

Traffic Data Collection Program - Summary

The last comprehensive traffic data count survey was carried out in 1999. Since that time, significant developments and expansion of the arterial and collector road network has occurred on Grand Cayman. Consequently, in late October 2015, invitation for tendering, via a Request for Proposal (RFP), from qualified professional engineering firms was advertised in The Cayman Reporter for services to carry out a comprehensive Traffic Data Collection Program for Grand Cayman's arterial and collector roadways. The tender documents were also published on the NRA's website and the North American Procurement Council on their Caribbean Bid Network website. Finally, email notices of the RFP were forward out to various US-based consulting engineering firms soliciting their assistance in promoting the tender with their vendors or for submittal of a proposal.

The scope of services sought entailed the following traffic data collection requirements:

1. Forty (**40**) intersections Turning Movement Counts (TMC) for 7-hour duration; and,
2. One-hundred and fifty two (**152**) Automatic Traffic Recorder (ATR) count locations collected continuously for seven (7) continuous days.

The target completion date for the data collection by TCM and ATR was March 20th 2016. The deadline for the submission of proposals for the services requested was November 10th 2015 addressed to Secretary of the Central Tenders Committee (CTC). A total of three (3) firms submitted proposals for this tender.

Each bid proposal was evaluated based two assessment cores with 60% being for the price of the service provided and 40% for none-price factors. These latter elements were comprised of Experience and qualifications (15 points), Work Plan, Methodology and Schedule (10 points), Major issues, risk and mitigation, guarantee (5 points), Value Added Considerations (5 points), and Innovation (5 points). The evaluation methodology and criteria selection of the bids received was documented in a "Evaluation Summary and Tender Award Recommendation" (ESTAR) report which was prepared by NRA staff and submitted its recommendation to the CTC for their review and endorsement

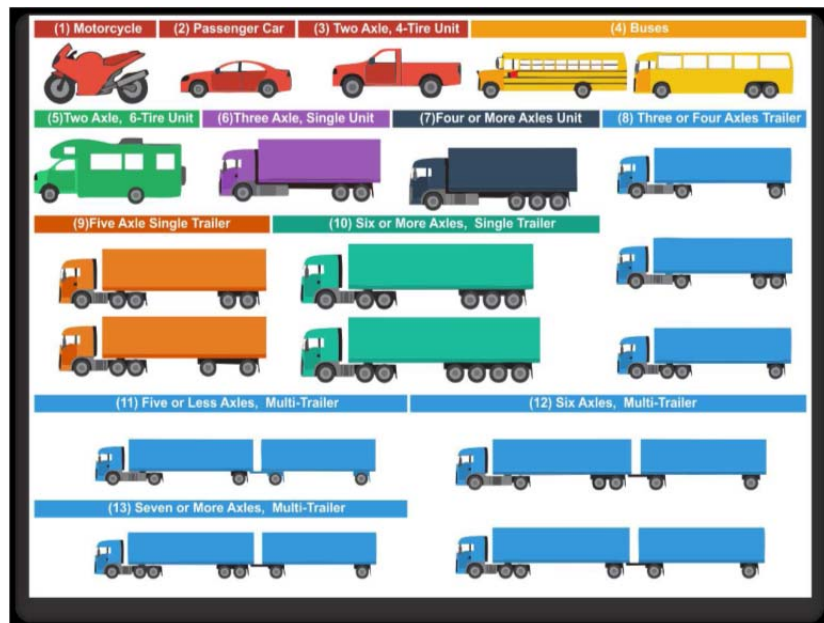
The CTC endorsed staff's recommendation and the contract for the 2016 Traffic Data Collection program was awarded to SEMIC S.A. de C.V. for an all-inclusive contract value of US\$ 171,471.14.

Supplemented by two (2) NRA staff members, SEMIC employed ten (10) of their employees to carry out the contracted traffic data collection exercise. The data collection began in the week of February 2nd and was successfully completed by March 20th 2016. Upon review and assessment of all ATR and TMC locations

with NRA staff, SEMIC advises that data would be collected at an additional intersection TMC and a new roadway could be added to the ATR location at no additional cost to the contract.

