

## Memorandum

Tollway Towers North, Suite 870
15770 North Dallas Parkway
Dallas, TX 75248
Tel: 214-245-5300
Shahram "Sam" Bohluli, Ph.D., P.E.
Vice President/Project Manager
sbohluli@candm-associates.com

Tel: 214-245-5300 Fax: 214-889-5049

**Date:** November 27, 2012

**To:** Mr. Lois Jones, P.E.

Vice President

Dannenbaum Engineering 1109 Nolana Loop, Suite 208

McAllen Texas 78504

Subject: Hidalgo Loop Intermediate Traffic and Revenue Study Update –

Draft T&R for Scenario 1 (SH 365) and Scenario 2 (SH 365+IBTC)

This memorandum presents the draft version of traffic and revenue results for Scenario1 (SH 365) and Scenario 2 (SH 365+ IBTC) as a part of C&M's ongoing update of comprehensive traffic and revenue study. Separate analyses were performed for three different scenarios namely:

- Scenario 1: SH 365; SH 365 opening on August 2, 2018 Up to FM 396 (Anzalduas Hwy) and on July 3,2028 Up to FM 1016 (Conway Avenue)
- Scenario 2: SH 365+ IBTC; SH 365 opening as mentioned in scenario 1 and IBTC opening on October 1, 2019
- Scenario 3: SH 365+IBTC+ Segment D; SH 365 and IBTC opening as mentioned in scenario 1 and 2 and Segment D opening on October 1, 2024

## **Traffic and Revenue Assumptions**

C&M's traffic and revenue forecast is based on the following set of assumptions, some of which will differ depending on their origin and destination within US or crossing the US-Mexico border. The assumptions used in the T&R calculations are as follows:

- Traffic and Revenue were forecasted for a forty-year period beginning in 2018.
- All revenues are expressed in nominal dollars.
- \$0.15/mile toll rate in 2010 dollar is adjusted to \$0.19/mile using CPI for opening year 2018 and so on for all the future years. Trucks were assumed to have an average of 3.9 axles. So the commercial vehicle toll factor of 2.9 (Based on N-1 formula for an average of 3.9 axles) is used for truck toll rate.
- While a number of new toll roads are scheduled to open within the next five years in the Rio Grande Valley of South Texas, the fact remains that the region currently has no toll roads, and the only existing tolled facilities are the international bridges. Therefore, during its analysis, C&M was keenly aware that many drivers in the area may be unfamiliar with the notion of road pricing and consequently reluctant to use the new toll roads, thereby causing an extended ramp-up period, the term used to describe the time it takes for traffic volumes to reach their full potential after the opening of a new toll facility. Although the same initial ramp-up for both automobile and truck drivers was expected, truck traffic on this toll road was assumed to mature sooner than the auto traffic. In addition, C&M expected passenger car motorists on the U.S. side of the border to become familiar with the toll roads in a more timely fashion than those Mexican drivers crossing

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the border on a regular basis. Indeed, as shown in Table 1, ramp-up for all vehicle classes starts at a modest 50% during the SH 365's opening year.

- Tolls will be collected by means of ETC or video recognition. Any increase in revenue due to video tolling surcharges, beyond the ETC toll rates, was assumed to be offset by additional costs associated with the video tolling recognition and billing method.
- ETC penetration a term referring to the percentage of all toll transactions collected electronically was assumed to be 50% to 60% for U.S. customers and 10% to 20% for border-crossing customers with Mexican license plates in the Project's opening year. This percentage was assumed to reach an eventual maximum of 90% for U.S. customers and 50% to 60% for border-crossing customers with Mexican license plates. In fact, C&M's stated preference survey found that more than 70% of automobile travelers said they would be likely to utilize the ETC system. ETC penetration for trucks was assumed to be higher than that for autos, based on the operational characteristics of truck traffic Table 1 presents a detailed look at assumptions for ETC penetration.
- For this study, the ETC leakage rate was assumed to be 5%, enough to account for any uncollected revenue from ETC customers as a result of system deficiencies.
- A video violation rate was applied in order to make up for revenue lost as a result of deficiencies in the video transaction system and potential toll evaders. A video tolling violation rate of 33% was assumed for U.S. customers. In addition, because C&M realized it would be difficult to recognize or collect tolls from all border-crossing vehicles with Mexican license plates, it assumed an 80% violation rate for such automobiles and a 60% violation rate for such trucks.
- In order to obtain annual traffic and revenue figures, C&M estimated equivalent revenue days of 350 for cars and 290 for trucks, a result of its analysis of weekday and weekend traffic counts.

