equation 13-6 or 13-7) L <sub>EQ</sub> = P <sub>FM</sub> = using Equation (Exhibit 13-6) V <sub>12</sub> = pc/h V <sub>3</sub> or V <sub>av34</sub> pc/h (Equation 13-14 or 13-17) Is V <sub>3</sub> or V <sub>av34</sub> > 2,700 pc/h? <input type="checkbox"/> Yes <input type="checkbox"/> No Is V <sub>3</sub> or V <sub>av34</sub> > 1.5 * V <sub>12</sub> /2 <input type="checkbox"/> Yes <input type="checkbox"/> No If Yes, V <sub>12a</sub> = pc/h (Equation 13-16, 13-18, or 13-19)					$V_{12} = V_R + (V_F - V_R)P_{FD}$ L <sub>EQ</sub> = 4063.61 (Equation 13-12 or 13-13) P <sub>FD</sub> = 0.574 using Equation (Exhibit 13-7) V <sub>12</sub> = 4196 pc/h V <sub>3</sub> or V <sub>av34</sub> 1614 pc/h (Equation 13-14 or 13-17) Is V <sub>3</sub> or V <sub>av34</sub> > 2,700 pc/h? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Is V <sub>3</sub> or V <sub>av34</sub> > 1.5 * V <sub>12</sub> /2 <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No If Yes, V <sub>12a</sub> = pc/h (Equation 13-16, 13-18, or 13-19)					
<b>Capacity Checks</b>					<b>Capacity Checks</b>					
	Actual	Capacity		LOS F?		Actual	Capacity		LOS F?	
V <sub>FO</sub>		Exhibit 13-8			V <sub>F</sub>	5810	Exhibit 13-8	7050	No	
					V <sub>FO</sub> = V <sub>F</sub> - V <sub>R</sub>	3791	Exhibit 13-8	7050	No	
					V <sub>R</sub>	2019	Exhibit 13-10	2200	No	
<b>Flow Entering Merge Influence Area</b>					<b>Flow Entering Diverge Influence Area</b>					
	Actual	Max Desirable		Violation?		Actual	Max Desirable		Violation?	
V <sub>R12</sub>		Exhibit 13-8			V <sub>12</sub>	4196	Exhibit 13-8	4400:All	No	
<b>Level of Service Determination (if not F)</b>					<b>Level of Service Determination (if not F)</b>					
$D_R = 5.475 + 0.00734 v_R + 0.0078 V_{12} - 0.00627 L_A$ D <sub>R</sub> = (pc/mi/ln) LOS = (Exhibit 13-2)					$D_R = 4.252 + 0.0086 V_{12} - 0.009 L_D$ D <sub>R</sub> = 39.2 (pc/mi/ln) LOS = E (Exhibit 13-2)					
<b>Speed Determination</b>					<b>Speed Determination</b>					
M <sub>S</sub> = (Exhibit 13-11)					D <sub>S</sub> = 0.220 (Exhibit 13-12)					
S <sub>R</sub> = mph (Exhibit 13-11)					S <sub>R</sub> = 59.9 mph (Exhibit 13-12)					
S <sub>0</sub> = mph (Exhibit 13-11)					S <sub>0</sub> = 68.9 mph (Exhibit 13-12)					
S = mph (Exhibit 13-13)					S = 62.2 mph (Exhibit 13-13)					

<b>BASIC FREEWAY SEGMENTS WORKSHEET</b>			
<b>General Information</b>		<b>Site Information</b>	
Analyst	<i>RB</i>	Highway/Direction of Travel	<i>80 WB</i>
Agency or Company	<i>Fehr &amp; Peers</i>	From/To	<i>I-780 Collectors - Georgia St</i>
Date Performed	<i>10/23/2014</i>	Jurisdiction	<i>Sonoma County</i>
Analysis Time Period	<i>PM Peak Hour</i>	Analysis Year	<i>2040 + ORCEM</i>
Project Description <i>Vallejo Marine Terminal</i>			
<input checked="" type="checkbox"/> Oper.(LOS) <input type="checkbox"/> Des.(N) <input type="checkbox"/> Planning Data			
<b>Flow Inputs</b>			
Volume, V	<i>6052</i>	veh/h	Peak-Hour Factor, PHF
AADT		veh/day	%Trucks and Buses, P <sub>T</sub>
Peak-Hr Prop. of AADT, K			%RVs, P <sub>R</sub>
Peak-Hr Direction Prop, D			General Terrain:
DDHV = AADT x K x D		veh/h	Grade % Length
			Up/Down %
<b>Calculate Flow Adjustments</b>			
f <sub>p</sub>	<i>1.00</i>	E <sub>R</sub>	<i>1.2</i>
E <sub>T</sub>	<i>1.5</i>	f <sub>HV</sub> = 1/[1+P <sub>T</sub> (E <sub>T</sub> - 1) + P <sub>R</sub> (E <sub>R</sub> - 1)]	<i>0.976</i>
<b>Speed Inputs</b>		<b>Calc Speed Adj and FFS</b>	
Lane Width	ft	f <sub>LW</sub>	mph
Rt-Side Lat. Clearance	ft	f <sub>LC</sub>	mph
Number of Lanes, N	<i>3</i>	TRD Adjustment	mph
Total Ramp Density, TRD	ramps/mi	FFS	<i>65.0</i> mph
FFS (measured)	<i>65.0</i> mph		
Base free-flow Speed, BFFS	mph		
<b>LOS and Performance Measures</b>		<b>Design (N)</b>	
<u>Operational (LOS)</u>		<u>Design (N)</u>	
v <sub>p</sub> = (V or DDHV) / (PHF x N x f <sub>HV</sub> )	<i>2248</i> pc/h/ln	Design LOS	
x f <sub>p</sub> )		v <sub>p</sub> = (V or DDHV) / (PHF x N x f <sub>HV</sub> )	pc/h/ln
S	<i>54.8</i> mph	x f <sub>p</sub> )	
D = v <sub>p</sub> / S	<i>41.0</i> pc/mi/ln	S	mph
LOS	<i>E</i>	D = v <sub>p</sub> / S	pc/mi/ln
		Required Number of Lanes, N	
<b>Glossary</b>		<b>Factor Location</b>	
N - Number of lanes	S - Speed	E <sub>R</sub> - Exhibits 11-10, 11-12	f <sub>LW</sub> - Exhibit 11-8
V - Hourly volume	D - Density	E <sub>T</sub> - Exhibits 11-10, 11-11, 11-13	f <sub>LC</sub> - Exhibit 11-9
v <sub>p</sub> - Flow rate	FFS - Free-flow speed	f <sub>p</sub> - Page 11-18	TRD - Page 11-11
LOS - Level of service	BFFS - Base free-flow speed	LOS, S, FFS, v <sub>p</sub> - Exhibits 11-2, 11-3	
DDHV - Directional design hour volume			

<b>BASIC FREEWAY SEGMENTS WORKSHEET</b>			
<b>General Information</b>		<b>Site Information</b>	
Analyst	<i>RB</i>	Highway/Direction of Travel	<i>80 WB</i>
Agency or Company	<i>Fehr &amp; Peers</i>	From/To	<i>I-780 Collectors - Georgia St</i>
Date Performed	<i>10/23/2014</i>	Jurisdiction	<i>Sonoma County</i>
Analysis Time Period	<i>AM Peak Hour</i>	Analysis Year	<i>2040 + ORCEM</i>
Project Description <i>Vallejo Marine Terminal</i>			
<input checked="" type="checkbox"/> Oper.(LOS) <input type="checkbox"/> Des.(N) <input type="checkbox"/> Planning Data			
<b>Flow Inputs</b>			
Volume, V	<i>5231</i>	veh/h	Peak-Hour Factor, PHF
AADT		veh/day	%Trucks and Buses, P <sub>T</sub>
Peak-Hr Prop. of AADT, K			%RVs, P <sub>R</sub>
Peak-Hr Direction Prop, D			General Terrain:
DDHV = AADT x K x D		veh/h	Grade %    Length <i>mi</i>
			Up/Down %
<b>Calculate Flow Adjustments</b>			
f <sub>p</sub>	<i>1.00</i>	E <sub>R</sub>	<i>1.2</i>
E <sub>T</sub>	<i>1.5</i>	f <sub>HV</sub> = 1/[1+P <sub>T</sub> (E <sub>T</sub> - 1) + P <sub>R</sub> (E <sub>R</sub> - 1)]	<i>0.976</i>
<b>Speed Inputs</b>		<b>Calc Speed Adj and FFS</b>	
Lane Width	ft	f <sub>LW</sub>	mph
Rt-Side Lat. Clearance	ft	f <sub>LC</sub>	mph
Number of Lanes, N	<i>3</i>	TRD Adjustment	mph
Total Ramp Density, TRD	ramps/mi	FFS	<i>65.0</i> mph
FFS (measured)	<i>65.0</i> mph		
Base free-flow Speed, BFFS	mph		
<b>LOS and Performance Measures</b>		<b>Design (N)</b>	
<u>Operational (LOS)</u>		<u>Design (N)</u>	
v <sub>p</sub> = (V or DDHV) / (PHF x N x f <sub>HV</sub> )	<i>1943</i> pc/h/ln	Design LOS	
x f <sub>p</sub> )		v <sub>p</sub> = (V or DDHV) / (PHF x N x f <sub>HV</sub> )	pc/h/ln
S	<i>60.8</i> mph	x f <sub>p</sub> )	
D = v <sub>p</sub> / S	<i>31.9</i> pc/mi/ln	S	mph
LOS	<i>D</i>	D = v <sub>p</sub> / S	pc/mi/ln
		Required Number of Lanes, N	
<b>Glossary</b>		<b>Factor Location</b>	
N - Number of lanes	S - Speed	E <sub>R</sub> - Exhibits 11-10, 11-12	f <sub>LW</sub> - Exhibit 11-8
V - Hourly volume	D - Density	E <sub>T</sub> - Exhibits 11-10, 11-11, 11-13	f <sub>LC</sub> - Exhibit 11-9
v <sub>p</sub> - Flow rate	FFS - Free-flow speed	f <sub>p</sub> - Page 11-18	TRD - Page 11-11
LOS - Level of service	BFFS - Base free-flow speed	LOS, S, FFS, v <sub>p</sub> - Exhibits 11-2, 11-3	
DDHV - Directional design hour volume			

<b>BASIC FREEWAY SEGMENTS WORKSHEET</b>			
<b>General Information</b>		<b>Site Information</b>	
Analyst	<i>RB</i>	Highway/Direction of Travel	<i>80 EB</i>
Agency or Company	<i>Fehr &amp; Peers</i>	From/To	<i>I-780 Collectors - Georgia St</i>
Date Performed	<i>10/23/2014</i>	Jurisdiction	<i>Sonoma County</i>
Analysis Time Period	<i>PM Peak Hour</i>	Analysis Year	<i>2040 + ORCEM</i>
Project Description <i>Vallejo Marine Terminal</i>			
<input checked="" type="checkbox"/> Oper.(LOS) <input type="checkbox"/> Des.(N) <input type="checkbox"/> Planning Data			
<b>Flow Inputs</b>			
Volume, V	<i>5059</i>	veh/h	Peak-Hour Factor, PHF
AADT		veh/day	%Trucks and Buses, P <sub>T</sub>
Peak-Hr Prop. of AADT, K			%RVs, P <sub>R</sub>
Peak-Hr Direction Prop, D			General Terrain:
DDHV = AADT x K x D		veh/h	Grade % Length
			Up/Down %
<b>Calculate Flow Adjustments</b>			
f <sub>p</sub>	<i>1.00</i>	E <sub>R</sub>	<i>1.2</i>
E <sub>T</sub>	<i>1.5</i>	f <sub>HV</sub> = 1/[1+P <sub>T</sub> (E <sub>T</sub> - 1) + P <sub>R</sub> (E <sub>R</sub> - 1)]	<i>0.976</i>
<b>Speed Inputs</b>		<b>Calc Speed Adj and FFS</b>	
Lane Width		ft	
Rt-Side Lat. Clearance		ft	f <sub>LW</sub>
Number of Lanes, N	<i>3</i>		mph
Total Ramp Density, TRD		ramps/mi	f <sub>LC</sub>
FFS (measured)	<i>65.0</i>	mph	TRD Adjustment
Base free-flow Speed, BFFS		mph	FFS
			<i>65.0</i>
			mph
<b>LOS and Performance Measures</b>		<b>Design (N)</b>	
<u>Operational (LOS)</u>		<u>Design (N)</u>	
v <sub>p</sub> = (V or DDHV) / (PHF x N x f <sub>HV</sub> )	<i>1879</i>	pc/h/ln	Design LOS
x f <sub>p</sub> )			v <sub>p</sub> = (V or DDHV) / (PHF x N x f <sub>HV</sub> )
S	<i>61.7</i>	mph	x f <sub>p</sub> )
D = v <sub>p</sub> / S	<i>30.4</i>	pc/mi/ln	S
LOS	<i>D</i>		D = v <sub>p</sub> / S
			pc/mi/ln
			Required Number of Lanes, N
<b>Glossary</b>		<b>Factor Location</b>	
N - Number of lanes	S - Speed	E <sub>R</sub> - Exhibits 11-10, 11-12	f <sub>LW</sub> - Exhibit 11-8
V - Hourly volume	D - Density	E <sub>T</sub> - Exhibits 11-10, 11-11, 11-13	f <sub>LC</sub> - Exhibit 11-9
v <sub>p</sub> - Flow rate	FFS - Free-flow speed	f <sub>p</sub> - Page 11-18	TRD - Page 11-11
LOS - Level of service	BFFS - Base free-flow speed	LOS, S, FFS, v <sub>p</sub> - Exhibits 11-2, 11-3	
DDHV - Directional design hour volume			

<b>BASIC FREEWAY SEGMENTS WORKSHEET</b>			
<b>General Information</b>		<b>Site Information</b>	
Analyst	<i>RB</i>	Highway/Direction of Travel	<i>80 EB</i>
Agency or Company	<i>Fehr &amp; Peers</i>	From/To	<i>I-780 Collectors - Georgia St</i>
Date Performed	<i>10/23/2014</i>	Jurisdiction	<i>Sonoma County</i>
Analysis Time Period	<i>AM Peak Hour</i>	Analysis Year	<i>2040 + ORCEM</i>
Project Description <i>Vallejo Marine Terminal</i>			
<input checked="" type="checkbox"/> Oper.(LOS) <input type="checkbox"/> Des.(N) <input type="checkbox"/> Planning Data			
<b>Flow Inputs</b>			
Volume, V	<i>5413</i>	veh/h	Peak-Hour Factor, PHF
AADT		veh/day	%Trucks and Buses, P <sub>T</sub>
Peak-Hr Prop. of AADT, K			%RVs, P <sub>R</sub>
Peak-Hr Direction Prop, D			General Terrain:
DDHV = AADT x K x D		veh/h	Grade % Length
			Up/Down %
<b>Calculate Flow Adjustments</b>			
f <sub>p</sub>	<i>1.00</i>	E <sub>R</sub>	<i>1.2</i>
E <sub>T</sub>	<i>1.5</i>	f <sub>HV</sub> = 1/[1+P <sub>T</sub> (E <sub>T</sub> - 1) + P <sub>R</sub> (E <sub>R</sub> - 1)]	<i>0.976</i>
<b>Speed Inputs</b>		<b>Calc Speed Adj and FFS</b>	
Lane Width		ft	
Rt-Side Lat. Clearance		ft	f <sub>LW</sub>
Number of Lanes, N	<i>3</i>		mph
Total Ramp Density, TRD		ramps/mi	f <sub>LC</sub>
FFS (measured)	<i>65.0</i>	mph	TRD Adjustment
Base free-flow Speed, BFFS		mph	FFS
			<i>65.0</i>
			mph
<b>LOS and Performance Measures</b>		<b>Design (N)</b>	
<u>Operational (LOS)</u>		<u>Design (N)</u>	
v <sub>p</sub> = (V or DDHV) / (PHF x N x f <sub>HV</sub> )	<i>2010</i>	Design LOS	
x f <sub>p</sub> )		v <sub>p</sub> = (V or DDHV) / (PHF x N x f <sub>HV</sub> )	pc/h/ln
S	<i>59.7</i>	x f <sub>p</sub> )	
D = v <sub>p</sub> / S	<i>33.7</i>	S	mph
LOS	<i>D</i>	D = v <sub>p</sub> / S	pc/mi/ln
		Required Number of Lanes, N	
<b>Glossary</b>		<b>Factor Location</b>	
N - Number of lanes	S - Speed	E <sub>R</sub> - Exhibits 11-10, 11-12	f <sub>LW</sub> - Exhibit 11-8
V - Hourly volume	D - Density	E <sub>T</sub> - Exhibits 11-10, 11-11, 11-13	f <sub>LC</sub> - Exhibit 11-9
v <sub>p</sub> - Flow rate	FFS - Free-flow speed	f <sub>p</sub> - Page 11-18	TRD - Page 11-11
LOS - Level of service	BFFS - Base free-flow speed	LOS, S, FFS, v <sub>p</sub> - Exhibits 11-2, 11-3	
DDHV - Directional design hour volume			