A preliminary finding presentation of the data collection program (41 TMC and 153 ATR) was made to NRA staff in early May 2016 – the initial presentation highlighted the following about the collected traffic data:

- TMC locations consisted of seven (7) signalized intersections, eighteen (18) unsignalized intersections and sixteen (16) large and mini roundabout intersections. Number and type of vehicles were collected at each arm/leg of the 41 intersections on Tuesdays, Wednesdays and Thursday only in three (3) time periods: from 7:00 am to 9:00 am, from 11:00 am to 1:00 pm and from 3:00 pm to 6:00 pm – for a total of count duration of seven (7) hours. Counts for the intersection of Fort Street at Harbour Drive were collected for longer period in the afternoon from 2:00 pm to 6:00 in (for a total of eight (8) hours) in order to focus on the high level of pedestrian activity interacting with vehicular traffic on a typical day when cruisehips are in port.
- Six vehicle classifications were employed for the TMC (and ATR) counts, consistent to FHWA Vehicle Classification as illustrated below.



- i. Project Deliverables for the 2016 Traffic Data Collection program by SEMIC were as follows:
 - 41 individual spreadsheet TCM files which summarized turning movements at each legs of the intersections surveyed by vehicle classification at a) 15-minute and b) 1-hour interval.
 - Individual spreadsheet files ATR data which consists of 1) Volume and Classification for 153 count stations and 2) Volume and Speed for 153 count stations for seven (7) days of collection. The data was

provided in 15-min and 1-hour interval for each direction and combined as link volumes.