Following Table 1 which shows details about assumption used in this study, Tables 2 to 5 shows the traffic and revenue figures for scenario 1, scenario 2 (IBTC), scenario 2 (SH365) and scenario 2 (SH365+IBTC) respectively.



**Table 1. Traffic and Revenue Assumptions** 

Item	Assumption					
			U	IS	Border (	Crossings
		Year	Auto	Truck	Auto	Truck
		2018	50%	50%	50%	50%
		2019	60%	60%	60%	60%
		2020	70%	70%	65%	70%
Traffic Ramp-Up		2021	80%	80%	70%	80%
		2022	85%	90%	75%	90%
		2023	90%	100%	80%	100%
		2024	95%	100%	85%	100%
		2025	100%	100%	90%	100%
		2026	100%	100%	95%	100%
		2027 and after	100%	100%	100%	100%
		<b>V</b>	U	S	Border	Crossings
		Year	Auto	Truck	Auto	Truck
		2018	50%	60%	10%	20%
		2019	55%	65%	15%	25%
		2020	60%	70%	20%	30%
ETC Penetration	•	2021	65%	75%	25%	35%
		2022	70%	80%	30%	40%
		2023	75%	83%	35%	45%
	•	2024	80%	85%	40%	50%
	•	2025	85%	88%	45%	55%
		2026 and after	90%	90%	50%	60%
ETC Leakage	5% of ETC Transactions					
	U.S. customers: 33%					
Video Violation Rate	Border-crossing autos with Mexican license plates: 80%					
viaco violation Rate	Border-crossing autos with Mexican license plates: 60%					
	Auto: 350 days					
Revenue days	Truck: 290 days					
Commercial Vehicle Toll Factor	2.9 (Based on N-1 formula with 3.9 average number of axels for trucks)					



Table 2. Traffic and Revenue – Scenario 1 (SH365)

Vacu	Annual Transactions (Thousands)			Annual Revenue (Thousands Nominal Dollars)		
Year	Auto	Truck	Total	Auto	Truck	Total
2018	1,106	185	1,290	\$571	\$346	\$917
2019	3,276	556	3,832	\$1,814	\$1,099	\$2,911
2020	3,831	677	4,508	\$2,296	\$1,405	\$3,701
2021	4,414	806	5,220	\$2,842	\$1,756	\$4,599
2022	4,828	943	5,771	\$3,296	\$2,153	\$5,449
2023	5,256	1,088	6,344	\$3,798	\$2,583	\$6,381
2024	5,699	1,128	6,827	\$4,349	\$2,781	\$7,129
2025	6,158	1,168	7,326	\$4,953	\$2,988	\$7,941
2026	6,405	1,208	7,614	\$5,400	\$3,205	\$8,605
2027	6,655	1,249	7,903	\$5,735	\$3,397	\$9,132
2028	7,619	1,442	9,061	\$6,497	\$3,885	\$10,383
2029	8,691	1,651	10,343	\$7,385	\$4,432	\$11,815
2030	8,937	1,705	10,641	\$7,806	\$4,695	\$12,502
2031	9,184	1,759	10,943	\$8,226	\$4,959	\$13,185
2032	9,432	1,814	11,246	\$8,662	\$5,236	\$13,898
2033	9,682	1,869	11,552	\$9,113	\$5,525	\$14,640
2034	9,934	1,926	11,860	\$9,584	\$5,828	\$15,412
2035	10,187	1,983	12,170	\$10,074	\$6,146	\$16,218
2036	10,441	2,041	12,482	\$10,581	\$6,477	\$17,058
2037	10,697	2,100	12,797	\$11,110	\$6,822	\$17,933
2038	10,955	2,159	13,114	\$11,659	\$7,185	\$18,842
2039	11,214	2,220	13,433	\$12,227	\$7,561	\$19,790
2040	11,474	2,281	13,755	\$12,819	\$7,957	\$20,777
2041	11,736	2,343	14,079	\$13,434	\$8,370	\$21,804
2042	12,000	2,405	14,405	\$14,070	\$8,801	\$22,871
2043	12,265	2,469	14,733	\$14,733	\$9,250	\$23,983
2044	12,531	2,533	15,064	\$15,418	\$9,719	\$25,138
2045	12,799	2,598	15,397	\$16,132	\$10,207	\$26,339
2046	13,068	2,664	15,732	\$16,870	\$10,718	\$27,587
2047	13,339	2,730	16,070	\$17,638	\$11,251	\$28,888
2048	13,612	2,798	16,409	\$18,432	\$11,805	\$30,237
2049	13,886	2,866	16,752	\$19,255	\$12,384	\$31,639
2050	14,161	2,935	17,096	\$20,112	\$12,988	\$33,097
2051	14,438	3,004	17,442	\$20,997	\$13,616	\$34,610
2052	14,717	3,075	17,791	\$21,915	\$14,269	\$36,183
2053	14,996	3,146	18,142	\$22,866	\$14,952	\$37,819
2054	15,278	3,218	18,496	\$23,852	\$15,662	\$39,515
2055	15,561	3,291	18,852	\$24,874	\$16,403	\$41,274
2056	15,845	3,364	19,210	\$25,933	\$17,172	\$43,102
2057	16,131	3,439	19,570	\$27,028	\$17,974	\$45,001