RAMPS AND RAMP JUNCTIONS WORKSHEET									
General Information					Site Information				
Analyst	RB	Freeway/Dir of Travel	I 80 EB						
Agency or Company	Fehr & Peers	Junction	I-780 Collector						
Date Performed	10/31/2014	Jurisdiction	Sonoma County						
Analysis Time Period	PM Peak	Analysis Year	2040 + ORCEM						
Project Description Vallejo Marine Terminal									
Inputs									
Upstream Adj Ramp		Number of Lanes, N			3		Downstream Adj Ramp		
<input type="checkbox"/> Yes <input type="checkbox"/> On		Acceleration Lane Length, L <sub>A</sub>			150		<input checked="" type="checkbox"/> Yes <input type="checkbox"/> On		
<input checked="" type="checkbox"/> No <input type="checkbox"/> Off		Deceleration Lane Length L <sub>D</sub>					<input type="checkbox"/> No <input checked="" type="checkbox"/> Off		
L <sub>up</sub> = ft		Freeway Volume, V <sub>F</sub>			2877		L <sub>down</sub> = 2100 ft		
V <sub>u</sub> = veh/h		Ramp Volume, V <sub>R</sub>			2183		V <sub>D</sub> = 217 veh/h		
		Freeway Free-Flow Speed, S <sub>FF</sub>			65.0				
		Ramp Free-Flow Speed, S <sub>FR</sub>			65.0				
Conversion to pc/h Under Base Conditions									
(pc/h)	V (Veh/hr)	PHF	Terrain	%Truck	%Rv	f <sub>HV</sub>	f <sub>p</sub>	v = V/PHF x f <sub>HV</sub> x f <sub>p</sub>	
Freeway	2877	0.92	Level	5	0	0.976	1.00	3205	
Ramp	2183	0.92	Level	5	0	0.976	1.00	2432	
UpStream									
DownStream	217	0.90	Level	5	0	0.976	1.00	247	
Merge Areas					Diverge Areas				
Estimation of v <sub>12</sub>					Estimation of v <sub>12</sub>				
$V_{12} = V_F (P_{FM})$ L <sub>EQ</sub> = 1965.78 (Equation 13-6 or 13-7) P <sub>FM</sub> = 0.582 using Equation (Exhibit 13-6) V <sub>12</sub> = 1864 pc/h V <sub>3</sub> or V <sub>av34</sub> = 1341 pc/h (Equation 13-14 or 13-17) Is V <sub>3</sub> or V <sub>av34</sub> > 2,700 pc/h? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Is V <sub>3</sub> or V <sub>av34</sub> > 1.5 * V <sub>12</sub> /2 <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No If Yes, V <sub>12a</sub> = pc/h (Equation 13-16, 13-18, or 13-19)					$V_{12} = V_R + (V_F - V_R)P_{FD}$ L <sub>EQ</sub> = (Equation 13-12 or 13-13) P <sub>FD</sub> = using Equation (Exhibit 13-7) V <sub>12</sub> = pc/h V <sub>3</sub> or V <sub>av34</sub> = pc/h (Equation 13-14 or 13-17) Is V <sub>3</sub> or V <sub>av34</sub> > 2,700 pc/h? <input type="checkbox"/> Yes <input type="checkbox"/> No Is V <sub>3</sub> or V <sub>av34</sub> > 1.5 * V <sub>12</sub> /2 <input type="checkbox"/> Yes <input type="checkbox"/> No If Yes, V <sub>12a</sub> = pc/h (Equation 13-16, 13-18, or 13-19)				
Capacity Checks					Capacity Checks				
	Actual	Capacity		LOS F?		Actual	Capacity		LOS F?
V <sub>FO</sub>	5637	Exhibit 13-8		No	V <sub>F</sub>		Exhibit 13-8		
					V <sub>FO</sub> = V <sub>F</sub> - V <sub>R</sub>		Exhibit 13-8		
					V <sub>R</sub>		Exhibit 13-10		
Flow Entering Merge Influence Area					Flow Entering Diverge Influence Area				
	Actual	Max Desirable		Violation?		Actual	Max Desirable		Violation?
V <sub>R12</sub>	4296	Exhibit 13-8		4600:All	No	V <sub>12</sub>	Exhibit 13-8		
Level of Service Determination (if not F)					Level of Service Determination (if not F)				
$D_R = 5.475 + 0.00734 v_R + 0.0078 V_{12} - 0.00627 L_A$ D <sub>R</sub> = 36.9 (pc/mi/ln) LOS = E (Exhibit 13-2)					$D_R = 4.252 + 0.0086 V_{12} - 0.009 L_D$ D <sub>R</sub> = (pc/mi/ln) LOS = (Exhibit 13-2)				
Speed Determination					Speed Determination				
M <sub>S</sub> = 0.588 (Exhibit 13-11)					D <sub>S</sub> = (Exhibit 13-12)				
S <sub>R</sub> = 51.5 mph (Exhibit 13-11)					S <sub>R</sub> = mph (Exhibit 13-12)				
S <sub>0</sub> = 62.0 mph (Exhibit 13-11)					S <sub>0</sub> = mph (Exhibit 13-12)				
S = 53.6 mph (Exhibit 13-13)					S = mph (Exhibit 13-13)				

<b>BASIC FREEWAY SEGMENTS WORKSHEET</b>			
<b>General Information</b>		<b>Site Information</b>	
Analyst	<i>RB</i>	Highway/Direction of Travel <i>I-80 WB</i>	
Agency or Company	<i>Fehr &amp; Peers</i>	From/To	<i>South of Sonoma Blvd</i>
Date Performed	<i>10/23/2014</i>	Jurisdiction	<i>Sonoma County</i>
Analysis Time Period	<i>AM Peak Hour</i>	Analysis Year	<i>2040 + ORCEM</i>
Project Description <i>Vallejo Marine Terminal</i>			
<input checked="" type="checkbox"/> Oper.(LOS)		<input type="checkbox"/> Des.(N)	
<input type="checkbox"/> Planning Data			
<b>Flow Inputs</b>			
Volume, V	<i>6371</i>	veh/h	Peak-Hour Factor, PHF <i>0.92</i>
AADT		veh/day	%Trucks and Buses, P <sub>T</sub> <i>5</i>
Peak-Hr Prop. of AADT, K			%RVs, P <sub>R</sub> <i>0</i>
Peak-Hr Direction Prop, D			General Terrain: <i>Level</i>
DDHV = AADT x K x D		veh/h	Grade % Length <i>mi</i>
			Up/Down %
<b>Calculate Flow Adjustments</b>			
f <sub>p</sub>	<i>1.00</i>	E <sub>R</sub>	<i>1.2</i>
E <sub>T</sub>	<i>1.5</i>	f <sub>HV</sub> = 1/[1+P <sub>T</sub> (E <sub>T</sub> - 1) + P <sub>R</sub> (E <sub>R</sub> - 1)] <i>0.976</i>	
<b>Speed Inputs</b>		<b>Calc Speed Adj and FFS</b>	
Lane Width	ft		
Rt-Side Lat. Clearance	ft	f <sub>LW</sub>	mph
Number of Lanes, N	<i>4</i>	f <sub>LC</sub>	mph
Total Ramp Density, TRD	ramps/mi	TRD Adjustment	mph
FFS (measured)	<i>65.0</i>	FFS	<i>65.0</i>
Base free-flow Speed, BFFS	mph		
<b>LOS and Performance Measures</b>		<b>Design (N)</b>	
<u>Operational (LOS)</u>		<u>Design (N)</u>	
v <sub>p</sub> = (V or DDHV) / (PHF x N x f <sub>HV</sub> x f <sub>p</sub> )		Design LOS	
S	<i>63.0</i>	v <sub>p</sub> = (V or DDHV) / (PHF x N x f <sub>HV</sub> x f <sub>p</sub> )	pc/h/ln
D = v <sub>p</sub> / S	<i>28.2</i>	S	mph
LOS	<i>D</i>	D = v <sub>p</sub> / S	pc/mi/ln
		Required Number of Lanes, N	
<b>Glossary</b>		<b>Factor Location</b>	
N - Number of lanes	S - Speed	E <sub>R</sub> - Exhibits 11-10, 11-12	f <sub>LW</sub> - Exhibit 11-8
V - Hourly volume	D - Density	E <sub>T</sub> - Exhibits 11-10, 11-11, 11-13	f <sub>LC</sub> - Exhibit 11-9
v <sub>p</sub> - Flow rate	FFS - Free-flow speed	f <sub>p</sub> - Page 11-18	TRD - Page 11-11
LOS - Level of service	BFFS - Base free-flow speed	LOS, S, FFS, v <sub>p</sub> - Exhibits 11-2, 11-3	
DDHV - Directional design hour volume			

<b>BASIC FREEWAY SEGMENTS WORKSHEET</b>			
<b>General Information</b>		<b>Site Information</b>	
Analyst	<i>RB</i>	Highway/Direction of Travel <i>I-80 EB</i>	
Agency or Company	<i>Fehr &amp; Peers</i>	From/To	<i>South of Sonoma Blvd</i>
Date Performed	<i>10/23/2014</i>	Jurisdiction	<i>Sonoma County</i>
Analysis Time Period	<i>PM Peak Hour</i>	Analysis Year	<i>2040 + ORCEM</i>
Project Description <i>Vallejo Marine Terminal</i>			
<input checked="" type="checkbox"/> Oper.(LOS)		<input type="checkbox"/> Des.(N)	
<input type="checkbox"/> Planning Data			
<b>Flow Inputs</b>			
Volume, V	<i>5377</i>	veh/h	Peak-Hour Factor, PHF <i>0.92</i>
AADT		veh/day	%Trucks and Buses, P <sub>T</sub> <i>5</i>
Peak-Hr Prop. of AADT, K			%RVs, P <sub>R</sub> <i>0</i>
Peak-Hr Direction Prop, D			General Terrain: <i>Level</i>
DDHV = AADT x K x D		veh/h	Grade % Length <i>mi</i>
			Up/Down %
<b>Calculate Flow Adjustments</b>			
f <sub>p</sub>	<i>1.00</i>	E <sub>R</sub>	<i>1.2</i>
E <sub>T</sub>	<i>1.5</i>	f <sub>HV</sub> = 1/[1+P <sub>T</sub> (E <sub>T</sub> - 1) + P <sub>R</sub> (E <sub>R</sub> - 1)] <i>0.976</i>	
<b>Speed Inputs</b>		<b>Calc Speed Adj and FFS</b>	
Lane Width	ft		
Rt-Side Lat. Clearance	ft	f <sub>LW</sub>	mph
Number of Lanes, N	<i>4</i>	f <sub>LC</sub>	mph
Total Ramp Density, TRD	ramps/mi	TRD Adjustment	mph
FFS (measured)	<i>65.0</i>	FFS	<i>65.0</i>
Base free-flow Speed, BFFS	mph		
<b>LOS and Performance Measures</b>		<b>Design (N)</b>	
<u>Operational (LOS)</u>		<u>Design (N)</u>	
v <sub>p</sub> = (V or DDHV) / (PHF x N x f <sub>HV</sub> ) <i>1498</i>		Design LOS	
x f <sub>p</sub> )	pc/h/ln	v <sub>p</sub> = (V or DDHV) / (PHF x N x f <sub>HV</sub> )	
S	<i>64.9</i>	x f <sub>p</sub> )	pc/h/ln
D = v <sub>p</sub> / S	<i>23.1</i>	S	mph
LOS	<i>C</i>	D = v <sub>p</sub> / S	pc/mi/ln
		Required Number of Lanes, N	
<b>Glossary</b>		<b>Factor Location</b>	
N - Number of lanes	S - Speed	E <sub>R</sub> - Exhibits 11-10, 11-12	f <sub>LW</sub> - Exhibit 11-8
V - Hourly volume	D - Density	E <sub>T</sub> - Exhibits 11-10, 11-11, 11-13	f <sub>LC</sub> - Exhibit 11-9
v <sub>p</sub> - Flow rate	FFS - Free-flow speed	f <sub>p</sub> - Page 11-18	TRD - Page 11-11
LOS - Level of service	BFFS - Base free-flow speed	LOS, S, FFS, v <sub>p</sub> - Exhibits 11-2, 11-3	
DDHV - Directional design hour volume			



<b>BASIC FREEWAY SEGMENTS WORKSHEET</b>			
<b>General Information</b>		<b>Site Information</b>	
Analyst	<i>RB</i>	Highway/Direction of Travel <i>I-80 EB</i>	
Agency or Company	<i>Fehr &amp; Peers</i>	From/To	<i>South of Sonoma Blvd</i>
Date Performed	<i>10/23/2014</i>	Jurisdiction	<i>Sonoma County</i>
Analysis Time Period	<i>AM Peak Hour</i>	Analysis Year	<i>2040 + ORCEM</i>
Project Description <i>Vallejo Marine Terminal</i>			
<input checked="" type="checkbox"/> Oper.(LOS)		<input type="checkbox"/> Des.(N)	
<input type="checkbox"/> Planning Data			
<b>Flow Inputs</b>			
Volume, V	<i>2947</i>	veh/h	Peak-Hour Factor, PHF <i>0.92</i>
AADT		veh/day	%Trucks and Buses, P <sub>T</sub> <i>5</i>
Peak-Hr Prop. of AADT, K			%RVs, P <sub>R</sub> <i>0</i>
Peak-Hr Direction Prop, D			General Terrain: <i>Level</i>
DDHV = AADT x K x D		veh/h	Grade % Length <i>mi</i>
			Up/Down %
<b>Calculate Flow Adjustments</b>			
f <sub>p</sub>	<i>1.00</i>	E <sub>R</sub>	<i>1.2</i>
E <sub>T</sub>	<i>1.5</i>	f <sub>HV</sub> = 1/[1+P <sub>T</sub> (E <sub>T</sub> - 1) + P <sub>R</sub> (E <sub>R</sub> - 1)] <i>0.976</i>	
<b>Speed Inputs</b>		<b>Calc Speed Adj and FFS</b>	
Lane Width	ft		
Rt-Side Lat. Clearance	ft	f <sub>LW</sub>	mph
Number of Lanes, N	<i>4</i>	f <sub>LC</sub>	mph
Total Ramp Density, TRD	ramps/mi	TRD Adjustment	mph
FFS (measured)	<i>65.0</i>	FFS	<i>65.0</i>
Base free-flow Speed, BFFS	mph		
<b>LOS and Performance Measures</b>		<b>Design (N)</b>	
<u>Operational (LOS)</u>		<u>Design (N)</u>	
v <sub>p</sub> = (V or DDHV) / (PHF x N x f <sub>HV</sub> )		Design LOS	
x f <sub>p</sub> )	<i>821</i>	v <sub>p</sub> = (V or DDHV) / (PHF x N x f <sub>HV</sub> )	pc/h/ln
S	<i>65.0</i>	x f <sub>p</sub> )	
D = v <sub>p</sub> / S	<i>12.6</i>	S	mph
LOS	<i>B</i>	D = v <sub>p</sub> / S	pc/mi/ln
		Required Number of Lanes, N	
<b>Glossary</b>		<b>Factor Location</b>	
N - Number of lanes	S - Speed	E <sub>R</sub> - Exhibits 11-10, 11-12	f <sub>LW</sub> - Exhibit 11-8
V - Hourly volume	D - Density	E <sub>T</sub> - Exhibits 11-10, 11-11, 11-13	f <sub>LC</sub> - Exhibit 11-9
v <sub>p</sub> - Flow rate	FFS - Free-flow speed	f <sub>p</sub> - Page 11-18	TRD - Page 11-11
LOS - Level of service	BFFS - Base free-flow speed	LOS, S, FFS, v <sub>p</sub> - Exhibits 11-2, 11-3	
DDHV - Directional design hour volume			

<b>BASIC FREEWAY SEGMENTS WORKSHEET</b>			
<b>General Information</b>		<b>Site Information</b>	
Analyst	<i>RB</i>	Highway/Direction of Travel <i>I-80 WB</i>	
Agency or Company	<i>Fehr &amp; Peers</i>	From/To	<i>South of Sonoma Blvd</i>
Date Performed	<i>10/23/2014</i>	Jurisdiction	<i>Sonoma County</i>
Analysis Time Period	<i>PM Peak Hour</i>	Analysis Year	<i>2040 + ORCEM</i>
Project Description <i>Vallejo Marine Terminal</i>			
<input checked="" type="checkbox"/> Oper.(LOS)		<input type="checkbox"/> Des.(N)	
<input type="checkbox"/> Planning Data			
<b>Flow Inputs</b>			
Volume, V	<i>3574</i>	veh/h	Peak-Hour Factor, PHF <i>0.92</i>
AADT		veh/day	%Trucks and Buses, P <sub>T</sub> <i>5</i>
Peak-Hr Prop. of AADT, K			%RVs, P <sub>R</sub> <i>0</i>
Peak-Hr Direction Prop, D			General Terrain: <i>Level</i>
DDHV = AADT x K x D		veh/h	Grade % Length <i>mi</i>
			Up/Down %
<b>Calculate Flow Adjustments</b>			
f <sub>p</sub>	<i>1.00</i>	E <sub>R</sub>	<i>1.2</i>
E <sub>T</sub>	<i>1.5</i>	f <sub>HV</sub> = 1/[1+P <sub>T</sub> (E <sub>T</sub> - 1) + P <sub>R</sub> (E <sub>R</sub> - 1)] <i>0.976</i>	
<b>Speed Inputs</b>		<b>Calc Speed Adj and FFS</b>	
Lane Width	ft		
Rt-Side Lat. Clearance	ft	f <sub>LW</sub>	mph
Number of Lanes, N	<i>4</i>	f <sub>LC</sub>	mph
Total Ramp Density, TRD	ramps/mi	TRD Adjustment	mph
FFS (measured)	<i>65.0</i>	FFS	<i>65.0</i>
Base free-flow Speed, BFFS	mph		
<b>LOS and Performance Measures</b>		<b>Design (N)</b>	
<u>Operational (LOS)</u>		<u>Design (N)</u>	
v <sub>p</sub> = (V or DDHV) / (PHF x N x f <sub>HV</sub> ) <i>995</i>		Design LOS	
x f <sub>p</sub> )	pc/h/ln	v <sub>p</sub> = (V or DDHV) / (PHF x N x f <sub>HV</sub> )	
S	<i>65.0</i>	x f <sub>p</sub> )	pc/h/ln
D = v <sub>p</sub> / S	<i>15.3</i>	S	mph
LOS	<i>B</i>	D = v <sub>p</sub> / S	pc/mi/ln
		Required Number of Lanes, N	
<b>Glossary</b>		<b>Factor Location</b>	
N - Number of lanes	S - Speed	E <sub>R</sub> - Exhibits 11-10, 11-12	f <sub>LW</sub> - Exhibit 11-8
V - Hourly volume	D - Density	E <sub>T</sub> - Exhibits 11-10, 11-11, 11-13	f <sub>LC</sub> - Exhibit 11-9
v <sub>p</sub> - Flow rate	FFS - Free-flow speed	f <sub>p</sub> - Page 11-18	TRD - Page 11-11
LOS - Level of service	BFFS - Base free-flow speed	LOS, S, FFS, v <sub>p</sub> - Exhibits 11-2, 11-3	
DDHV - Directional design hour volume			

<b>BASIC FREEWAY SEGMENTS WORKSHEET</b>			
<b>General Information</b>		<b>Site Information</b>	
Analyst	RB	Highway/Direction of Travel <i>I-780 EB</i>	
Agency or Company	Fehr & Peers	From/To	<i>Laurel to Glen Cove</i>
Date Performed	10/23/2014	Jurisdiction	<i>Sonoma County</i>
Analysis Time Period	PM Peak Hour	Analysis Year	<i>2040 + ORCEM</i>
Project Description <i>Vallejo Marine Terminal</i>			
<input checked="" type="checkbox"/> Oper.(LOS)		<input type="checkbox"/> Des.(N)	
<input type="checkbox"/> Planning Data			
<b>Flow Inputs</b>			
Volume, V	2782	veh/h	Peak-Hour Factor, PHF
AADT		veh/day	0.92
Peak-Hr Prop. of AADT, K			%Trucks and Buses, P <sub>T</sub>
Peak-Hr Direction Prop, D			5
DDHV = AADT x K x D		veh/h	%RVs, P <sub>R</sub>
			0
			General Terrain:
			<i>Level</i>
			Grade % Length
			<i>mi</i>
			Up/Down %
<b>Calculate Flow Adjustments</b>			
f <sub>p</sub>	1.00	E <sub>R</sub>	1.2
E <sub>T</sub>	1.5	f <sub>HV</sub> = 1/[1+P <sub>T</sub> (E <sub>T</sub> - 1) + P <sub>R</sub> (E <sub>R</sub> - 1)]	
			0.976
<b>Speed Inputs</b>		<b>Calc Speed Adj and FFS</b>	
Lane Width	ft		
Rt-Side Lat. Clearance	ft	f <sub>LW</sub>	mph
Number of Lanes, N	2	f <sub>LC</sub>	mph
Total Ramp Density, TRD	ramps/mi	TRD Adjustment	mph
FFS (measured)	65.0	FFS	65.0
Base free-flow Speed, BFFS	mph		mph
<b>LOS and Performance Measures</b>		<b>Design (N)</b>	
<u>Operational (LOS)</u>		<u>Design (N)</u>	
v <sub>p</sub> = (V or DDHV) / (PHF x N x f <sub>HV</sub> )		Design LOS	
1550	pc/h/ln	v <sub>p</sub> = (V or DDHV) / (PHF x N x f <sub>HV</sub> )	
x f <sub>p</sub> )		pc/h/ln	
S	64.7	x f <sub>p</sub> )	
S	mph	S	mph
D = v <sub>p</sub> / S	24.0	D = v <sub>p</sub> / S	pc/mi/ln
24.0	pc/mi/ln	Required Number of Lanes, N	
LOS	C		
<b>Glossary</b>		<b>Factor Location</b>	
N - Number of lanes	S - Speed	E <sub>R</sub> - Exhibits 11-10, 11-12	f <sub>LW</sub> - Exhibit 11-8
V - Hourly volume	D - Density	E <sub>T</sub> - Exhibits 11-10, 11-11, 11-13	f <sub>LC</sub> - Exhibit 11-9
v <sub>p</sub> - Flow rate	FFS - Free-flow speed	f <sub>p</sub> - Page 11-18	TRD - Page 11-11
LOS - Level of service	BFFS - Base free-flow speed	LOS, S, FFS, v <sub>p</sub> - Exhibits 11-2, 11-3	
DDHV - Directional design hour volume			