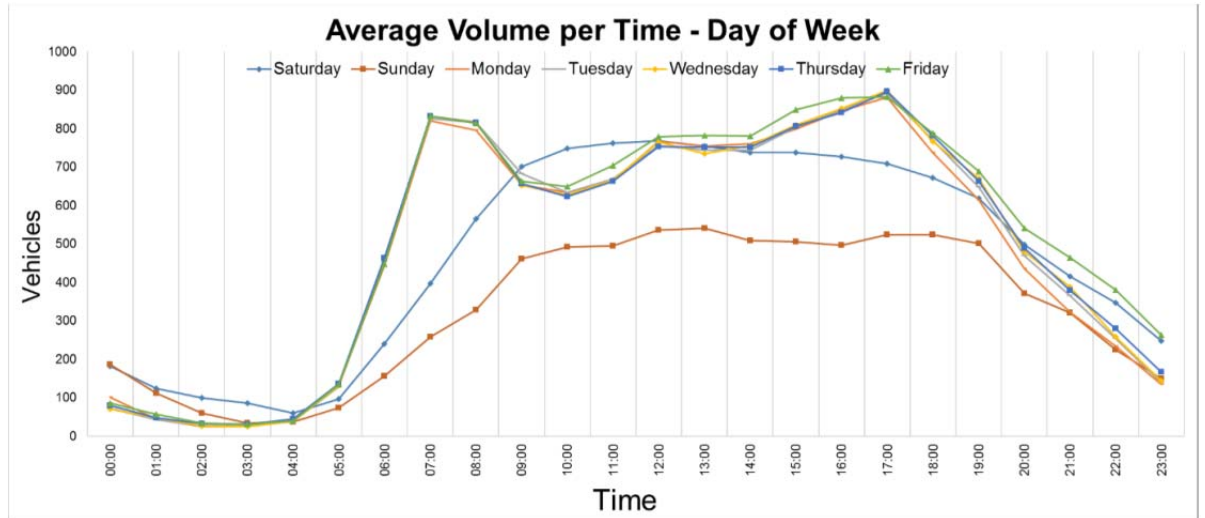
ii. TMC Findings and Summary

- Six (6) of the forty-one (41) intersections had a total vehicle volume within the range of 16,000 - 24,000 vehicles (corresponding to the sum of the three study periods of the day).
- Twenty-eight (28) of the forty-one (41) intersections studied showed a vehicular volume in a range of 8,000 - 16,000 vehicles.
- The seven (7) remaining intersections showed vehicular volumes lower than 8,000 vehicles.
- At the intersection of North Sound Road and Dorcy Drive / Kentsville Drive, the highest percentage of heavy vehicles (Bus + Trucks) was observed during the study period (7.1%, 851 vehicles).
- At the intersection of Smith Road and Crewe Road, the highest flow of vehicles turning right (4,397 vehicles, from east to the north) in the study period was observed.
- At the intersection of Harbour Drive / North Church Street, a total of 3,117 pedestrians were observed during the study period.
- Approximately 50% of the intersections have a Peak Hour Factor of more than 0.95 indicating high traffic volumes and potentially road capacity problem that will need further assessment.
- At four (4) intersections (IDs 10, 20, 28 and 34) the highest value of PHF was observed at around 0.98.
- Approximately 50% of the intersections presented their peak hour condition as being between 07:00 and 09:00 am.

iii. ATR Findings and Summary – Volumes and Classification

- At 23 (15%) of the ATR stations (15% of the total number of stations) the Weekday Average Daily Traffic (WADT) observed was in the range of 20,000 to 37,000 vehicles per day (vpd).
- At 56 ATR stations (37% of the stations), the WADT observed was in the range of 10,000 - 20,000 vpd.
- For the remaining 74 ATR stations (or 48% of the stations), the WADT observed was in the range of 500 to 10,000 vpd.
- The ATR station that presented the highest percentage of trucks (4.4%) was the ID - 309 located on Portland Rd (west of Tortuga Way).
- The station ID - 714 located at Shamrock Road, west of Selkirk Drive registered the highest WADT, which was about 36,300 vpd.
- From all 153 ATR stations, the observed traffic flows across the network are classified as follow: 98.5% are cars, 0.4% buses and 1.1% trucks.
- Taken from SEMIC final report, the chart below shows the average hourly traffic flows observed for each day throughout the network. It

is noted that weekday traffic flows display similar pattern of behavior from day to day and that weekend patterns are different to those from Monday to Friday. The peak hours on weekdays are generally from 7:00-8:00 am for the morning and from 5:00 to 6:00 pm for the afternoon.



iv. ATR Findings and Summary – Speed and Volumes

An analysis of the direction with higher value of average speed at each ATR station, the following information was determined:

- At 56 stations (37% of the total number of stations), the average point speed was in the range of 30 - 55 mph.
- At 72 stations (47% of the total) the average point speed was in the range of 20 - 30 mph.
- At 25 stations (16% of the total), the average point speed was below 20 mph.
- The maximum average point speed 50.91 mph observed is station 114 (ETH south of Willie Farrington Connector). Here, the maximum value of the 85th percentile of the point speed was recorded, this value was of 56.30 mph.
- At 87 (57% of the total) stations, the 85th percentile point speed was in the range 30 - 57 mph.
- At 49 stations (32% of the total), the 85th percentile point speed was in the range 20 - 30 mph.
- At 17 stations (11% of the total), the 85th percentile point speed was below 20 mph.