Table 3. Traffic and Revenue – Scenario 2 (IBTC)

Year	Annual Transactions (Thousands)			Annual Revenue (Thousands Nominal Dollars)		
rear	Auto	Truck	Total	Auto	Truck	Total
2018	0	0	0	\$0	\$0	\$0
2019	395	83	478	\$203	\$164	\$367
2020	1,948	413	2,361	\$1,071	\$858	\$1,929
2021	2,300	504	2,805	\$1,364	\$1,098	\$2,462
2022	2,674	603	3,277	\$1,696	\$1,372	\$3,069
2023	2,942	708	3,649	\$1,973	\$1,683	\$3,656
2024	3,220	819	4,040	\$2,280	\$2,017	\$4,297
2025	3,511	852	4,363	\$2,618	\$2,171	\$4,789
2026	3,812	885	4,697	\$2,991	\$2,333	\$5,324
2027	3,976	918	4,894	\$3,266	\$2,503	\$5,769
2028	4,146	955	5,101	\$3,483	\$2,667	\$6,150
2029	4,294	991	5,286	\$3,709	\$2,841	\$6,550
2030	4,439	1,025	5,465	\$3,940	\$3,013	\$6,954
2031	4,586	1,060	5,646	\$4,171	\$3,187	\$7,358
2032	4,734	1,096	5,830	\$4,411	\$3,370	\$7,781
2033	4,884	1,133	6,017	\$4,662	\$3,563	\$8,224
2034	5,035	1,171	6,206	\$4,923	\$3,766	\$8,689
2035	5,188	1,210	6,398	\$5,195	\$3,980	\$9,175
2036	5,342	1,250	6,592	\$5,479	\$4,205	\$9,684
2037	5,498	1,291	6,789	\$5,774	\$4,442	\$10,216
2038	5,655	1,333	6,988	\$6,081	\$4,691	\$10,772
2039	5,814	1,376	7,190	\$6,401	\$4,953	\$11,354
2040	5,975	1,420	7,395	\$6,735	\$5,228	\$11,962
2041	6,137	1,465	7,602	\$7,081	\$5,516	\$12,598
2042	6,301	1,511	7,811	\$7,442	\$5,819	\$13,262
2043	6,466	1,558	8,024	\$7,818	\$6,137	\$13,955
2044	6,633	1,606	8,238	\$8,208	\$6,471	\$14,679
2045	6,801	1,655	8,456	\$8,614	\$6,821	\$15,435
2046	6,971	1,705	8,676	\$9,036	\$7,187	\$16,223
2047	7,142	1,756	8,898	\$9,475	\$7,571	\$17,046
2048	7,315	1,808	9,123	\$9,931	\$7,974	\$17,904
2049	7,490	1,861	9,351	\$10,405	\$8,395	\$18,800
2050	7,666	1,915	9,581	\$10,897	\$8,836	\$19,733
2051	7,843	1,971	9,814	\$11,409	\$9,297	\$20,706
2052	8,023	2,027	10,049	\$11,940	\$9,780	\$21,720
2053	8,203	2,084	10,287	\$12,492	\$10,285	\$22,777
2054	8,386	2,142	10,528	\$13,066	\$10,812	\$23,878
2055	8,570	2,201	10,771	\$13,661	\$11,364	\$25,025
2056	8,755	2,261	11,016	\$14,278	\$11,940	\$26,219
2057	8,942	2,323	11,265	\$14,920	\$12,543	\$27,462