<b>BASIC FREEWAY SEGMENTS WORKSHEET</b>			
<b>General Information</b>		<b>Site Information</b>	
Analyst	<i>RB</i>	Highway/Direction of Travel <i>I-780 EB</i>	
Agency or Company	<i>Fehr &amp; Peers</i>	From/To	<i>Laurel to Glen Cove</i>
Date Performed	<i>10/23/2014</i>	Jurisdiction	<i>Sonoma County</i>
Analysis Time Period	<i>AM Peak Hour</i>	Analysis Year	<i>2040 + ORCEM</i>
Project Description <i>Vallejo Marine Terminal</i>			
<input checked="" type="checkbox"/> Oper.(LOS) <input type="checkbox"/> Des.(N) <input type="checkbox"/> Planning Data			
<b>Flow Inputs</b>			
Volume, V	<i>3006</i>	veh/h	Peak-Hour Factor, PHF <i>0.92</i>
AADT		veh/day	%Trucks and Buses, P <sub>T</sub> <i>5</i>
Peak-Hr Prop. of AADT, K			%RVs, P <sub>R</sub> <i>0</i>
Peak-Hr Direction Prop, D			General Terrain: <i>Level</i>
DDHV = AADT x K x D		veh/h	Grade % Length <i>mi</i> Up/Down %
<b>Calculate Flow Adjustments</b>			
f <sub>p</sub>	<i>1.00</i>	E <sub>R</sub>	<i>1.2</i>
E <sub>T</sub>	<i>1.5</i>	f <sub>HV</sub> = 1/[1+P <sub>T</sub> (E <sub>T</sub> - 1) + P <sub>R</sub> (E <sub>R</sub> - 1)] <i>0.976</i>	
<b>Speed Inputs</b>		<b>Calc Speed Adj and FFS</b>	
Lane Width	ft		
Rt-Side Lat. Clearance	ft	f <sub>LW</sub>	mph
Number of Lanes, N	<i>2</i>	f <sub>LC</sub>	mph
Total Ramp Density, TRD	ramps/mi	TRD Adjustment	mph
FFS (measured)	<i>65.0</i>	FFS	<i>65.0</i>
Base free-flow Speed, BFFS	mph		
<b>LOS and Performance Measures</b>		<b>Design (N)</b>	
<u>Operational (LOS)</u>		<u>Design (N)</u>	
v <sub>p</sub> = (V or DDHV) / (PHF x N x f <sub>HV</sub> x f <sub>p</sub> )	<i>1675</i> pc/h/ln	Design LOS	
S	<i>63.9</i> mph	v <sub>p</sub> = (V or DDHV) / (PHF x N x f <sub>HV</sub> x f <sub>p</sub> )	pc/h/ln
D = v <sub>p</sub> / S	<i>26.2</i> pc/mi/ln	S	mph
LOS	<i>D</i>	D = v <sub>p</sub> / S	pc/mi/ln
		Required Number of Lanes, N	
<b>Glossary</b>		<b>Factor Location</b>	
N - Number of lanes	S - Speed	E <sub>R</sub> - Exhibits 11-10, 11-12	f <sub>LW</sub> - Exhibit 11-8
V - Hourly volume	D - Density	E <sub>T</sub> - Exhibits 11-10, 11-11, 11-13	f <sub>LC</sub> - Exhibit 11-9
v <sub>p</sub> - Flow rate	FFS - Free-flow speed	f <sub>p</sub> - Page 11-18	TRD - Page 11-11
LOS - Level of service	BFFS - Base free-flow speed	LOS, S, FFS, v <sub>p</sub> - Exhibits 11-2, 11-3	
DDHV - Directional design hour volume			

<b>BASIC FREEWAY SEGMENTS WORKSHEET</b>			
<b>General Information</b>		<b>Site Information</b>	
Analyst	<i>RB</i>	Highway/Direction of Travel <i>I-780 WB</i>	
Agency or Company	<i>Fehr &amp; Peers</i>	From/To	<i>Glen Cove to Laurel</i>
Date Performed	<i>10/23/2014</i>	Jurisdiction	<i>Sonoma County</i>
Analysis Time Period	<i>PM Peak Hour</i>	Analysis Year	<i>2040 + ORCEM</i>
Project Description <i>Vallejo Marine Terminal</i>			
<input checked="" type="checkbox"/> Oper.(LOS) <span style="margin-left: 150px;"><input type="checkbox"/> Des.(N)</span> <span style="margin-left: 150px;"><input type="checkbox"/> Planning Data</span>			
<b>Flow Inputs</b>			
Volume, V	<i>3504</i>	veh/h	Peak-Hour Factor, PHF <i>0.92</i>
AADT		veh/day	%Trucks and Buses, P <sub>T</sub> <i>5</i>
Peak-Hr Prop. of AADT, K			%RVs, P <sub>R</sub> <i>0</i>
Peak-Hr Direction Prop, D			General Terrain: <i>Level</i>
DDHV = AADT x K x D		veh/h	Grade % Length <i>mi</i> Up/Down %
<b>Calculate Flow Adjustments</b>			
f <sub>p</sub>	<i>1.00</i>	E <sub>R</sub>	<i>1.2</i>
E <sub>T</sub>	<i>1.5</i>	f <sub>HV</sub> = 1/[1+P <sub>T</sub> (E <sub>T</sub> - 1) + P <sub>R</sub> (E <sub>R</sub> - 1)] <i>0.976</i>	
<b>Speed Inputs</b>		<b>Calc Speed Adj and FFS</b>	
Lane Width	ft		
Rt-Side Lat. Clearance	ft	f <sub>LW</sub>	mph
Number of Lanes, N	<i>2</i>	f <sub>LC</sub>	mph
Total Ramp Density, TRD	ramps/mi	TRD Adjustment	mph
FFS (measured)	<i>65.0</i>	FFS	<i>65.0</i> mph
Base free-flow Speed, BFFS	mph		
<b>LOS and Performance Measures</b>		<b>Design (N)</b>	
<u>Operational (LOS)</u>		<u>Design (N)</u>	
v <sub>p</sub> = (V or DDHV) / (PHF x N x f <sub>HV</sub> x f <sub>p</sub> )	<i>1952</i> pc/h/ln	Design LOS	
S	<i>60.7</i> mph	v <sub>p</sub> = (V or DDHV) / (PHF x N x f <sub>HV</sub> x f <sub>p</sub> )	pc/h/ln
D = v <sub>p</sub> / S	<i>32.2</i> pc/mi/ln	S	mph
LOS	<i>D</i>	D = v <sub>p</sub> / S	pc/mi/ln
		Required Number of Lanes, N	
<b>Glossary</b>		<b>Factor Location</b>	
N - Number of lanes	S - Speed	E <sub>R</sub> - Exhibits 11-10, 11-12	f <sub>LW</sub> - Exhibit 11-8
V - Hourly volume	D - Density	E <sub>T</sub> - Exhibits 11-10, 11-11, 11-13	f <sub>LC</sub> - Exhibit 11-9
v <sub>p</sub> - Flow rate	FFS - Free-flow speed	f <sub>p</sub> - Page 11-18	TRD - Page 11-11
LOS - Level of service	BFFS - Base free-flow speed	LOS, S, FFS, v <sub>p</sub> - Exhibits 11-2, 11-3	
DDHV - Directional design hour volume			

BASIC FREEWAY SEGMENTS WORKSHEET			
<b>General Information</b>		<b>Site Information</b>	
Analyst	<i>RB</i>	Highway/Direction of Travel	<i>I-780 WB</i>
Agency or Company	<i>Fehr &amp; Peers</i>	From/To	<i>Glen Cove to Laurel</i>
Date Performed	<i>10/23/2014</i>	Jurisdiction	<i>Sonoma County</i>
Analysis Time Period	<i>AM Peak Hour</i>	Analysis Year	<i>2040 + ORCEM</i>
Project Description <i>Vallejo Marine Terminal</i>			
<input checked="" type="checkbox"/> Oper.(LOS)		<input type="checkbox"/> Des.(N)	
		<input type="checkbox"/> Planning Data	
<b>Flow Inputs</b>			
Volume, V	<i>2398</i>	veh/h	Peak-Hour Factor, PHF <i>0.92</i>
AADT		veh/day	%Trucks and Buses, P <sub>T</sub> <i>5</i>
Peak-Hr Prop. of AADT, K			%RVs, P <sub>R</sub> <i>0</i>
Peak-Hr Direction Prop, D			General Terrain: <i>Level</i>
DDHV = AADT x K x D		veh/h	Grade % Length <i>mi</i>
			Up/Down %
<b>Calculate Flow Adjustments</b>			
f <sub>p</sub>	<i>1.00</i>	E <sub>R</sub>	<i>1.2</i>
E <sub>T</sub>	<i>1.5</i>	f <sub>HV</sub> = 1/[1+P <sub>T</sub> (E <sub>T</sub> - 1) + P <sub>R</sub> (E <sub>R</sub> - 1)]	<i>0.976</i>
<b>Speed Inputs</b>		<b>Calc Speed Adj and FFS</b>	
Lane Width		ft	
Rt-Side Lat. Clearance		ft	
Number of Lanes, N	<i>2</i>		f <sub>LW</sub> mph
Total Ramp Density, TRD		ramps/mi	f <sub>LC</sub> mph
FFS (measured)	<i>65.0</i>	mph	TRD Adjustment mph
Base free-flow Speed, BFFS		mph	FFS <i>65.0</i> mph
<b>LOS and Performance Measures</b>		<b>Design (N)</b>	
<u>Operational (LOS)</u>		<u>Design (N)</u>	
v <sub>p</sub> = (V or DDHV) / (PHF x N x f <sub>HV</sub> )	<i>1336</i>	pc/h/ln	Design LOS
x f <sub>p</sub> )			v <sub>p</sub> = (V or DDHV) / (PHF x N x f <sub>HV</sub> )
S	<i>65.0</i>	mph	x f <sub>p</sub> )
D = v <sub>p</sub> / S	<i>20.6</i>	pc/mi/ln	S
LOS	<i>C</i>		D = v <sub>p</sub> / S
			pc/mi/ln
			Required Number of Lanes, N
<b>Glossary</b>		<b>Factor Location</b>	
N - Number of lanes	S - Speed	E <sub>R</sub> - Exhibits 11-10, 11-12	f <sub>LW</sub> - Exhibit 11-8
V - Hourly volume	D - Density	E <sub>T</sub> - Exhibits 11-10, 11-11, 11-13	f <sub>LC</sub> - Exhibit 11-9
v <sub>p</sub> - Flow rate	FFS - Free-flow speed	f <sub>p</sub> - Page 11-18	TRD - Page 11-11
LOS - Level of service	BFFS - Base free-flow speed	LOS, S, FFS, v <sub>p</sub> - Exhibits 11-2, 11-3	
DDHV - Directional design hour volume			

# Leisch Method for Weaving Analysis

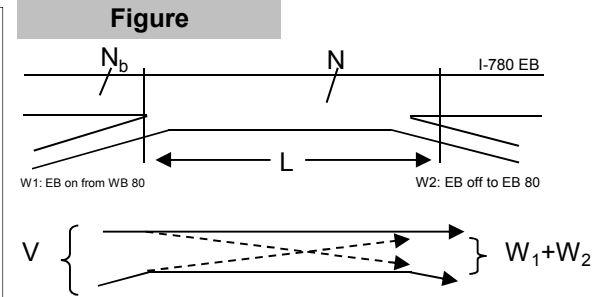
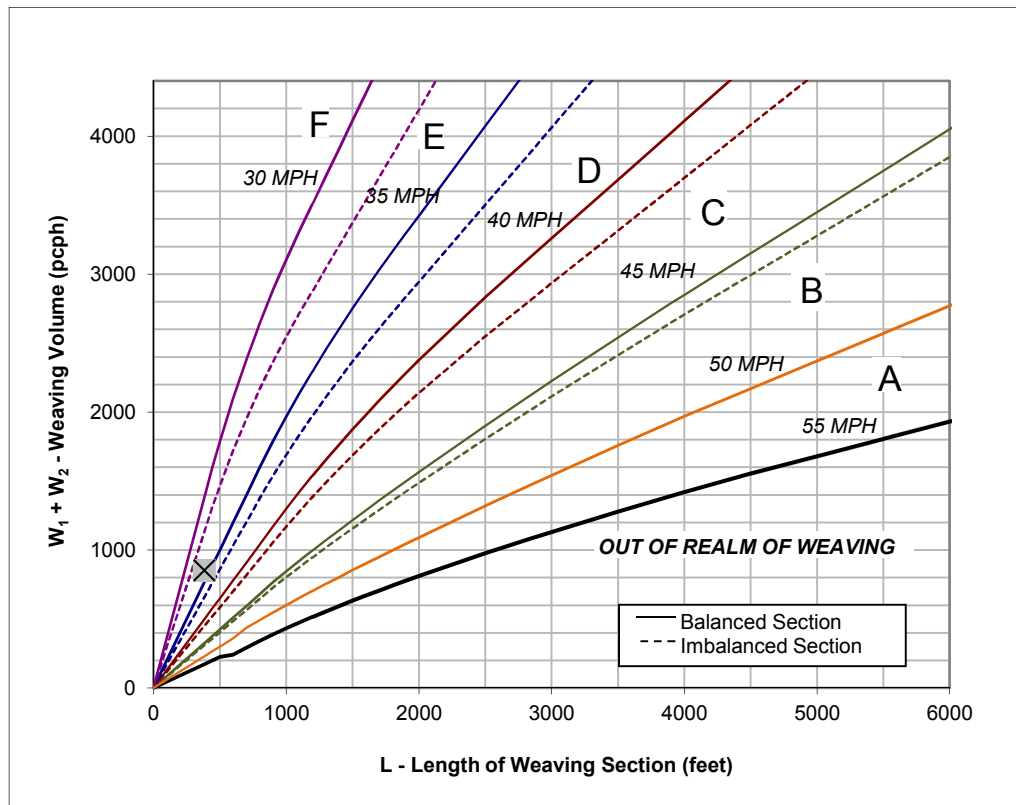
## Data Input

Number of Entering Mainline Lanes	$N_b$	2
Number of Lanes in Weaving Section	$N$	3
Length of Weaving Section (feet)	$L$	385

## Project Information

Project	Vallejo Marine Terminal
Scenario	AM + ORCEM
Freeway	I-780 EB
On-ramp	W1: EB on from WB 80
Off-ramp	W2: EB off to EB 80

Total Weaving Section (V)		On-ramp to Mainline ( $W_1$ )		Mainline to Off-ramp ( $W_2$ )	
Volume (vph)*	1,266	Volume (vph)*	749	Volume (vph)*	84
Truck Percentage	5%	Truck Percentage	5%	Truck Percentage	5%
PCE for Trucks	1.5	PCE for Trucks	1.5	PCE for Trucks	1.5
Volume (pcph)	1,298	Volume (pcph)	768	Volume (pcph)	87



## Capacity Analysis

- Is the weaving section balanced ( $Y / N$ )? N  
[If optional exit lane, then "Y". Otherwise "N".]
- In the Weaving Speed Chart to the left, which two speed curves is the black "x" between?

30 MPH and 35 MPH

If below the 55 MPH curve, out of the realm of weaving.  
If left of the 30 MPH curve, LOS is F.

- Interpolated Weaving Speed ( $S_w$ , mph) 33.0
- Weaving Intensity Factor ( $k$ ) 3.00
- Service Volume (SV, pcph)  
 $SV = (1/N) * [V + (k - 1) * \min(W_1, W_2)]$  490
- Level of Service (LOS) A

The LOS in the chart above refers to the capacity of weaving traffic only; through and ramp to ramp traffic is not included.

\* Note: **Do not adjust by a Peak Hour Factor (PHF)**. The methodology incorporates the PHF in the Service Volume tables.

Sources: *Completion of Procedures for Analysis and Design of Traffic Weaving Sections*, Jack E. Leisch & Associates, September 1983 and *Highway Design Manual*, California Department of Transportation, July 24, 2009

# Leisch Method for Weaving Analysis

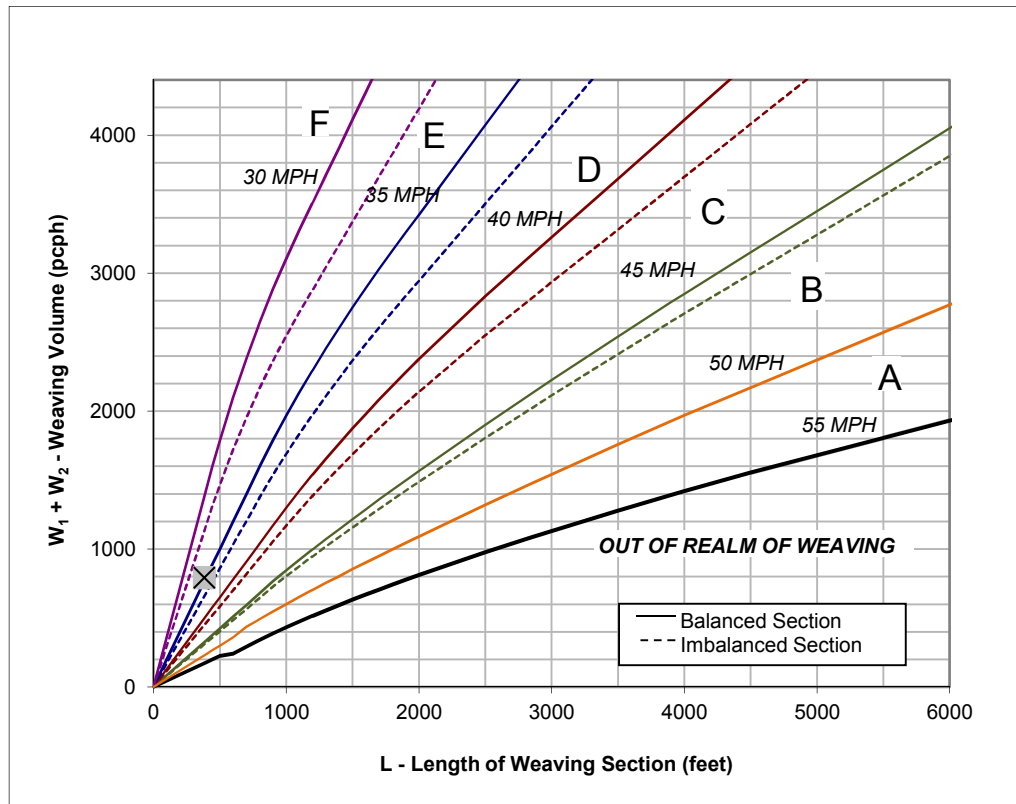
## Data Input

Number of Entering Mainline Lanes	$N_b$	2
Number of Lanes in Weaving Section	N	3
Length of Weaving Section (feet)	L	385

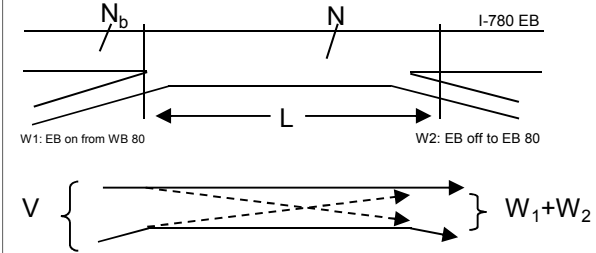
## Project Information

Project	Vallejo Marine Terminal
Scenario	PM + ORCEM
Freeway	I-780 EB
On-ramp	W1: EB on from WB 80
Off-ramp	W2: EB off to EB 80

Total Weaving Section (V)		On-ramp to Mainline ( $W_1$ )		Mainline to Off-ramp ( $W_2$ )	
Volume (vph)*	1,928	Volume (vph)*	519	Volume (vph)*	255
Truck Percentage	5%	Truck Percentage	5%	Truck Percentage	5%
PCE for Trucks	1.5	PCE for Trucks	1.5	PCE for Trucks	1.5
Volume (pcph)	1,977	Volume (pcph)	532	Volume (pcph)	261



## Figure



## Capacity Analysis

1. Is the weaving section balanced ( $Y / N$ )? **N**  
[If optional exit lane, then "Y". Otherwise "N".]
2. In the Weaving Speed Chart to the left, which two speed curves is the black "x" between?