Sample Turning Movement Count Chart Summary Sheet for a Roundabout

2016 TURNING MOVEMENT COUNTS Chart Summary Sheet

Station ID# **8**

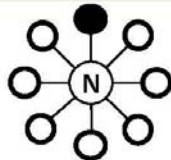
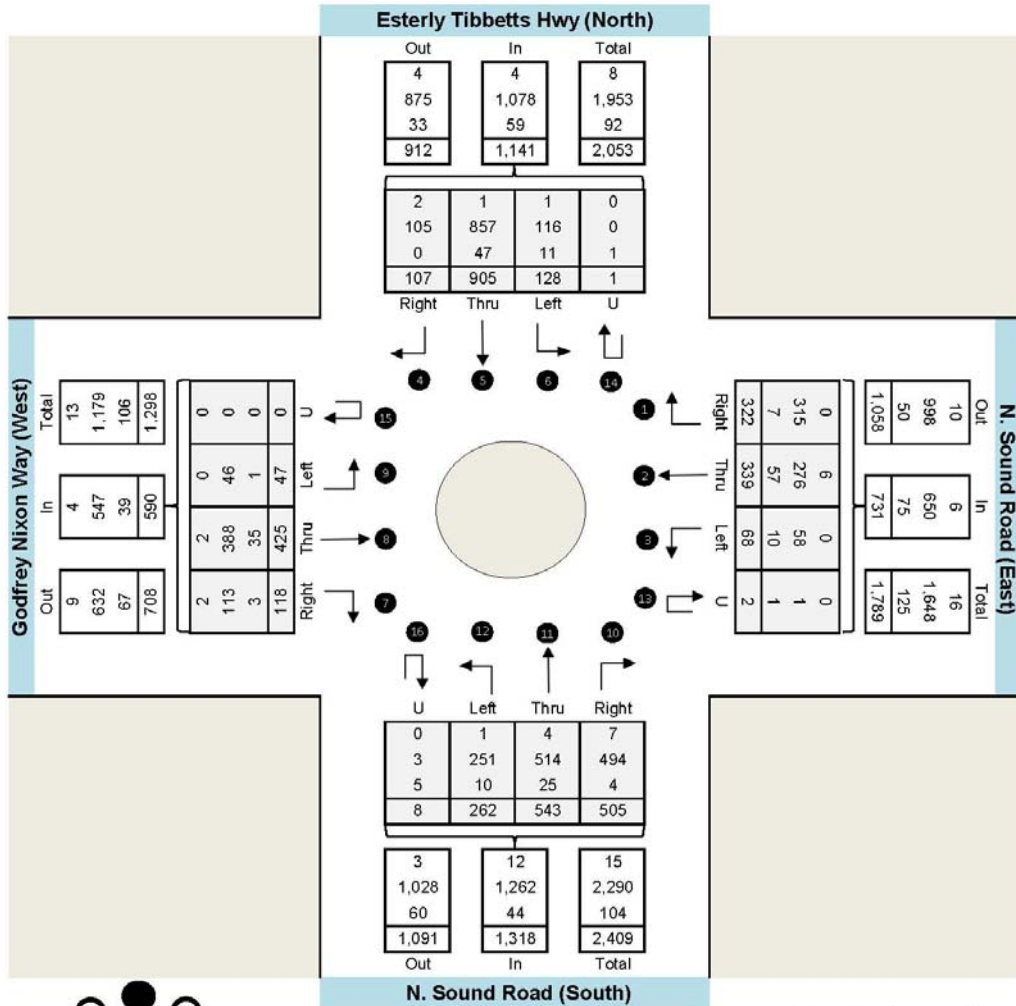
Intersection Street Names: **ETH / North Sound Rd and Godfrey Nixon Way**

Peak Hour: **8:00** to **9:00**

Max 15 min: **979**

Date: **03/09/2016**

PHF: **0.97**



Motorcycle	
Passenger Car	
Heavy Vehicles	
Total	

Sample ATR Summary Report



National Roads Authority 2016 AUTOMATIC TRAFFIC RECORDERS (ATR) 153 LOCATIONS

Geographic Coordinates	Latitude: 19.369029
	Longitude: -81.400517

Street Address: 2481 WEST BAY ROAD

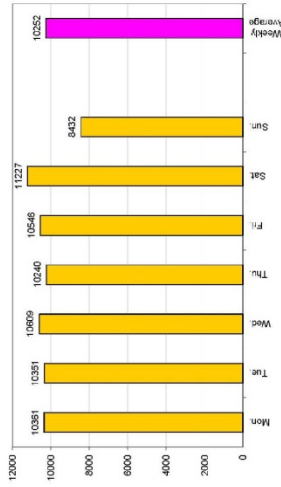
Reference Point: WEST BAY RD. S/O 4-WAY STOP