Table 4. Traffic and Revenue – Scenario 2 (SH365)

Voor	Annual Transactions (Thousands)			Annual Revenue (Thousands Nominal Dollars)		
Year	Auto	Truck	Total	Auto	Truck	Total
2018	1,106	185	1,290	\$571	\$346	\$917
2019	3,276	556	3,832	\$1,814	\$1,099	\$2,911
2020	3,976	736	4,712	\$2,459	\$1,521	\$3,980
2021	4,611	877	5,488	\$3,049	\$1,904	\$4,953
2022	5,056	1,028	6,085	\$3,537	\$2,338	\$5,875
2023	5,520	1,188	6,707	\$4,075	\$2,809	\$6,884
2024	6,000	1,233	7,234	\$4,668	\$3,028	\$7,696
2025	6,498	1,279	7,777	\$5,318	\$3,258	\$8,575
2026	6,761	1,324	8,085	\$5,794	\$3,499	\$9,292
2027	7,024	1,370	8,394	\$6,155	\$3,712	\$9,867
2028	8,031	1,577	9,608	\$6,956	\$4,238	\$11,194
2029	9,167	1,796	10,964	\$7,906	\$4,817	\$12,723
2030	9,459	1,853	11,312	\$8,384	\$5,101	\$13,485
2031	9,751	1,911	11,661	\$8,858	\$5,385	\$14,243
2032	10,043	1,969	12,012	\$9,350	\$5,683	\$15,033
2033	10,337	2,029	12,366	\$9,861	\$5,994	\$15,855
2034	10,631	2,089	12,720	\$10,391	\$6,321	\$16,712
2035	10,926	2,151	13,077	\$10,941	\$6,662	\$17,604
2036	11,222	2,213	13,435	\$11,512	\$7,020	\$18,532
2037	11,519	2,277	13,795	\$12,104	\$7,394	\$19,498
2038	11,816	2,341	14,157	\$12,719	\$7,785	\$20,504
2039	12,115	2,406	14,521	\$13,356	\$8,194	\$21,550
2040	12,414	2,473	14,886	\$14,016	\$8,622	\$22,638
2041	12,713	2,540	15,253	\$14,701	\$9,069	\$23,770
2042	13,014	2,608	15,622	\$15,410	\$9,536	\$24,946
2043	13,316	2,677	15,993	\$16,145	\$10,024	\$26,169
2044	13,618	2,748	16,365	\$16,907	\$10,534	\$27,441
2045	13,921	2,819	16,739	\$17,696	\$11,066	\$28,762
2046	14,224	2,891	17,115	\$18,514	\$11,621	\$30,135
2047	14,529	2,964	17,493	\$19,361	\$12,201	\$31,562
2048	14,834	3,038	17,872	\$20,237	\$12,806	\$33,043
2049	15,140	3,113	18,254	\$21,145	\$13,437	\$34,582
2050	15,447	3,189	18,636	\$22,085	\$14,095	\$36,180
2051	15,755	3,266	19,021	\$23,057	\$14,781	\$37,839
2052	16,064	3,344	19,408	\$24,064	\$15,497	\$39,561
2053	16,373	3,423	19,796	\$25,105	\$16,243	\$41,348
2054	16,683	3,503	20,186	\$26,183	\$17,020	\$43,203
2055	16,994	3,584	20,577	\$27,298	\$17,830	\$45,128
2056	17,305	3,665	20,971	\$28,451	\$18,674	\$47,125
2057	17,618	3,748	21,366	\$29,644	\$19,553	\$49,197