**30 MPH** and **35 MPH**

If below the 55 MPH curve, out of the realm of weaving.  
If left of the 30 MPH curve, LOS is F.

3. Interpolated Weaving Speed ( $S_w$ , mph) **33.6**
4. Weaving Intensity Factor ( $k$ ) **2.96**
5. Service Volume (SV, pcph)  
 $SV = (1/N) * [V + (k - 1) * \min(W_1, W_2)]$  **829**
6. Level of Service (LOS) **B**

The LOS in the chart above refers to the capacity of weaving traffic only; through and ramp to ramp traffic is not included.

\* Note: **Do not adjust by a Peak Hour Factor (PHF)**. The methodology incorporates the PHF in the Service Volume tables.

Sources: *Completion of Procedures for Analysis and Design of Traffic Weaving Sections*, Jack E. Leisch & Associates, September 1983 and *Highway Design Manual*, California Department of Transportation, July 24, 2009



# Leisch Method for Weaving Analysis

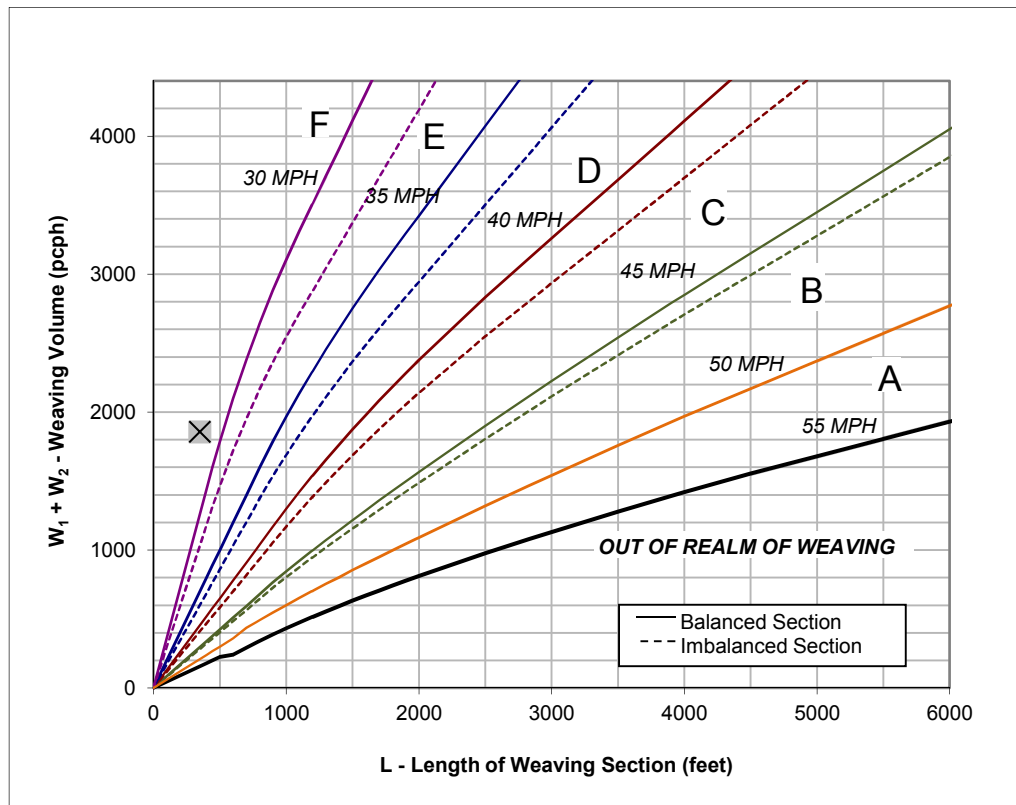
## Data Input

Number of Entering Mainline Lanes	$N_b$	2
Number of Lanes in Weaving Section	N	3
Length of Weaving Section (feet)	L	350

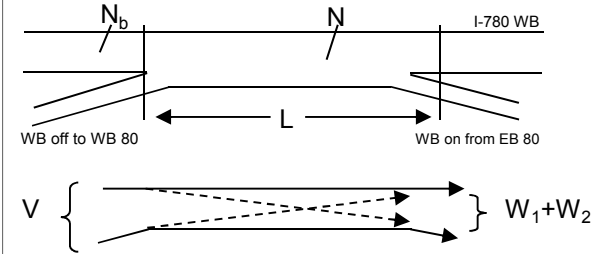
## Project Information

Project	Vallejo Marine Terminal
Scenario	AM + ORCEM
Freeway	I-780 WB
On-ramp	WB off to WB 80
Off-ramp	WB on from EB 80

Total Weaving Section (V)		On-ramp to Mainline ( $W_1$ )		Mainline to Off-ramp ( $W_2$ )	
Volume (vph)*	2,271	Volume (vph)*	1,610	Volume (vph)*	202
Truck Percentage	5%	Truck Percentage	5%	Truck Percentage	5%
PCE for Trucks	1.5	PCE for Trucks	1.5	PCE for Trucks	1.5
Volume (pcph)	2,328	Volume (pcph)	1,650	Volume (pcph)	207



## Figure



## Capacity Analysis

1. Is the weaving section balanced ( $Y / N$ )? [If optional exit lane, then "Y". Otherwise "N".]	N
2. In the Weaving Speed Chart to the left, which two speed curves is the black "x" between?	0 MPH and 30 MPH
If below the 55 MPH curve, out of the realm of weaving. If left of the 30 MPH curve, LOS is F.	
3. Interpolated Weaving Speed ( $S_w$ , mph)	-
4. Weaving Intensity Factor ( $k$ )	-
5. Service Volume (SV, pcph) $SV = (1/N) * [V + (k - 1) * \min(W_1, W_2)]$	-
6. Level of Service (LOS)	F

The LOS in the chart above refers to the capacity of weaving traffic only; through and ramp to ramp traffic is not included.

\* Note: **Do not adjust by a Peak Hour Factor (PHF)**. The methodology incorporates the PHF in the Service Volume tables.

Sources: *Completion of Procedures for Analysis and Design of Traffic Weaving Sections*, Jack E. Leisch & Associates, September 1983 and *Highway Design Manual*, California Department of Transportation, July 24, 2009

# Leisch Method for Weaving Analysis

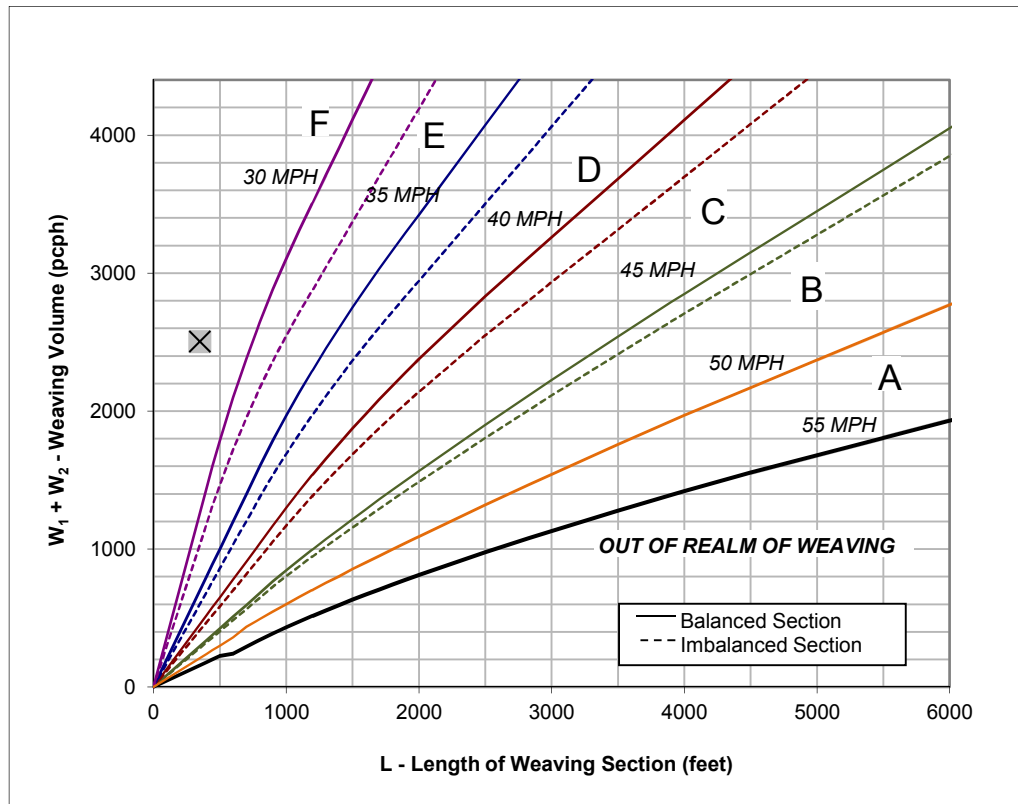
### Data Input

Number of Entering Mainline Lanes	$N_b$	2
Number of Lanes in Weaving Section	$N$	3
Length of Weaving Section (feet)	$L$	350

### Project Information

Project	Vallejo Marine Terminal
Scenario	PM + ORCEM
Freeway	I-780 WB
On-ramp	WB off to WB 80
Off-ramp	WB on from EB 80

Total Weaving Section (V)		On-ramp to Mainline ( $W_1$ )		Mainline to Off-ramp ( $W_2$ )	
Volume (vph)*	3,422	Volume (vph)*	1,952	Volume (vph)*	492
Truck Percentage	5%	Truck Percentage	5%	Truck Percentage	5%
PCE for Trucks	1.5	PCE for Trucks	1.5	PCE for Trucks	1.5
Volume (pcph)	3,507	Volume (pcph)	2,000	Volume (pcph)	505

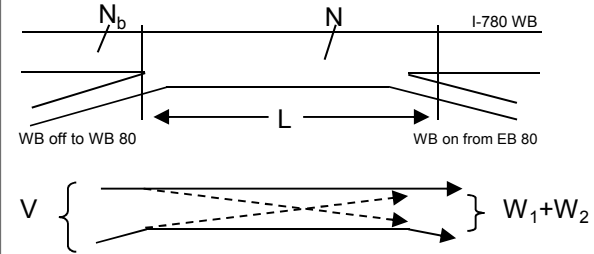


The LOS in the chart above refers to the capacity of weaving traffic only; through and ramp to ramp traffic is not included.

\* Note: **Do not adjust by a Peak Hour Factor (PHF)**. The methodology incorporates the PHF in the Service Volume tables.

Sources: *Completion of Procedures for Analysis and Design of Traffic Weaving Sections*, Jack E. Leisch & Associates, September 1983 and *Highway Design Manual*, California Department of Transportation, July 24, 2009

### Figure



### Capacity Analysis

- Is the weaving section balanced ( $Y / N$ )? N  
[If optional exit lane, then "Y". Otherwise "N".]
- In the Weaving Speed Chart to the left, which two speed curves is the black "x" between?  
0 MPH and 30 MPH

If below the 55 MPH curve, out of the realm of weaving.  
If left of the 30 MPH curve, LOS is F.

- Interpolated Weaving Speed ( $S_w$ , mph) -
- Weaving Intensity Factor ( $k$ ) -
- Service Volume (SV, pcph)  
 $SV = (1/N) * [V + (k - 1) * \min(W_1, W_2)]$  -
- Level of Service (LOS) F

**APPENDIX L.5.9 — CUMULATIVE PLUS COMBINED PROJECTS**



RAMPS AND RAMP JUNCTIONS WORKSHEET									
General Information					Site Information				
Analyst	RB	Freeway/Dir of Travel	I 80 EB						
Agency or Company	Fehr & Peers	Junction	I-780 Collector						
Date Performed	10/31/2014	Jurisdiction	Sonoma County						
Analysis Time Period	AM Peak	Analysis Year	2040 + Both						
Project Description Vallejo Marine Terminal									
Inputs									
Upstream Adj Ramp <input type="checkbox"/> Yes <input type="checkbox"/> On <input checked="" type="checkbox"/> No <input type="checkbox"/> Off	Number of Lanes, N Acceleration Lane Length, L <sub>A</sub> Deceleration Lane Length L <sub>D</sub>	3 150	Downstream Adj Ramp <input checked="" type="checkbox"/> Yes <input type="checkbox"/> On <input type="checkbox"/> No <input checked="" type="checkbox"/> Off	L <sub>down</sub> = 2100 ft					
L <sub>up</sub> = ft	Freeway Volume, V <sub>F</sub>	3274	Ramp Volume, V <sub>R</sub>	2148					
V <sub>u</sub> = veh/h	Freeway Free-Flow Speed, S <sub>FF</sub>	65.0	Ramp Free-Flow Speed, S <sub>FR</sub>	65.0					
			V <sub>D</sub> = 146 veh/h						
Conversion to pc/h Under Base Conditions									
(pc/h)	V (Veh/hr)	PHF	Terrain	%Truck	%Rv	f <sub>HV</sub>	f <sub>p</sub>	v = V/PHF x f <sub>HV</sub> x f <sub>p</sub>	
Freeway	3274	0.92	Level	5	0	0.976	1.00	3648	
Ramp	2148	0.92	Level	5	0	0.976	1.00	2393	
UpStream									
DownStream	146	0.90	Level	5	0	0.976	1.00	166	
Merge Areas					Diverge Areas				
Estimation of v <sub>12</sub>					Estimation of v <sub>12</sub>				
$V_{12} = V_F (P_{FM})$ L <sub>EQ</sub> = 1321.13 (Equation 13-6 or 13-7) P <sub>FM</sub> = 0.582 using Equation (Exhibit 13-6) V <sub>12</sub> = 2122 pc/h V <sub>3</sub> or V <sub>av34</sub> = 1526 pc/h (Equation 13-14 or 13-17) Is V <sub>3</sub> or V <sub>av34</sub> > 2,700 pc/h? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Is V <sub>3</sub> or V <sub>av34</sub> > 1.5 * V <sub>12</sub> /2 <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No If Yes, V <sub>12a</sub> = pc/h (Equation 13-16, 13-18, or 13-19)					$V_{12} = V_R + (V_F - V_R)P_{FD}$ L <sub>EQ</sub> = (Equation 13-12 or 13-13) P <sub>FD</sub> = using Equation (Exhibit 13-7) V <sub>12</sub> = pc/h V <sub>3</sub> or V <sub>av34</sub> = pc/h (Equation 13-14 or 13-17) Is V <sub>3</sub> or V <sub>av34</sub> > 2,700 pc/h? <input type="checkbox"/> Yes <input type="checkbox"/> No Is V <sub>3</sub> or V <sub>av34</sub> > 1.5 * V <sub>12</sub> /2 <input type="checkbox"/> Yes <input type="checkbox"/> No If Yes, V <sub>12a</sub> = pc/h (Equation 13-16, 13-18, or 13-19)				
Capacity Checks					Capacity Checks				
	Actual	Capacity		LOS F?		Actual	Capacity		LOS F?
V <sub>FO</sub>	6041	Exhibit 13-8		No	V <sub>F</sub>		Exhibit 13-8		
					V <sub>FO</sub> = V <sub>F</sub> - V <sub>R</sub>		Exhibit 13-8		
					V <sub>R</sub>		Exhibit 13-10		
Flow Entering Merge Influence Area					Flow Entering Diverge Influence Area				
	Actual	Max Desirable		Violation?		Actual	Max Desirable		Violation?
V <sub>R12</sub>	4515	Exhibit 13-8		4600:All	No	V <sub>12</sub>		Exhibit 13-8	
Level of Service Determination (if not F)					Level of Service Determination (if not F)				
$D_R = 5.475 + 0.00734 v_R + 0.0078 V_{12} - 0.00627 L_A$ D <sub>R</sub> = 38.7 (pc/mi/ln) LOS = E (Exhibit 13-2)					$D_R = 4.252 + 0.0086 V_{12} - 0.009 L_D$ D <sub>R</sub> = (pc/mi/ln) LOS = (Exhibit 13-2)				
Speed Determination					Speed Determination				
M <sub>S</sub> = 0.658 (Exhibit 13-11)	S <sub>R</sub> = 49.9 mph (Exhibit 13-11)	S <sub>0</sub> = 61.3 mph (Exhibit 13-11)	S = 52.3 mph (Exhibit 13-13)		D <sub>s</sub> = (Exhibit 13-12)	S <sub>R</sub> = mph (Exhibit 13-12)	S <sub>0</sub> = mph (Exhibit 13-12)	S = mph (Exhibit 13-13)	