Site ID: 101

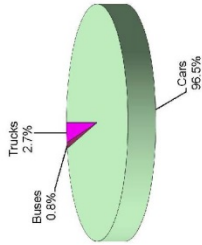
SUMMARY OF VOLUMES BOTH DIRECTIONS

Time	Volume of 7 days				W A D T											
	Cars	Buses	Trucks	TOTAL	Cars	Buses	Trucks	TOTAL	Cars	Buses	Trucks	TOTAL	Cars	Buses	Trucks	TOTAL
0:00	868	6	14	935	127	1	2	130								
1:00	463	0	2	465	47	0	0	71								
2:00	331	0	1	332	47	0	0	47								
3:00	269	0	3	301	43	0	0	43								
4:00	335	0	6	341	46	0	1	49								
5:00	1103	2	3	1008	144	0	0	144								
6:00	2742	6	56	2803	391	1	8	400								
7:00	5326	36	159	5481	748	5	23	776								
8:00	4443	26	114	4633	635	4	16	655								
9:00	3855	30	133	4058	571	4	19	594								
10:00	3915	38	117	4070	569	5	17	591								
11:00	4024	44	147	4215	575	6	21	602								
12:00	4146	41	143	4330	592	6	20	618								
13:00	3485	29	121	4135	570	4	17	591								
14:00	3447	46	126	4118	564	6	18	586								
15:00	4644	57	130	4831	577	8	19	604								
16:00	3891	45	134	4170	571	6	19	596								
17:00	3607	32	98	3735	543	5	14	562								
18:00	3406	45	102	3553	544	6	15	565								
19:00	3120	36	90	3246	538	5	13	554								
20:00	3320	28	93	3441	479	3	13	495								
21:00	2903	18	54	2975	427	3	8	438								
22:00	2322	12	46	2380	332	2	7	341								
23:00	1460	7	30	1497	207	1	4	212								
Day Totals	6058	576	1922	7156	969	62	273	10252								
Percent	85.0%	0.8%	2.7%						DIRECTIONAL FACTOR = 0.561							

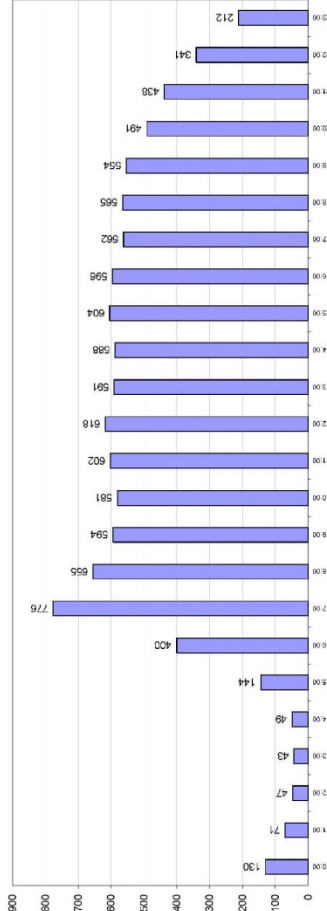
Weekly Daily Volume (Both Directions)



Vehicular Composition (Both Directions)



Average Hourly Traffic (Both Directions)



WEST BOUND												EAST BOUND												BOTH DIRECTIONS											
Car	Bus	Truck	Total	Car	Bus	Truck	Total	Car	Bus	Truck	Total	Car	Bus	Truck	Total	Car	Bus	Truck	Total	Car	Bus	Truck	Total												
3015	305	199	3519	73	9	0	84	3155	3025	250	275	3425	250	275	64	525	250	275	64	525	250	275	525												
93.3%	1.1%	0.6%	95.0%	0.2%	0.1%	0.0%	2.7%	100.0%	67.5%	0.6%	0.7%	68.8%	0.6%	0.7%	0.2%	0.0%	0.0%	0.0%	0.0%	100.0%	96.8%	0.8%	1.7%	100.0%											