Table 5. Traffic and Revenue – Scenario 2 (SH365 + IBTC)

Year	Annual Transactions (Thousands)			Annual Revenue (Thousands Nominal Dollars)		
rear	Auto	Truck	Total	Auto	Truck	Total
2018	1,106	185	1,290	\$571	\$346	\$917
2019	3,671	639	4,310	\$2,017	\$1,262	\$3,278
2020	5,924	1,148	7,073	\$3,530	\$2,379	\$5,909
2021	6,911	1,382	8,293	\$4,413	\$3,001	\$7,415
2022	7,730	1,631	9,361	\$5,233	\$3,711	\$8,944
2023	8,461	1,895	10,357	\$6,048	\$4,492	\$10,540
2024	9,221	2,052	11,273	\$6,948	\$5,046	\$11,993
2025	10,009	2,131	12,140	\$7,936	\$5,429	\$13,363
2026	10,572	2,209	12,781	\$8,784	\$5,831	\$14,616
2027	11,001	2,287	13,288	\$9,421	\$6,214	\$15,635
2028	12,178	2,531	14,709	\$10,439	\$6,904	\$17,345
2029	13,462	2,788	16,249	\$11,614	\$7,658	\$19,272
2030	13,898	2,878	16,776	\$12,324	\$8,114	\$20,439
2031	14,337	2,971	17,307	\$13,028	\$8,572	\$21,601
2032	14,777	3,065	17,843	\$13,762	\$9,053	\$22,814
2033	15,221	3,162	18,382	\$14,523	\$9,557	\$24,080
2034	15,666	3,260	18,926	\$15,314	\$10,086	\$25,400
2035	16,114	3,361	19,475	\$16,136	\$10,642	\$26,778
2036	16,564	3,463	20,027	\$16,990	\$11,225	\$28,215
2037	17,017	3,567	20,584	\$17,879	\$11,835	\$29,714
2038	17,472	3,674	21,145	\$18,800	\$12,475	\$31,276
2039	17,929	3,782	21,711	\$19,757	\$13,147	\$32,903
2040	18,388	3,892	22,281	\$20,751	\$13,849	\$34,600
2041	18,850	4,005	22,855	\$21,782	\$14,585	\$36,367
2042	19,315	4,119	23,434	\$22,853	\$15,356	\$38,207
2043	19,781	4,235	24,017	\$23,962	\$16,161	\$40,126
2044	20,250	4,354	24,604	\$25,116	\$17,005	\$42,121
2045	20,722	4,474	25,195	\$26,310	\$17,887	\$44,197
2046	21,195	4,596	25,791	\$27,550	\$18,809	\$46,359
2047	21,671	4,720	26,391	\$28,835	\$19,773	\$48,608
2048	22,149	4,846	26,996	\$30,169	\$20,778	\$50,947
2049	22,630	4,974	27,605	\$31,551	\$21,832	\$53,381
2050	23,113	5,105	28,218	\$32,983	\$22,931	\$55,911
2051	23,598	5,237	28,835	\$34,466	\$24,077	\$58,546
2052	24,086	5,371	29,457	\$36,005	\$25,277	\$61,282
2053	24,576	5,507	30,083	\$37,598	\$26,528	\$64,126
2054	25,069	5,645	30,713	\$39,248	\$27,833	\$67,081
2055	25,563	5,785	31,348	\$40,959	\$29,194	\$70,153
2056	26,060	5,927	31,987	\$42,730	\$30,613	\$73,344
2057	26,560	6,071	32,631	\$44,564	\$32,095	\$76,659