RAMPS AND RAMP JUNCTIONS WORKSHEET										
<b>General Information</b>					<b>Site Information</b>					
Analyst	RB		Freeway/Dir of Travel	I 80 WB		Agency or Company	Fehr & Peers		Junction	I-780 Collector
Date Performed	10/31/2014		Jurisdiction	Sonoma County		Analysis Time Period	PM Peak		Analysis Year	2040 + Both
Project Description Vallejo Marine Terminal										
<b>Inputs</b>										
Upstream Adj Ramp		Number of Lanes, N			Downstream Adj Ramp					
<input checked="" type="checkbox"/> Yes <input checked="" type="checkbox"/> On		Acceleration Lane Length, L <sub>A</sub>			<input type="checkbox"/> Yes <input type="checkbox"/> On					
<input type="checkbox"/> No <input type="checkbox"/> Off		Deceleration Lane Length L <sub>D</sub>			<input checked="" type="checkbox"/> No <input type="checkbox"/> Off					
L <sub>up</sub> =	1500 ft	Freeway Volume, V <sub>F</sub>			Ramp Volume, V <sub>R</sub>			L <sub>down</sub> =		
V <sub>u</sub> =	231 veh/h	Freeway Free-Flow Speed, S <sub>FF</sub>			Ramp Free-Flow Speed, S <sub>FR</sub>			ft		
		6040			2115			veh/h		
		65.0			65.0					
<b>Conversion to pc/h Under Base Conditions</b>										
(pc/h)	V (Veh/hr)	PHF	Terrain	%Truck	%Rv	f <sub>HV</sub>	f <sub>p</sub>	v = V/PHF x f <sub>HV</sub> x f <sub>p</sub>		
Freeway	6040	0.92	Level	5	0	0.976	1.00	6729		
Ramp	2115	0.92	Level	5	0	0.976	1.00	2356		
UpStream	231	0.90	Level	5	0	0.976	1.00	263		
DownStream										
<b>Merge Areas</b>					<b>Diverge Areas</b>					
<b>Estimation of v<sub>12</sub></b>					<b>Estimation of v<sub>12</sub></b>					
$V_{12} = V_F (P_{FM})$ L <sub>EQ</sub> = (Equation 13-6 or 13-7) P <sub>FM</sub> = using Equation (Exhibit 13-6) V <sub>12</sub> = pc/h V <sub>3</sub> or V <sub>av34</sub> pc/h (Equation 13-14 or 13-17) Is V <sub>3</sub> or V <sub>av34</sub> > 2,700 pc/h? <input type="checkbox"/> Yes <input type="checkbox"/> No Is V <sub>3</sub> or V <sub>av34</sub> > 1.5 * V <sub>12</sub> /2 <input type="checkbox"/> Yes <input type="checkbox"/> No If Yes, V <sub>12a</sub> = pc/h (Equation 13-16, 13-18, or 13-19)					$V_{12} = V_R + (V_F - V_R)P_{FD}$ L <sub>EQ</sub> = 5630.36 (Equation 13-12 or 13-13) P <sub>FD</sub> = 0.560 using Equation (Exhibit 13-7) V <sub>12</sub> = 4807 pc/h V <sub>3</sub> or V <sub>av34</sub> 1922 pc/h (Equation 13-14 or 13-17) Is V <sub>3</sub> or V <sub>av34</sub> > 2,700 pc/h? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Is V <sub>3</sub> or V <sub>av34</sub> > 1.5 * V <sub>12</sub> /2 <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No If Yes, V <sub>12a</sub> = pc/h (Equation 13-16, 13-18, or 13-19)					
<b>Capacity Checks</b>					<b>Capacity Checks</b>					
	Actual	Capacity		LOS F?		Actual	Capacity		LOS F?	
V <sub>FO</sub>		Exhibit 13-8			V <sub>F</sub>	6729	Exhibit 13-8	7050	No	
					V <sub>FO</sub> = V <sub>F</sub> - V <sub>R</sub>	4373	Exhibit 13-8	7050	No	
					V <sub>R</sub>	2356	Exhibit 13-10	2200	Yes	
<b>Flow Entering Merge Influence Area</b>					<b>Flow Entering Diverge Influence Area</b>					
	Actual	Max Desirable		Violation?		Actual	Max Desirable		Violation?	
V <sub>R12</sub>		Exhibit 13-8			V <sub>12</sub>	4807	Exhibit 13-8	4400:All	Yes	
<b>Level of Service Determination (if not F)</b>					<b>Level of Service Determination (if not F)</b>					
$D_R = 5.475 + 0.00734 v_R + 0.0078 V_{12} - 0.00627 L_A$ D <sub>R</sub> = (pc/mi/ln) LOS = (Exhibit 13-2)					$D_R = 4.252 + 0.0086 V_{12} - 0.009 L_D$ D <sub>R</sub> = 44.5 (pc/mi/ln) LOS = F (Exhibit 13-2)					
<b>Speed Determination</b>					<b>Speed Determination</b>					
M <sub>S</sub> = (Exhibit 13-11) S <sub>R</sub> = mph (Exhibit 13-11) S <sub>0</sub> = mph (Exhibit 13-11) S = mph (Exhibit 13-13)					D <sub>S</sub> = 0.250 (Exhibit 13-12) S <sub>R</sub> = 59.2 mph (Exhibit 13-12) S <sub>0</sub> = 67.7 mph (Exhibit 13-12) S = 61.4 mph (Exhibit 13-13)					

RAMPS AND RAMP JUNCTIONS WORKSHEET										
<b>General Information</b>					<b>Site Information</b>					
Analyst	RB		Freeway/Dir of Travel	I 80 WB		Agency or Company	Fehr & Peers		Junction	I-780 Collector
Date Performed	10/31/2014		Jurisdiction	Sonoma County		Analysis Time Period	AM Peak		Analysis Year	2040 + Both
Project Description Vallejo Marine Terminal										
<b>Inputs</b>										
Upstream Adj Ramp		Number of Lanes, N			3			Downstream Adj Ramp		
<input checked="" type="checkbox"/> Yes <input checked="" type="checkbox"/> On		Acceleration Lane Length, L <sub>A</sub>						<input type="checkbox"/> Yes <input type="checkbox"/> On		
<input type="checkbox"/> No <input type="checkbox"/> Off		Deceleration Lane Length L <sub>D</sub>			125			<input checked="" type="checkbox"/> No <input type="checkbox"/> Off		
L <sub>up</sub> = 1500 ft		Freeway Volume, V <sub>F</sub>			5215			L <sub>down</sub> = ft		
V <sub>u</sub> = 183 veh/h		Ramp Volume, V <sub>R</sub>			1821			V <sub>D</sub> = veh/h		
		Freeway Free-Flow Speed, S <sub>FF</sub>			65.0					
		Ramp Free-Flow Speed, S <sub>FR</sub>			65.0					
<b>Conversion to pc/h Under Base Conditions</b>										
(pc/h)	V (Veh/hr)	PHF	Terrain	%Truck	%Rv	f <sub>HV</sub>	f <sub>p</sub>	v = V/PHF x f <sub>HV</sub> x f <sub>p</sub>		
Freeway	5215	0.92	Level	5	0	0.976	1.00	5810		
Ramp	1821	0.92	Level	5	0	0.976	1.00	2029		
UpStream	183	0.90	Level	5	0	0.976	1.00	208		
DownStream										
<b>Merge Areas</b>					<b>Diverge Areas</b>					
<b>Estimation of v<sub>12</sub></b>					<b>Estimation of v<sub>12</sub></b>					
$V_{12} = V_F (P_{FM})$ L <sub>EQ</sub> = (Equation 13-6 or 13-7) P <sub>FM</sub> = using Equation (Exhibit 13-6) V <sub>12</sub> = pc/h V <sub>3</sub> or V <sub>av34</sub> pc/h (Equation 13-14 or 13-17) Is V <sub>3</sub> or V <sub>av34</sub> > 2,700 pc/h? <input type="checkbox"/> Yes <input type="checkbox"/> No Is V <sub>3</sub> or V <sub>av34</sub> > 1.5 * V <sub>12</sub> /2 <input type="checkbox"/> Yes <input type="checkbox"/> No If Yes, V <sub>12a</sub> = pc/h (Equation 13-16, 13-18, or 13-19)					$V_{12} = V_R + (V_F - V_R)P_{FD}$ L <sub>EQ</sub> = 4124.86 (Equation 13-12 or 13-13) P <sub>FD</sub> = 0.574 using Equation (Exhibit 13-7) V <sub>12</sub> = 4200 pc/h V <sub>3</sub> or V <sub>av34</sub> 1610 pc/h (Equation 13-14 or 13-17) Is V <sub>3</sub> or V <sub>av34</sub> > 2,700 pc/h? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Is V <sub>3</sub> or V <sub>av34</sub> > 1.5 * V <sub>12</sub> /2 <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No If Yes, V <sub>12a</sub> = pc/h (Equation 13-16, 13-18, or 13-19)					
<b>Capacity Checks</b>					<b>Capacity Checks</b>					
	Actual	Capacity		LOS F?		Actual	Capacity		LOS F?	
V <sub>FO</sub>		Exhibit 13-8			V <sub>F</sub>	5810	Exhibit 13-8	7050	No	
					V <sub>FO</sub> = V <sub>F</sub> - V <sub>R</sub>	3781	Exhibit 13-8	7050	No	
					V <sub>R</sub>	2029	Exhibit 13-10	2200	No	
<b>Flow Entering Merge Influence Area</b>					<b>Flow Entering Diverge Influence Area</b>					
	Actual	Max Desirable		Violation?		Actual	Max Desirable		Violation?	
V <sub>R12</sub>		Exhibit 13-8			V <sub>12</sub>	4200	Exhibit 13-8	4400:All	No	
<b>Level of Service Determination (if not F)</b>					<b>Level of Service Determination (if not F)</b>					
$D_R = 5.475 + 0.00734 v_R + 0.0078 V_{12} - 0.00627 L_A$ D <sub>R</sub> = (pc/mi/ln) LOS = (Exhibit 13-2)					$D_R = 4.252 + 0.0086 V_{12} - 0.009 L_D$ D <sub>R</sub> = 39.2 (pc/mi/ln) LOS = E (Exhibit 13-2)					
<b>Speed Determination</b>					<b>Speed Determination</b>					
M <sub>S</sub> = (Exhibit 13-11) S <sub>R</sub> = mph (Exhibit 13-11) S <sub>0</sub> = mph (Exhibit 13-11) S = mph (Exhibit 13-13)					D <sub>s</sub> = 0.221 (Exhibit 13-12) S <sub>R</sub> = 59.9 mph (Exhibit 13-12) S <sub>0</sub> = 68.9 mph (Exhibit 13-12) S = 62.2 mph (Exhibit 13-13)					

<b>BASIC FREEWAY SEGMENTS WORKSHEET</b>			
<b>General Information</b>		<b>Site Information</b>	
Analyst	<i>RB</i>	Highway/Direction of Travel	<i>80 WB</i>
Agency or Company	<i>Fehr &amp; Peers</i>	From/To	<i>I-780 Collectors - Georgia St</i>
Date Performed	<i>10/23/2014</i>	Jurisdiction	<i>Sonoma County</i>
Analysis Time Period	<i>PM Peak Hour</i>	Analysis Year	<i>2040 + Both</i>
Project Description <i>Vallejo Marine Terminal</i>			
<input checked="" type="checkbox"/> Oper.(LOS) <input type="checkbox"/> Des.(N) <input type="checkbox"/> Planning Data			
<b>Flow Inputs</b>			
Volume, V	<i>6057</i>	veh/h	Peak-Hour Factor, PHF
AADT		veh/day	<i>0.92</i>
Peak-Hr Prop. of AADT, K			%Trucks and Buses, P <sub>T</sub>
Peak-Hr Direction Prop, D			<i>5</i>
DDHV = AADT x K x D		veh/h	%RVs, P <sub>R</sub>
			<i>0</i>
			General Terrain:
			<i>Level</i>
			Grade % Length
			<i>mi</i>
			Up/Down %
<b>Calculate Flow Adjustments</b>			
f <sub>p</sub>	<i>1.00</i>	E <sub>R</sub>	<i>1.2</i>
E <sub>T</sub>	<i>1.5</i>	f <sub>HV</sub> = 1/[1+P <sub>T</sub> (E <sub>T</sub> - 1) + P <sub>R</sub> (E <sub>R</sub> - 1)]	<i>0.976</i>
<b>Speed Inputs</b>		<b>Calc Speed Adj and FFS</b>	
Lane Width	ft	f <sub>LW</sub>	mph
Rt-Side Lat. Clearance	ft	f <sub>LC</sub>	mph
Number of Lanes, N	<i>3</i>	TRD Adjustment	mph
Total Ramp Density, TRD	ramps/mi	FFS	<i>65.0</i>
FFS (measured)	<i>65.0</i>	mph	mph
Base free-flow Speed, BFFS	mph		
<b>LOS and Performance Measures</b>		<b>Design (N)</b>	
<u>Operational (LOS)</u>		<u>Design (N)</u>	
v <sub>p</sub> = (V or DDHV) / (PHF x N x f <sub>HV</sub> )	<i>2249</i>	Design LOS	pc/h/ln
x f <sub>p</sub> )		v <sub>p</sub> = (V or DDHV) / (PHF x N x f <sub>HV</sub> )	pc/h/ln
S	<i>54.8</i>	x f <sub>p</sub> )	
D = v <sub>p</sub> / S	<i>41.1</i>	S	mph
LOS	<i>E</i>	D = v <sub>p</sub> / S	pc/mi/ln
		Required Number of Lanes, N	
<b>Glossary</b>		<b>Factor Location</b>	
N - Number of lanes	S - Speed	E <sub>R</sub> - Exhibits 11-10, 11-12	f <sub>LW</sub> - Exhibit 11-8
V - Hourly volume	D - Density	E <sub>T</sub> - Exhibits 11-10, 11-11, 11-13	f <sub>LC</sub> - Exhibit 11-9
v <sub>p</sub> - Flow rate	FFS - Free-flow speed	f <sub>p</sub> - Page 11-18	TRD - Page 11-11
LOS - Level of service	BFFS - Base free-flow speed	LOS, S, FFS, v <sub>p</sub> - Exhibits 11-2, 11-3	
DDHV - Directional design hour volume			

<b>BASIC FREEWAY SEGMENTS WORKSHEET</b>			
<b>General Information</b>		<b>Site Information</b>	
Analyst	<i>RB</i>	Highway/Direction of Travel	<i>80 WB</i>
Agency or Company	<i>Fehr &amp; Peers</i>	From/To	<i>I-780 Collectors - Georgia St</i>
Date Performed	<i>10/23/2014</i>	Jurisdiction	<i>Sonoma County</i>
Analysis Time Period	<i>AM Peak Hour</i>	Analysis Year	<i>2040 + Both</i>
Project Description <i>Vallejo Marine Terminal</i>			
<input checked="" type="checkbox"/> Oper.(LOS) <input type="checkbox"/> Des.(N) <input type="checkbox"/> Planning Data			
<b>Flow Inputs</b>			
Volume, V	<i>5241</i>	veh/h	Peak-Hour Factor, PHF
AADT		veh/day	%Trucks and Buses, P <sub>T</sub>
Peak-Hr Prop. of AADT, K			%RVs, P <sub>R</sub>
Peak-Hr Direction Prop, D			General Terrain:
DDHV = AADT x K x D		veh/h	Grade %    Length <i>mi</i>
			Up/Down %
<b>Calculate Flow Adjustments</b>			
f <sub>p</sub>	<i>1.00</i>	E <sub>R</sub>	<i>1.2</i>
E <sub>T</sub>	<i>1.5</i>	f <sub>HV</sub> = 1/[1+P <sub>T</sub> (E <sub>T</sub> - 1) + P <sub>R</sub> (E <sub>R</sub> - 1)]	<i>0.976</i>
<b>Speed Inputs</b>		<b>Calc Speed Adj and FFS</b>	
Lane Width		ft	
Rt-Side Lat. Clearance		ft	f <sub>LW</sub>
Number of Lanes, N	<i>3</i>		mph
Total Ramp Density, TRD		ramps/mi	f <sub>LC</sub>
FFS (measured)	<i>65.0</i>	mph	TRD Adjustment
Base free-flow Speed, BFFS		mph	FFS
			<i>65.0</i>
			mph
<b>LOS and Performance Measures</b>		<b>Design (N)</b>	
<u>Operational (LOS)</u>		<u>Design (N)</u>	
v <sub>p</sub> = (V or DDHV) / (PHF x N x f <sub>HV</sub> )	<i>1946</i>	pc/h/ln	Design LOS
x f <sub>p</sub> )			v <sub>p</sub> = (V or DDHV) / (PHF x N x f <sub>HV</sub> )
S	<i>60.8</i>	mph	x f <sub>p</sub> )
D = v <sub>p</sub> / S	<i>32.0</i>	pc/mi/ln	S
LOS	<i>D</i>		D = v <sub>p</sub> / S
			pc/mi/ln
			Required Number of Lanes, N
<b>Glossary</b>		<b>Factor Location</b>	
N - Number of lanes	S - Speed	E <sub>R</sub> - Exhibits 11-10, 11-12	f <sub>LW</sub> - Exhibit 11-8
V - Hourly volume	D - Density	E <sub>T</sub> - Exhibits 11-10, 11-11, 11-13	f <sub>LC</sub> - Exhibit 11-9
v <sub>p</sub> - Flow rate	FFS - Free-flow speed	f <sub>p</sub> - Page 11-18	TRD - Page 11-11
LOS - Level of service	BFFS - Base free-flow speed	LOS, S, FFS, v <sub>p</sub> - Exhibits 11-2, 11-3	
DDHV - Directional design hour volume			



<b>BASIC FREEWAY SEGMENTS WORKSHEET</b>			
<b>General Information</b>		<b>Site Information</b>	
Analyst	<i>RB</i>	Highway/Direction of Travel	<i>80 EB</i>
Agency or Company	<i>Fehr &amp; Peers</i>	From/To	<i>I-780 Collectors - Georgia St</i>
Date Performed	<i>10/23/2014</i>	Jurisdiction	<i>Sonoma County</i>
Analysis Time Period	<i>PM Peak Hour</i>	Analysis Year	<i>2040 + Both</i>
Project Description <i>Vallejo Marine Terminal</i>			
<input checked="" type="checkbox"/> Oper.(LOS) <input type="checkbox"/> Des.(N) <input type="checkbox"/> Planning Data			
<b>Flow Inputs</b>			
Volume, V	<i>5068</i>	veh/h	Peak-Hour Factor, PHF
AADT		veh/day	%Trucks and Buses, P <sub>T</sub>
Peak-Hr Prop. of AADT, K			%RVs, P <sub>R</sub>
Peak-Hr Direction Prop, D			General Terrain:
DDHV = AADT x K x D		veh/h	Grade %    Length <i>mi</i>
			Up/Down %
<b>Calculate Flow Adjustments</b>			
f <sub>p</sub>	<i>1.00</i>	E <sub>R</sub>	<i>1.2</i>
E <sub>T</sub>	<i>1.5</i>	f <sub>HV</sub> = 1/[1+P <sub>T</sub> (E <sub>T</sub> - 1) + P <sub>R</sub> (E <sub>R</sub> - 1)]	<i>0.976</i>
<b>Speed Inputs</b>		<b>Calc Speed Adj and FFS</b>	
Lane Width	ft	f <sub>LW</sub>	mph
Rt-Side Lat. Clearance	ft	f <sub>LC</sub>	mph
Number of Lanes, N	<i>3</i>	TRD Adjustment	mph
Total Ramp Density, TRD	ramps/mi	FFS	<i>65.0</i> mph
FFS (measured)	<i>65.0</i> mph		
Base free-flow Speed, BFFS	mph		
<b>LOS and Performance Measures</b>		<b>Design (N)</b>	
<u>Operational (LOS)</u>		<u>Design (N)</u>	
v <sub>p</sub> = (V or DDHV) / (PHF x N x f <sub>HV</sub> )	<i>1882</i> pc/h/ln	Design LOS	
x f <sub>p</sub> )		v <sub>p</sub> = (V or DDHV) / (PHF x N x f <sub>HV</sub> )	pc/h/ln
S	<i>61.7</i> mph	x f <sub>p</sub> )	
D = v <sub>p</sub> / S	<i>30.5</i> pc/mi/ln	S	mph
LOS	<i>D</i>	D = v <sub>p</sub> / S	pc/mi/ln
		Required Number of Lanes, N	
<b>Glossary</b>		<b>Factor Location</b>	
N - Number of lanes	S - Speed	E <sub>R</sub> - Exhibits 11-10, 11-12	f <sub>LW</sub> - Exhibit 11-8
V - Hourly volume	D - Density	E <sub>T</sub> - Exhibits 11-10, 11-11, 11-13	f <sub>LC</sub> - Exhibit 11-9
v <sub>p</sub> - Flow rate	FFS - Free-flow speed	f <sub>p</sub> - Page 11-18	TRD - Page 11-11
LOS - Level of service	BFFS - Base free-flow speed	LOS, S, FFS, v <sub>p</sub> - Exhibits 11-2, 11-3	
DDHV - Directional design hour volume			

<b>BASIC FREEWAY SEGMENTS WORKSHEET</b>			
<b>General Information</b>		<b>Site Information</b>	
Analyst	<i>RB</i>	Highway/Direction of Travel	<i>80 EB</i>
Agency or Company	<i>Fehr &amp; Peers</i>	From/To	<i>I-780 Collectors - Georgia St</i>
Date Performed	<i>10/23/2014</i>	Jurisdiction	<i>Sonoma County</i>
Analysis Time Period	<i>AM Peak Hour</i>	Analysis Year	<i>2040 + Both</i>
Project Description <i>Vallejo Marine Terminal</i>			
<input checked="" type="checkbox"/> Oper.(LOS) <input type="checkbox"/> Des.(N) <input type="checkbox"/> Planning Data			
<b>Flow Inputs</b>			
Volume, V	<i>5422</i>	veh/h	Peak-Hour Factor, PHF
AADT		veh/day	%Trucks and Buses, P <sub>T</sub>
Peak-Hr Prop. of AADT, K			%RVs, P <sub>R</sub>
Peak-Hr Direction Prop, D			General Terrain:
DDHV = AADT x K x D		veh/h	Grade % Length
			Up/Down %
<b>Calculate Flow Adjustments</b>			
f <sub>p</sub>	<i>1.00</i>	E <sub>R</sub>	<i>1.2</i>
E <sub>T</sub>	<i>1.5</i>	f <sub>HV</sub> = 1/[1+P <sub>T</sub> (E <sub>T</sub> - 1) + P <sub>R</sub> (E <sub>R</sub> - 1)]	<i>0.976</i>
<b>Speed Inputs</b>		<b>Calc Speed Adj and FFS</b>	
Lane Width	ft	f <sub>LW</sub>	mph
Rt-Side Lat. Clearance	ft	f <sub>LC</sub>	mph
Number of Lanes, N	<i>3</i>	TRD Adjustment	mph
Total Ramp Density, TRD	ramps/mi	FFS	<i>65.0</i>
FFS (measured)	<i>65.0</i>	mph	mph
Base free-flow Speed, BFFS	mph		
<b>LOS and Performance Measures</b>		<b>Design (N)</b>	
<u>Operational (LOS)</u>		<u>Design (N)</u>	
v <sub>p</sub> = (V or DDHV) / (PHF x N x f <sub>HV</sub> )	<i>2014</i>	Design LOS	
x f <sub>p</sub> )	pc/h/ln	v <sub>p</sub> = (V or DDHV) / (PHF x N x f <sub>HV</sub> )	pc/h/ln
S	<i>59.7</i>	x f <sub>p</sub> )	
D = v <sub>p</sub> / S	<i>33.8</i>	S	mph
LOS	<i>D</i>	D = v <sub>p</sub> / S	pc/mi/ln
		Required Number of Lanes, N	
<b>Glossary</b>		<b>Factor Location</b>	
N - Number of lanes	S - Speed	E <sub>R</sub> - Exhibits 11-10, 11-12	f <sub>LW</sub> - Exhibit 11-8
V - Hourly volume	D - Density	E <sub>T</sub> - Exhibits 11-10, 11-11, 11-13	f <sub>LC</sub> - Exhibit 11-9
v <sub>p</sub> - Flow rate	FFS - Free-flow speed	f <sub>p</sub> - Page 11-18	TRD - Page 11-11
LOS - Level of service	BFFS - Base free-flow speed	LOS, S, FFS, v <sub>p</sub> - Exhibits 11-2, 11-3	
DDHV - Directional design hour volume			

RAMPS AND RAMP JUNCTIONS WORKSHEET									
General Information					Site Information				
Analyst	RB	Freeway/Dir of Travel	I 80 EB						
Agency or Company	Fehr & Peers	Junction	I-780 Collector						
Date Performed	10/31/2014	Jurisdiction	Sonoma County						
Analysis Time Period	PM Peak	Analysis Year	2040 + Both						
Project Description Vallejo Marine Terminal									
Inputs									
Upstream Adj Ramp <input type="checkbox"/> Yes <input type="checkbox"/> On <input checked="" type="checkbox"/> No <input type="checkbox"/> Off	Number of Lanes, N Acceleration Lane Length, L <sub>A</sub> Deceleration Lane Length L <sub>D</sub>	3 150	Downstream Adj Ramp <input checked="" type="checkbox"/> Yes <input type="checkbox"/> On <input type="checkbox"/> No <input checked="" type="checkbox"/> Off						
L <sub>up</sub> = ft	Freeway Volume, V <sub>F</sub> Ramp Volume, V <sub>R</sub>	2877 2192	L <sub>down</sub> = 2100 ft						
V <sub>u</sub> = veh/h	Freeway Free-Flow Speed, S <sub>FF</sub> Ramp Free-Flow Speed, S <sub>FR</sub>	65.0 65.0	V <sub>D</sub> = 217 veh/h						
Conversion to pc/h Under Base Conditions									
(pc/h)	V (Veh/hr)	PHF	Terrain	%Truck	%Rv	f <sub>HV</sub>	f <sub>p</sub>	v = V/PHF x f <sub>HV</sub> x f <sub>p</sub>	
Freeway	2877	0.92	Level	5	0	0.976	1.00	3205	
Ramp	2192	0.92	Level	5	0	0.976	1.00	2442	
UpStream									
DownStream	217	0.90	Level	5	0	0.976	1.00	247	
Merge Areas					Diverge Areas				
Estimation of v <sub>12</sub>					Estimation of v <sub>12</sub>				
$V_{12} = V_F (P_{FM})$ L <sub>EQ</sub> = 1965.78 (Equation 13-6 or 13-7) P <sub>FM</sub> = 0.582 using Equation (Exhibit 13-6) V <sub>12</sub> = 1864 pc/h V <sub>3</sub> or V <sub>av34</sub> = 1341 pc/h (Equation 13-14 or 13-17) Is V <sub>3</sub> or V <sub>av34</sub> > 2,700 pc/h? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Is V <sub>3</sub> or V <sub>av34</sub> > 1.5 * V <sub>12</sub> /2 <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No If Yes, V <sub>12a</sub> = pc/h (Equation 13-16, 13-18, or 13-19)					$V_{12} = V_R + (V_F - V_R)P_{FD}$ L <sub>EQ</sub> = (Equation 13-12 or 13-13) P <sub>FD</sub> = using Equation (Exhibit 13-7) V <sub>12</sub> = pc/h V <sub>3</sub> or V <sub>av34</sub> = pc/h (Equation 13-14 or 13-17) Is V <sub>3</sub> or V <sub>av34</sub> > 2,700 pc/h? <input type="checkbox"/> Yes <input type="checkbox"/> No Is V <sub>3</sub> or V <sub>av34</sub> > 1.5 * V <sub>12</sub> /2 <input type="checkbox"/> Yes <input type="checkbox"/> No If Yes, V <sub>12a</sub> = pc/h (Equation 13-16, 13-18, or 13-19)				
Capacity Checks					Capacity Checks				
	Actual	Capacity		LOS F?		Actual	Capacity		LOS F?
V <sub>FO</sub>	5647	Exhibit 13-8		No	V <sub>F</sub>		Exhibit 13-8		
					V <sub>FO</sub> = V <sub>F</sub> - V <sub>R</sub>		Exhibit 13-8		
					V <sub>R</sub>		Exhibit 13-10		
Flow Entering Merge Influence Area					Flow Entering Diverge Influence Area				
	Actual	Max Desirable		Violation?		Actual	Max Desirable		Violation?
V <sub>R12</sub>	4306	Exhibit 13-8		No	V <sub>12</sub>		Exhibit 13-8		
Level of Service Determination (if not F)					Level of Service Determination (if not F)				
$D_R = 5.475 + 0.00734 v_R + 0.0078 V_{12} - 0.00627 L_A$ D <sub>R</sub> = 37.0 (pc/mi/ln) LOS = E (Exhibit 13-2)					$D_R = 4.252 + 0.0086 V_{12} - 0.009 L_D$ D <sub>R</sub> = (pc/mi/ln) LOS = (Exhibit 13-2)				
Speed Determination					Speed Determination				
M <sub>S</sub> =	0.591 (Exhibit 13-11)				D <sub>S</sub> =	(Exhibit 13-12)			
S <sub>R</sub> =	51.4 mph (Exhibit 13-11)				S <sub>R</sub> =	mph (Exhibit 13-12)			
S <sub>0</sub> =	62.0 mph (Exhibit 13-11)				S <sub>0</sub> =	mph (Exhibit 13-12)			
S =	53.6 mph (Exhibit 13-13)				S =	mph (Exhibit 13-13)			

<b>BASIC FREEWAY SEGMENTS WORKSHEET</b>			
<b>General Information</b>		<b>Site Information</b>	
Analyst	<i>RB</i>	Highway/Direction of Travel <i>I-80 WB</i>	
Agency or Company	<i>Fehr &amp; Peers</i>	From/To	<i>South of Sonoma Blvd</i>
Date Performed	<i>10/23/2014</i>	Jurisdiction	<i>Sonoma County</i>
Analysis Time Period	<i>AM Peak Hour</i>	Analysis Year	<i>2040 + Both</i>
Project Description <i>Vallejo Marine Terminal</i>			
<input checked="" type="checkbox"/> Oper.(LOS) <input type="checkbox"/> Des.(N) <input type="checkbox"/> Planning Data			
<b>Flow Inputs</b>			
Volume, V	<i>6380</i>	veh/h	Peak-Hour Factor, PHF <i>0.92</i>
AADT		veh/day	%Trucks and Buses, P <sub>T</sub> <i>5</i>
Peak-Hr Prop. of AADT, K			%RVs, P <sub>R</sub> <i>0</i>
Peak-Hr Direction Prop, D			General Terrain: <i>Level</i>
DDHV = AADT x K x D		veh/h	Grade % Length <i>mi</i> Up/Down %
<b>Calculate Flow Adjustments</b>			
f <sub>p</sub>	<i>1.00</i>	E <sub>R</sub>	<i>1.2</i>
E <sub>T</sub>	<i>1.5</i>	f <sub>HV</sub> = 1/[1+P <sub>T</sub> (E <sub>T</sub> - 1) + P <sub>R</sub> (E <sub>R</sub> - 1)] <i>0.976</i>	
<b>Speed Inputs</b>		<b>Calc Speed Adj and FFS</b>	
Lane Width		ft	
Rt-Side Lat. Clearance		ft	
Number of Lanes, N	<i>4</i>		f <sub>LW</sub> mph
Total Ramp Density, TRD		ramps/mi	f <sub>LC</sub> mph
FFS (measured)	<i>65.0</i>	mph	TRD Adjustment mph
Base free-flow Speed, BFFS		mph	FFS <i>65.0</i> mph
<b>LOS and Performance Measures</b>		<b>Design (N)</b>	
<u>Operational (LOS)</u>		<u>Design (N)</u>	
v <sub>p</sub> = (V or DDHV) / (PHF x N x f <sub>HV</sub> x f <sub>p</sub> )	<i>1777</i>	pc/h/ln	Design LOS
S	<i>63.0</i>	mph	v <sub>p</sub> = (V or DDHV) / (PHF x N x f <sub>HV</sub> x f <sub>p</sub> )
D = v <sub>p</sub> / S	<i>28.2</i>	pc/mi/ln	S
LOS	<i>D</i>		D = v <sub>p</sub> / S
			Required Number of Lanes, N
<b>Glossary</b>		<b>Factor Location</b>	
N - Number of lanes	S - Speed	E <sub>R</sub> - Exhibits 11-10, 11-12	f <sub>LW</sub> - Exhibit 11-8
V - Hourly volume	D - Density	E <sub>T</sub> - Exhibits 11-10, 11-11, 11-13	f <sub>LC</sub> - Exhibit 11-9
v <sub>p</sub> - Flow rate	FFS - Free-flow speed	f <sub>p</sub> - Page 11-18	TRD - Page 11-11
LOS - Level of service	BFFS - Base free-flow speed	LOS, S, FFS, v <sub>p</sub> - Exhibits 11-2, 11-3	
DDHV - Directional design hour volume			

<b>BASIC FREEWAY SEGMENTS WORKSHEET</b>			
<b>General Information</b>		<b>Site Information</b>	
Analyst	RB	Highway/Direction of Travel I-80 EB	
Agency or Company	Fehr & Peers	From/To	South of Sonoma Blvd
Date Performed	10/23/2014	Jurisdiction	Sonoma County
Analysis Time Period	PM Peak Hour	Analysis Year	2040 + Both
Project Description Vallejo Marine Terminal			
<input checked="" type="checkbox"/> Oper.(LOS) <input type="checkbox"/> Des.(N) <input type="checkbox"/> Planning Data			
<b>Flow Inputs</b>			
Volume, V	5386	veh/h	Peak-Hour Factor, PHF 0.92
AADT		veh/day	%Trucks and Buses, P <sub>T</sub> 5
Peak-Hr Prop. of AADT, K			%RVs, P <sub>R</sub> 0
Peak-Hr Direction Prop, D			General Terrain: Level
DDHV = AADT x K x D		veh/h	Grade % Length mi
			Up/Down %
<b>Calculate Flow Adjustments</b>			
f <sub>p</sub>	1.00	E <sub>R</sub>	1.2
E <sub>T</sub>	1.5	f <sub>HV</sub> = 1/[1+P <sub>T</sub> (E <sub>T</sub> - 1) + P <sub>R</sub> (E <sub>R</sub> - 1)] 0.976	
<b>Speed Inputs</b>		<b>Calc Speed Adj and FFS</b>	
Lane Width	ft	f <sub>LW</sub> mph f <sub>LC</sub> mph TRD Adjustment mph FFS 65.0 mph	
Rt-Side Lat. Clearance	ft		
Number of Lanes, N	4		
Total Ramp Density, TRD	ramps/mi		
FFS (measured)	65.0 mph		
Base free-flow Speed, BFFS	mph		
<b>LOS and Performance Measures</b>		<b>Design (N)</b>	
<u>Operational (LOS)</u>		<u>Design (N)</u>	
v <sub>p</sub> = (V or DDHV) / (PHF x N x f <sub>HV</sub> x f <sub>p</sub> )	1500 pc/h/ln	Design LOS	
S	64.9 mph	v <sub>p</sub> = (V or DDHV) / (PHF x N x f <sub>HV</sub> x f <sub>p</sub> )	pc/h/ln
D = v <sub>p</sub> / S	23.1 pc/mi/ln	S	mph
LOS	C	D = v <sub>p</sub> / S	pc/mi/ln
		Required Number of Lanes, N	
<b>Glossary</b>		<b>Factor Location</b>	
N - Number of lanes	S - Speed	E <sub>R</sub> - Exhibits 11-10, 11-12	f <sub>LW</sub> - Exhibit 11-8
V - Hourly volume	D - Density	E <sub>T</sub> - Exhibits 11-10, 11-11, 11-13	f <sub>LC</sub> - Exhibit 11-9
v <sub>p</sub> - Flow rate	FFS - Free-flow speed	f <sub>p</sub> - Page 11-18	TRD - Page 11-11
LOS - Level of service	BFFS - Base free-flow speed	LOS, S, FFS, v <sub>p</sub> - Exhibits 11-2, 11-3	
DDHV - Directional design hour volume			

<b>BASIC FREEWAY SEGMENTS WORKSHEET</b>			
<b>General Information</b>		<b>Site Information</b>	
Analyst	<i>RB</i>	Highway/Direction of Travel <i>I-80 EB</i>	
Agency or Company	<i>Fehr &amp; Peers</i>	From/To	<i>South of Sonoma Blvd</i>
Date Performed	<i>10/23/2014</i>	Jurisdiction	<i>Sonoma County</i>
Analysis Time Period	<i>AM Peak Hour</i>	Analysis Year	<i>2040 + Both</i>
Project Description <i>Vallejo Marine Terminal</i>			
<input checked="" type="checkbox"/> Oper.(LOS) <input type="checkbox"/> Des.(N) <input type="checkbox"/> Planning Data			
<b>Flow Inputs</b>			
Volume, V	<i>2956</i>	veh/h	Peak-Hour Factor, PHF <i>0.92</i>
AADT		veh/day	%Trucks and Buses, P <sub>T</sub> <i>5</i>
Peak-Hr Prop. of AADT, K			%RVs, P <sub>R</sub> <i>0</i>
Peak-Hr Direction Prop, D			General Terrain: <i>Level</i>
DDHV = AADT x K x D		veh/h	Grade % Length <i>mi</i> Up/Down %
<b>Calculate Flow Adjustments</b>			
f <sub>p</sub>	<i>1.00</i>	E <sub>R</sub>	<i>1.2</i>
E <sub>T</sub>	<i>1.5</i>	f <sub>HV</sub> = 1/[1+P <sub>T</sub> (E <sub>T</sub> - 1) + P <sub>R</sub> (E <sub>R</sub> - 1)] <i>0.976</i>	
<b>Speed Inputs</b>		<b>Calc Speed Adj and FFS</b>	
Lane Width		ft	
Rt-Side Lat. Clearance		ft	f <sub>LW</sub> mph
Number of Lanes, N	<i>4</i>		f <sub>LC</sub> mph
Total Ramp Density, TRD		ramps/mi	TRD Adjustment mph
FFS (measured)	<i>65.0</i>	mph	FFS <i>65.0</i> mph
Base free-flow Speed, BFFS		mph	
<b>LOS and Performance Measures</b>		<b>Design (N)</b>	
<u>Operational (LOS)</u>		<u>Design (N)</u>	
v <sub>p</sub> = (V or DDHV) / (PHF x N x f <sub>HV</sub> x f <sub>p</sub> )	<i>823</i>	pc/h/ln	Design LOS
S	<i>65.0</i>	mph	v <sub>p</sub> = (V or DDHV) / (PHF x N x f <sub>HV</sub> x f <sub>p</sub> )
D = v <sub>p</sub> / S	<i>12.7</i>	pc/mi/ln	S
LOS	<i>B</i>		D = v <sub>p</sub> / S
			Required Number of Lanes, N
<b>Glossary</b>		<b>Factor Location</b>	
N - Number of lanes	S - Speed	E <sub>R</sub> - Exhibits 11-10, 11-12	f <sub>LW</sub> - Exhibit 11-8
V - Hourly volume	D - Density	E <sub>T</sub> - Exhibits 11-10, 11-11, 11-13	f <sub>LC</sub> - Exhibit 11-9
v <sub>p</sub> - Flow rate	FFS - Free-flow speed	f <sub>p</sub> - Page 11-18	TRD - Page 11-11
LOS - Level of service	BFFS - Base free-flow speed	LOS, S, FFS, v <sub>p</sub> - Exhibits 11-2, 11-3	
DDHV - Directional design hour volume			

<b>BASIC FREEWAY SEGMENTS WORKSHEET</b>			
<b>General Information</b>		<b>Site Information</b>	
Analyst	<i>RB</i>	Highway/Direction of Travel <i>I-80 WB</i>	
Agency or Company	<i>Fehr &amp; Peers</i>	From/To	<i>South of Sonoma Blvd</i>
Date Performed	<i>10/23/2014</i>	Jurisdiction	<i>Sonoma County</i>
Analysis Time Period	<i>PM Peak Hour</i>	Analysis Year	<i>2040 + Both</i>
Project Description <i>Vallejo Marine Terminal</i>			
<input checked="" type="checkbox"/> Oper.(LOS)		<input type="checkbox"/> Des.(N)	
<input type="checkbox"/> Planning Data			
<b>Flow Inputs</b>			
Volume, V	<i>3578</i>	veh/h	Peak-Hour Factor, PHF <i>0.92</i>
AADT		veh/day	%Trucks and Buses, P <sub>T</sub> <i>5</i>
Peak-Hr Prop. of AADT, K			%RVs, P <sub>R</sub> <i>0</i>
Peak-Hr Direction Prop, D			General Terrain: <i>Level</i>
DDHV = AADT x K x D		veh/h	Grade % Length <i>mi</i>
			Up/Down %
<b>Calculate Flow Adjustments</b>			
f <sub>p</sub>	<i>1.00</i>	E <sub>R</sub>	<i>1.2</i>
E <sub>T</sub>	<i>1.5</i>	f <sub>HV</sub> = 1/[1+P <sub>T</sub> (E <sub>T</sub> - 1) + P <sub>R</sub> (E <sub>R</sub> - 1)] <i>0.976</i>	
<b>Speed Inputs</b>		<b>Calc Speed Adj and FFS</b>	
Lane Width	ft		
Rt-Side Lat. Clearance	ft	f <sub>LW</sub>	mph
Number of Lanes, N	<i>4</i>	f <sub>LC</sub>	mph
Total Ramp Density, TRD	ramps/mi	TRD Adjustment	mph
FFS (measured)	<i>65.0</i>	FFS	<i>65.0</i>
Base free-flow Speed, BFFS	mph		
<b>LOS and Performance Measures</b>		<b>Design (N)</b>	
<u>Operational (LOS)</u>		<u>Design (N)</u>	
v <sub>p</sub> = (V or DDHV) / (PHF x N x f <sub>HV</sub> ) <i>997</i>		Design LOS	
x f <sub>p</sub> )	pc/h/ln	v <sub>p</sub> = (V or DDHV) / (PHF x N x f <sub>HV</sub> )	
S	<i>65.0</i>	x f <sub>p</sub> )	pc/h/ln
D = v <sub>p</sub> / S	<i>15.3</i>	S	mph
LOS	<i>B</i>	D = v <sub>p</sub> / S	pc/mi/ln
		Required Number of Lanes, N	
<b>Glossary</b>		<b>Factor Location</b>	
N - Number of lanes	S - Speed	E <sub>R</sub> - Exhibits 11-10, 11-12	f <sub>LW</sub> - Exhibit 11-8
V - Hourly volume	D - Density	E <sub>T</sub> - Exhibits 11-10, 11-11, 11-13	f <sub>LC</sub> - Exhibit 11-9
v <sub>p</sub> - Flow rate	FFS - Free-flow speed	f <sub>p</sub> - Page 11-18	TRD - Page 11-11
LOS - Level of service	BFFS - Base free-flow speed	LOS, S, FFS, v <sub>p</sub> - Exhibits 11-2, 11-3	
DDHV - Directional design hour volume			

<b>BASIC FREEWAY SEGMENTS WORKSHEET</b>			
<b>General Information</b>		<b>Site Information</b>	
Analyst	<i>RB</i>	Highway/Direction of Travel	<i>I-780 EB</i>
Agency or Company	<i>Fehr &amp; Peers</i>	From/To	<i>Laurel to Glen Cove</i>
Date Performed	<i>10/23/2014</i>	Jurisdiction	<i>Sonoma County</i>
Analysis Time Period	<i>PM Peak Hour</i>	Analysis Year	<i>2040 + Both</i>
Project Description <i>Vallejo Marine Terminal</i>			
<input checked="" type="checkbox"/> Oper.(LOS) <input type="checkbox"/> Des.(N) <input type="checkbox"/> Planning Data			
<b>Flow Inputs</b>			
Volume, V	<i>2787</i>	veh/h	Peak-Hour Factor, PHF
AADT		veh/day	0.92
Peak-Hr Prop. of AADT, K			%Trucks and Buses, P <sub>T</sub>
Peak-Hr Direction Prop, D			5
DDHV = AADT x K x D		veh/h	%RVs, P <sub>R</sub>
			0
			General Terrain:
			<i>Level</i>
			Grade % Length
			<i>mi</i>
			Up/Down %
<b>Calculate Flow Adjustments</b>			
f <sub>p</sub>	<i>1.00</i>	E <sub>R</sub>	<i>1.2</i>
E <sub>T</sub>	<i>1.5</i>	f <sub>HV</sub> = 1/[1+P <sub>T</sub> (E <sub>T</sub> - 1) + P <sub>R</sub> (E <sub>R</sub> - 1)]	<i>0.976</i>
<b>Speed Inputs</b>		<b>Calc Speed Adj and FFS</b>	
Lane Width	ft		
Rt-Side Lat. Clearance	ft	f <sub>LW</sub>	mph
Number of Lanes, N	<i>2</i>	f <sub>LC</sub>	mph
Total Ramp Density, TRD	ramps/mi	TRD Adjustment	mph
FFS (measured)	<i>65.0</i>	FFS	<i>65.0</i>
Base free-flow Speed, BFFS	mph		
<b>LOS and Performance Measures</b>		<b>Design (N)</b>	
<u>Operational (LOS)</u>		<u>Design (N)</u>	
v <sub>p</sub> = (V or DDHV) / (PHF x N x f <sub>HV</sub> x f <sub>p</sub> )		Design LOS	
<i>1553</i>	pc/h/ln	v <sub>p</sub> = (V or DDHV) / (PHF x N x f <sub>HV</sub> x f <sub>p</sub> )	
S	<i>64.7</i>	S	mph
D = v <sub>p</sub> / S	<i>24.0</i>	D = v <sub>p</sub> / S	pc/mi/ln
LOS	<i>C</i>	Required Number of Lanes, N	
<b>Glossary</b>		<b>Factor Location</b>	
N - Number of lanes	S - Speed	E <sub>R</sub> - Exhibits 11-10, 11-12	f <sub>LW</sub> - Exhibit 11-8
V - Hourly volume	D - Density	E <sub>T</sub> - Exhibits 11-10, 11-11, 11-13	f <sub>LC</sub> - Exhibit 11-9
v <sub>p</sub> - Flow rate	FFS - Free-flow speed	f <sub>p</sub> - Page 11-18	TRD - Page 11-11
LOS - Level of service	BFFS - Base free-flow speed	LOS, S, FFS, v <sub>p</sub> - Exhibits 11-2, 11-3	
DDHV - Directional design hour volume			



<b>BASIC FREEWAY SEGMENTS WORKSHEET</b>			
<b>General Information</b>		<b>Site Information</b>	
Analyst	<i>RB</i>	Highway/Direction of Travel	<i>I-780 EB</i>
Agency or Company	<i>Fehr &amp; Peers</i>	From/To	<i>Laurel to Glen Cove</i>
Date Performed	<i>10/23/2014</i>	Jurisdiction	<i>Sonoma County</i>
Analysis Time Period	<i>AM Peak Hour</i>	Analysis Year	<i>2040 + Both</i>
Project Description <i>Vallejo Marine Terminal</i>			
<input checked="" type="checkbox"/> Oper.(LOS) <input type="checkbox"/> Des.(N) <input type="checkbox"/> Planning Data			
<b>Flow Inputs</b>			
Volume, V	<i>3011</i>	veh/h	Peak-Hour Factor, PHF
AADT		veh/day	<i>0.92</i>
Peak-Hr Prop. of AADT, K			%Trucks and Buses, P <sub>T</sub>
Peak-Hr Direction Prop, D			<i>5</i>
DDHV = AADT x K x D		veh/h	%RVs, P <sub>R</sub>
			<i>0</i>
			General Terrain:
			<i>Level</i>
			Grade % Length
			<i>mi</i>
			Up/Down %
<b>Calculate Flow Adjustments</b>			
f <sub>p</sub>	<i>1.00</i>	E <sub>R</sub>	<i>1.2</i>
E <sub>T</sub>	<i>1.5</i>	f <sub>HV</sub> = 1/[1+P <sub>T</sub> (E <sub>T</sub> - 1) + P <sub>R</sub> (E <sub>R</sub> - 1)]	<i>0.976</i>
<b>Speed Inputs</b>		<b>Calc Speed Adj and FFS</b>	
Lane Width	ft		
Rt-Side Lat. Clearance	ft	f <sub>LW</sub>	mph
Number of Lanes, N	<i>2</i>	f <sub>LC</sub>	mph
Total Ramp Density, TRD	ramps/mi	TRD Adjustment	mph
FFS (measured)	<i>65.0</i>	FFS	<i>65.0</i>
Base free-flow Speed, BFFS	mph		
<b>LOS and Performance Measures</b>		<b>Design (N)</b>	
<u>Operational (LOS)</u>		<u>Design (N)</u>	
v <sub>p</sub> = (V or DDHV) / (PHF x N x f <sub>HV</sub> )		Design LOS	
<i>1677</i>	pc/h/ln	v <sub>p</sub> = (V or DDHV) / (PHF x N x f <sub>HV</sub> )	pc/h/ln
x f <sub>p</sub> )		x f <sub>p</sub> )	
S	<i>63.9</i>	S	mph
D = v <sub>p</sub> / S	<i>26.2</i>	D = v <sub>p</sub> / S	pc/mi/ln
LOS	<i>D</i>	Required Number of Lanes, N	
<b>Glossary</b>		<b>Factor Location</b>	
N - Number of lanes	S - Speed	E <sub>R</sub> - Exhibits 11-10, 11-12	f <sub>LW</sub> - Exhibit 11-8
V - Hourly volume	D - Density	E <sub>T</sub> - Exhibits 11-10, 11-11, 11-13	f <sub>LC</sub> - Exhibit 11-9
v <sub>p</sub> - Flow rate	FFS - Free-flow speed	f <sub>p</sub> - Page 11-18	TRD - Page 11-11
LOS - Level of service	BFFS - Base free-flow speed	LOS, S, FFS, v <sub>p</sub> - Exhibits 11-2, 11-3	
DDHV - Directional design hour volume			

<b>BASIC FREEWAY SEGMENTS WORKSHEET</b>			
<b>General Information</b>		<b>Site Information</b>	
Analyst	<i>RB</i>	Highway/Direction of Travel <i>I-780 WB</i>	
Agency or Company	<i>Fehr &amp; Peers</i>	From/To	<i>Glen Cove to Laurel</i>
Date Performed	<i>10/23/2014</i>	Jurisdiction	<i>Sonoma County</i>
Analysis Time Period	<i>PM Peak Hour</i>	Analysis Year	<i>2040 + Both</i>
Project Description <i>Vallejo Marine Terminal</i>			
<input checked="" type="checkbox"/> Oper.(LOS) <input type="checkbox"/> Des.(N) <input type="checkbox"/> Planning Data			
<b>Flow Inputs</b>			
Volume, V	<i>3505</i>	veh/h	Peak-Hour Factor, PHF <i>0.92</i>
AADT		veh/day	%Trucks and Buses, P <sub>T</sub> <i>5</i>
Peak-Hr Prop. of AADT, K			%RVs, P <sub>R</sub> <i>0</i>
Peak-Hr Direction Prop, D			General Terrain: <i>Level</i>
DDHV = AADT x K x D		veh/h	Grade % Length <i>mi</i> Up/Down %
<b>Calculate Flow Adjustments</b>			
f <sub>p</sub>	<i>1.00</i>	E <sub>R</sub>	<i>1.2</i>
E <sub>T</sub>	<i>1.5</i>	f <sub>HV</sub> = 1/[1+P <sub>T</sub> (E <sub>T</sub> - 1) + P <sub>R</sub> (E <sub>R</sub> - 1)] <i>0.976</i>	
<b>Speed Inputs</b>		<b>Calc Speed Adj and FFS</b>	
Lane Width		ft	
Rt-Side Lat. Clearance		ft	
Number of Lanes, N	<i>2</i>		f <sub>LW</sub> mph
Total Ramp Density, TRD		ramps/mi	f <sub>LC</sub> mph
FFS (measured)	<i>65.0</i>	mph	TRD Adjustment mph
Base free-flow Speed, BFFS		mph	FFS <i>65.0</i> mph
<b>LOS and Performance Measures</b>		<b>Design (N)</b>	
<u>Operational (LOS)</u>		<u>Design (N)</u>	
v <sub>p</sub> = (V or DDHV) / (PHF x N x f <sub>HV</sub> x f <sub>p</sub> )		Design LOS	
<i>1953</i>	pc/h/ln	v <sub>p</sub> = (V or DDHV) / (PHF x N x f <sub>HV</sub> x f <sub>p</sub> )	
S	<i>60.7</i>	mph	pc/h/ln
D = v <sub>p</sub> / S	<i>32.2</i>	pc/mi/ln	S
LOS	<i>D</i>		D = v <sub>p</sub> / S
			pc/mi/ln
			Required Number of Lanes, N
<b>Glossary</b>		<b>Factor Location</b>	
N - Number of lanes	S - Speed	E <sub>R</sub> - Exhibits 11-10, 11-12	f <sub>LW</sub> - Exhibit 11-8
V - Hourly volume	D - Density	E <sub>T</sub> - Exhibits 11-10, 11-11, 11-13	f <sub>LC</sub> - Exhibit 11-9
v <sub>p</sub> - Flow rate	FFS - Free-flow speed	f <sub>p</sub> - Page 11-18	TRD - Page 11-11
LOS - Level of service	BFFS - Base free-flow speed	LOS, S, FFS, v <sub>p</sub> - Exhibits 11-2, 11-3	
DDHV - Directional design hour volume			

<b>BASIC FREEWAY SEGMENTS WORKSHEET</b>			
<b>General Information</b>		<b>Site Information</b>	
Analyst	<i>RB</i>	Highway/Direction of Travel <i>I-780 WB</i>	
Agency or Company	<i>Fehr &amp; Peers</i>	From/To	<i>Glen Cove to Laurel</i>
Date Performed	<i>10/23/2014</i>	Jurisdiction	<i>Sonoma County</i>
Analysis Time Period	<i>AM Peak Hour</i>	Analysis Year	<i>2040 + Both</i>
Project Description <i>Vallejo Marine Terminal</i>			
<input checked="" type="checkbox"/> Oper.(LOS) <input type="checkbox"/> Des.(N) <input type="checkbox"/> Planning Data			
<b>Flow Inputs</b>			
Volume, V	<i>2404</i>	veh/h	Peak-Hour Factor, PHF
AADT		veh/day	<i>0.92</i>
Peak-Hr Prop. of AADT, K			%Trucks and Buses, P <sub>T</sub>
Peak-Hr Direction Prop, D			<i>5</i>
DDHV = AADT x K x D		veh/h	%RVs, P <sub>R</sub>
			<i>0</i>
			General Terrain: <i>Level</i>
			Grade % Length <i>mi</i>
			Up/Down %
<b>Calculate Flow Adjustments</b>			
f <sub>p</sub>	<i>1.00</i>	E <sub>R</sub>	<i>1.2</i>
E <sub>T</sub>	<i>1.5</i>	f <sub>HV</sub> = 1/[1+P <sub>T</sub> (E <sub>T</sub> - 1) + P <sub>R</sub> (E <sub>R</sub> - 1)] <i>0.976</i>	
<b>Speed Inputs</b>		<b>Calc Speed Adj and FFS</b>	
Lane Width	ft		
Rt-Side Lat. Clearance	ft	f <sub>LW</sub>	mph
Number of Lanes, N	<i>2</i>	f <sub>LC</sub>	mph
Total Ramp Density, TRD	ramps/mi	TRD Adjustment	mph
FFS (measured)	<i>65.0</i>	FFS	<i>65.0</i>
Base free-flow Speed, BFFS	mph		mph
<b>LOS and Performance Measures</b>		<b>Design (N)</b>	
<u>Operational (LOS)</u>		<u>Design (N)</u>	
v <sub>p</sub> = (V or DDHV) / (PHF x N x f <sub>HV</sub> x f <sub>p</sub> )		Design LOS	
<i>1339</i>	pc/h/ln	v <sub>p</sub> = (V or DDHV) / (PHF x N x f <sub>HV</sub> x f <sub>p</sub> )	
S	<i>65.0</i>	S	mph
D = v <sub>p</sub> / S	<i>20.6</i>	D = v <sub>p</sub> / S	pc/mi/ln
LOS	<i>C</i>	Required Number of Lanes, N	
<b>Glossary</b>		<b>Factor Location</b>	
N - Number of lanes	S - Speed	E <sub>R</sub> - Exhibits 11-10, 11-12	f <sub>LW</sub> - Exhibit 11-8
V - Hourly volume	D - Density	E <sub>T</sub> - Exhibits 11-10, 11-11, 11-13	f <sub>LC</sub> - Exhibit 11-9
v <sub>p</sub> - Flow rate	FFS - Free-flow speed	f <sub>p</sub> - Page 11-18	TRD - Page 11-11
LOS - Level of service	BFFS - Base free-flow speed	LOS, S, FFS, v <sub>p</sub> - Exhibits 11-2, 11-3	
DDHV - Directional design hour volume			

# Leisch Method for Weaving Analysis

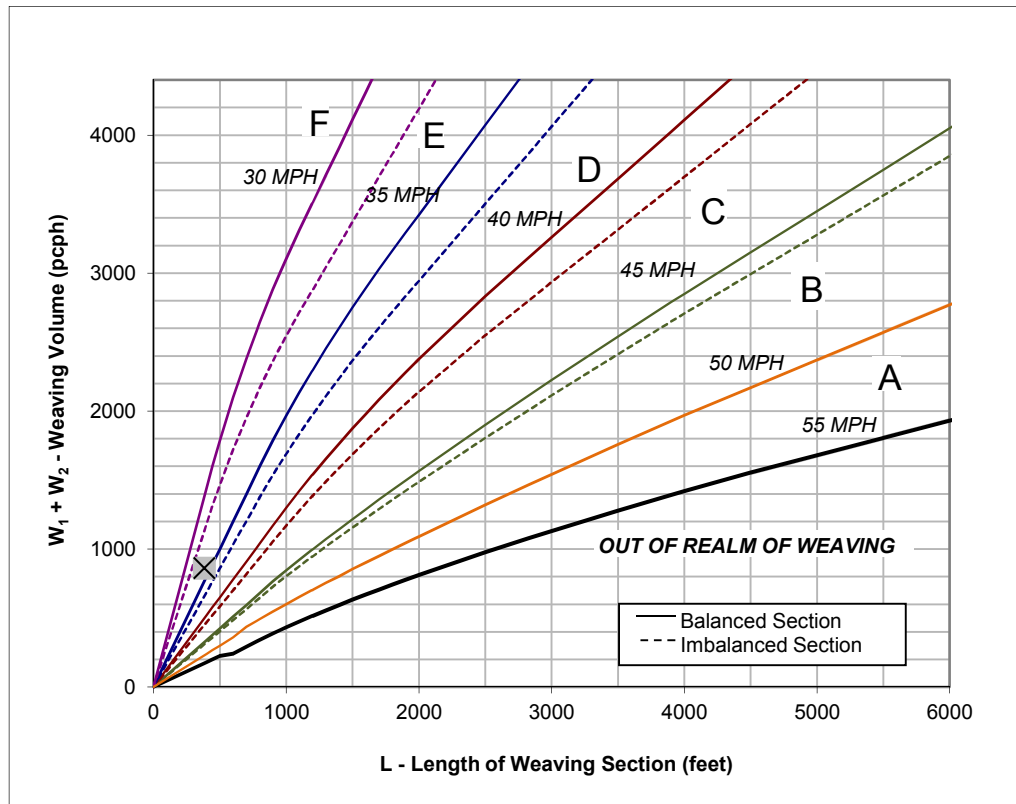
## Data Input

Number of Entering Mainline Lanes	$N_b$	2
Number of Lanes in Weaving Section	$N$	3
Length of Weaving Section (feet)	$L$	385

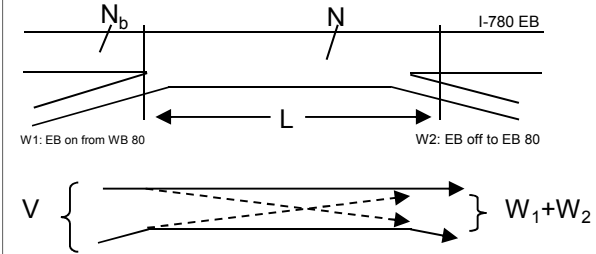
## Project Information

Project	Vallejo Marine Terminal
Scenario	AM + Cumulative
Freeway	I-780 EB
On-ramp	W1: EB on from WB 80
Off-ramp	W2: EB off to EB 80

Total Weaving Section (V)		On-ramp to Mainline ( $W_1$ )		Mainline to Off-ramp ( $W_2$ )	
Volume (vph)*	1,279	Volume (vph)*	758	Volume (vph)*	84
Truck Percentage	5%	Truck Percentage	5%	Truck Percentage	5%
PCE for Trucks	1.5	PCE for Trucks	1.5	PCE for Trucks	1.5
Volume (pcph)	1,311	Volume (pcph)	777	Volume (pcph)	87



## Figure



## Capacity Analysis

- Is the weaving section balanced ( $Y / N$ )? N  
[If optional exit lane, then "Y". Otherwise "N".]
- In the Weaving Speed Chart to the left, which two speed curves is the black "x" between?

30 MPH and 35 MPH

If below the 55 MPH curve, out of the realm of weaving.  
If left of the 30 MPH curve, LOS is F.

- Interpolated Weaving Speed ( $S_w$ , mph) 32.9
- Weaving Intensity Factor ( $k$ ) 3.00
- Service Volume (SV, pcph)  
 $SV = (1/N)[V + (k - 1) \cdot \min(W_1, W_2)]$  495
- Level of Service (LOS) A

The LOS in the chart above refers to the capacity of weaving traffic only; through and ramp to ramp traffic is not included.

\* Note: **Do not adjust by a Peak Hour Factor (PHF)**. The methodology incorporates the PHF in the Service Volume tables.

Sources: *Completion of Procedures for Analysis and Design of Traffic Weaving Sections*, Jack E. Leisch & Associates, September 1983 and *Highway Design Manual*, California Department of Transportation, July 24, 2009

# Leisch Method for Weaving Analysis

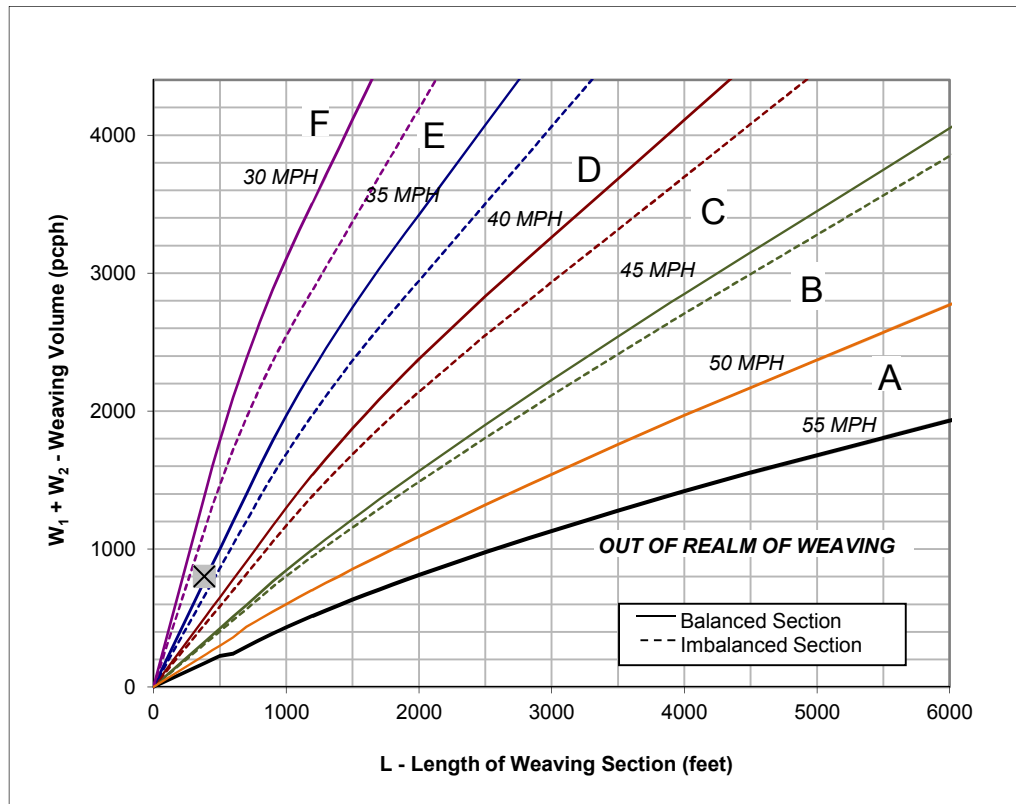
## Data Input

Number of Entering Mainline Lanes	$N_b$	2
Number of Lanes in Weaving Section	$N$	3
Length of Weaving Section (feet)	$L$	385

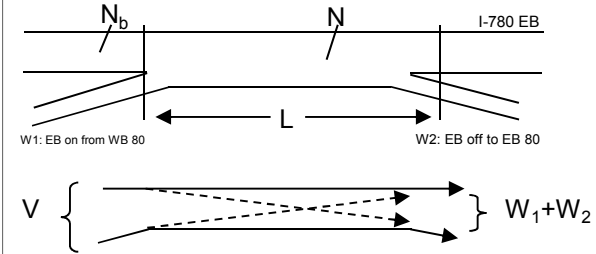
## Project Information

Project	Vallejo Marine Terminal
Scenario	PM + Cumulative
Freeway	I-780 EB
On-ramp	W1: EB on from WB 80
Off-ramp	W2: EB off to EB 80

Total Weaving Section (V)		On-ramp to Mainline ( $W_1$ )		Mainline to Off-ramp ( $W_2$ )	
Volume (vph)*	1,941	Volume (vph)*	528	Volume (vph)*	255
Truck Percentage	5%	Truck Percentage	5%	Truck Percentage	5%
PCE for Trucks	1.5	PCE for Trucks	1.5	PCE for Trucks	1.5
Volume (pcph)	1,990	Volume (pcph)	541	Volume (pcph)	261



## Figure



## Capacity Analysis

- Is the weaving section balanced ( $Y / N$ )? N  
[If optional exit lane, then "Y". Otherwise "N".]
- In the Weaving Speed Chart to the left, which two speed curves is the black "x" between?

30 MPH and 35 MPH

If below the 55 MPH curve, out of the realm of weaving.  
If left of the 30 MPH curve, LOS is F.

- Interpolated Weaving Speed ( $S_w$ , mph) 33.5
- Weaving Intensity Factor ( $k$ ) 2.96
- Service Volume (SV, pcph)  
 $SV = (1/N) * [V + (k - 1) * \min(W_1, W_2)]$  834
- Level of Service (LOS) B

The LOS in the chart above refers to the capacity of weaving traffic only; through and ramp to ramp traffic is not included.

\* Note: **Do not adjust by a Peak Hour Factor (PHF)**. The methodology incorporates the PHF in the Service Volume tables.

Sources: *Completion of Procedures for Analysis and Design of Traffic Weaving Sections*, Jack E. Leisch & Associates, September 1983 and *Highway Design Manual*, California Department of Transportation, July 24, 2009

# Leisch Method for Weaving Analysis

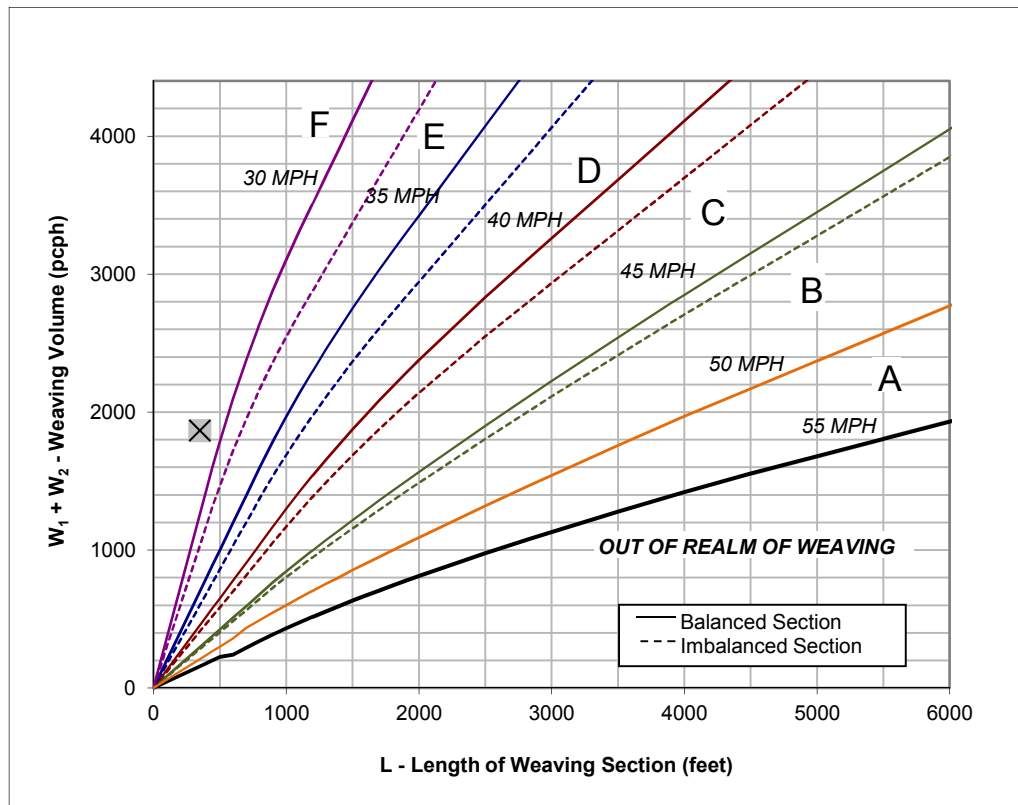
## Data Input

Number of Entering Mainline Lanes	$N_b$	2
Number of Lanes in Weaving Section	N	3
Length of Weaving Section (feet)	L	350

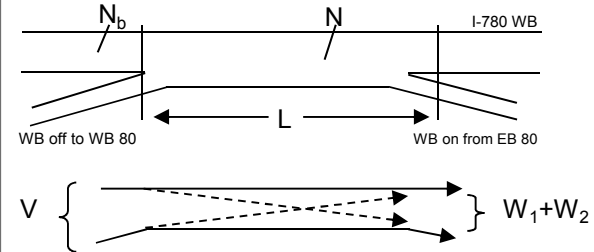
## Project Information

Project	Vallejo Marine Terminal
Scenario	AM + Cumulative
Freeway	I-780 WB
On-ramp	WB off to WB 80
Off-ramp	WB on from EB 80

Total Weaving Section (V)		On-ramp to Mainline ( $W_1$ )		Mainline to Off-ramp ( $W_2$ )	
Volume (vph)*	2,284	Volume (vph)*	1,610	Volume (vph)*	211
Truck Percentage	5%	Truck Percentage	5%	Truck Percentage	5%
PCE for Trucks	1.5	PCE for Trucks	1.5	PCE for Trucks	1.5
Volume (pcph)	2,341	Volume (pcph)	1,650	Volume (pcph)	216



## Figure



## Capacity Analysis

- Is the weaving section balanced ( $Y / N$ )? **N**  
[If optional exit lane, then "Y". Otherwise "N".]
- In the Weaving Speed Chart to the left, which two speed curves is the black "x" between?  
**0 MPH** and **30 MPH**

If below the 55 MPH curve, out of the realm of weaving.  
If left of the 30 MPH curve, LOS is F.

- Interpolated Weaving Speed ( $S_w$ , mph) -
- Weaving Intensity Factor (k) -
- Service Volume (SV, pcph)  
 $SV = (1/N) * [V + (k - 1) * \min(W_1, W_2)]$  -
- Level of Service (LOS) **F**

The LOS in the chart above refers to the capacity of weaving traffic only; through and ramp to ramp traffic is not included.

\* Note: **Do not adjust by a Peak Hour Factor (PHF)**. The methodology incorporates the PHF in the Service Volume tables.

Sources: *Completion of Procedures for Analysis and Design of Traffic Weaving Sections*, Jack E. Leisch & Associates, September 1983 and *Highway Design Manual*, California Department of Transportation, July 24, 2009

# Leisch Method for Weaving Analysis

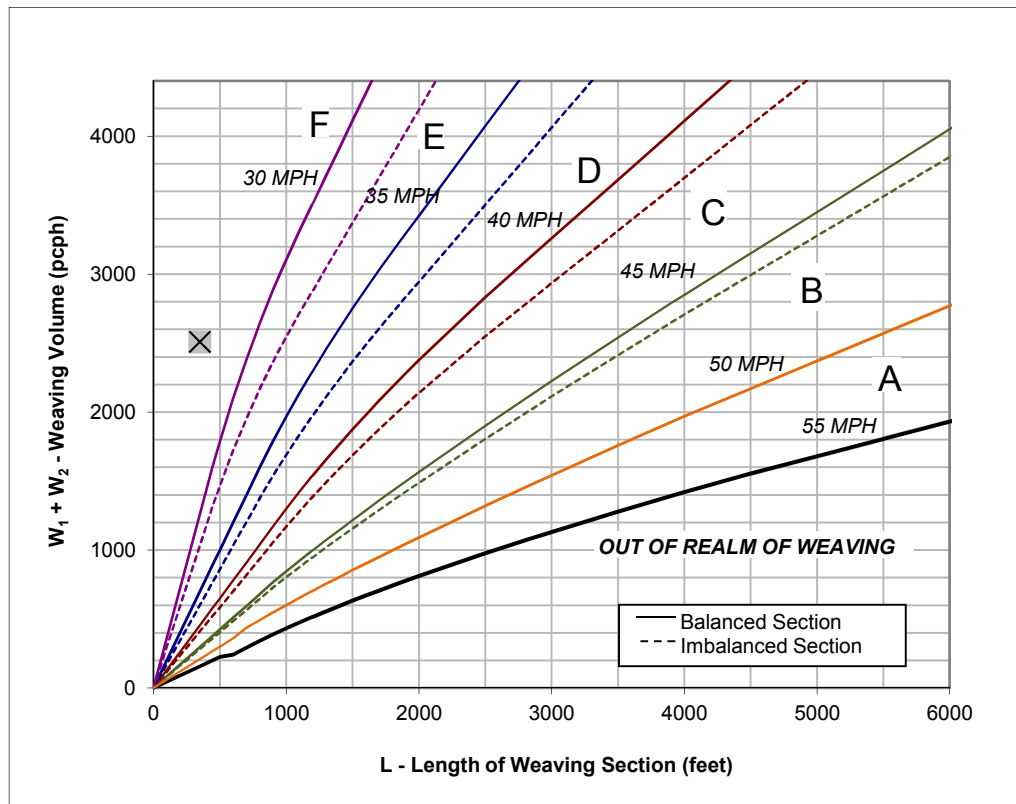
## Data Input

Number of Entering Mainline Lanes	$N_b$	2
Number of Lanes in Weaving Section	N	3
Length of Weaving Section (feet)	L	350

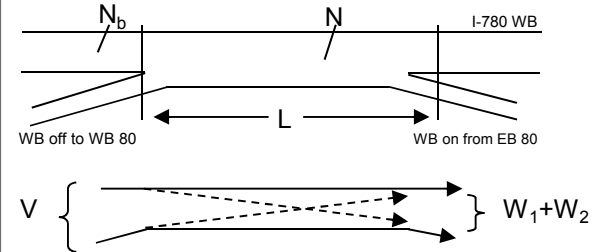
## Project Information

Project	Vallejo Marine Terminal
Scenario	PM + Cumulative
Freeway	I-780 WB
On-ramp	WB off to WB 80
Off-ramp	WB on from EB 80

Total Weaving Section (V)		On-ramp to Mainline ( $W_1$ )		Mainline to Off-ramp ( $W_2$ )	
Volume (vph)*	3,428	Volume (vph)*	1,952	Volume (vph)*	497
Truck Percentage	5%	Truck Percentage	5%	Truck Percentage	5%
PCE for Trucks	1.5	PCE for Trucks	1.5	PCE for Trucks	1.5
Volume (pcph)	3,513	Volume (pcph)	2,000	Volume (pcph)	510



## Figure



## Capacity Analysis

- Is the weaving section balanced ( $Y / N$ )? **N**  
[If optional exit lane, then "Y". Otherwise "N".]
- In the Weaving Speed Chart to the left, which two speed curves is the black "x" between?  
**0 MPH** and **30 MPH**

If below the 55 MPH curve, out of the realm of weaving.  
If left of the 30 MPH curve, LOS is F.

- Interpolated Weaving Speed ( $S_w$ , mph) -
- Weaving Intensity Factor ( $k$ ) -
- Service Volume (SV, pcph)  
 $SV = (1/N) * [V + (k - 1) * \min(W_1, W_2)]$  -
- Level of Service (LOS) **F**

The LOS in the chart above refers to the capacity of weaving traffic only; through and ramp to ramp traffic is not included.

\* Note: **Do not adjust by a Peak Hour Factor (PHF)**. The methodology incorporates the PHF in the Service Volume tables.

Sources: *Completion of Procedures for Analysis and Design of Traffic Weaving Sections*, Jack E. Leisch & Associates, September 1983 and *Highway Design Manual*, California Department of Transportation, July 24, 2009

