



EPC, LLC

2404 Taylor Road
Cayce, SC 29033

(803) 794 7018
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July 13, 2021

Mr. Neil McKenzie
Coleman Company Inc.
17 Park of Commerce, Suite 201
Savannah, Georgia 31405

E-Mail: nmckenzie@cci-sav.com
Phone: 912 200 3041

RE: Intersection Review
Abercorn Street at Sweetwater Station Drive/Pine Grove Drive
Savannah, GA

Dear Mr. McKenzie:

As requested, Encroachment Permit Clearinghouse (EPC) has reviewed the current operations of the four-legged signalized intersection of Abercorn Street (SR 204) at Sweetwater Station Drive/Pine Grove Drive. Additionally, this memo conducts a trip generation analysis for the expansion of the Sweetwater Station neighborhood to define the volume of traffic expected to be generated by the planned expansion of 63 single-family residential units to the sub-division. The following provides a summary of this study's findings.

PROJECT DESCRIPTION

Sweetwater Station is an existing residential sub-division/neighborhood located on the south side of SR 204 between the interchanges with King George Boulevard and Ogeechee Road. Sweetwater Station currently contains 306 single-family units and is provided a single access to/from SR 204 via a signalized intersection. Currently there are 118 approved units that are not yet constructed/occupied which will bring the total unit count to 424 units. No other access drives are available as railway lines exist to both the east and west sides of the neighborhood. **Figure 1** illustrates the general regional location of the project.

The eventual plan is to add 63 lots to the neighborhood along the southeastern side abutting Club House Drive and at the southwestern end of Iron Horse Spur (northwest of railway). **Figure 2** illustrates the over-all Sweetwater Master Plan as well as the proposed area of the 63 units.

The main purpose of this memorandum is to review the existing operations of the SR 204 at Sweetwater Station intersection and determine operational characteristics and if signal timing (soft) improvements would aid in operations.

EXISTING CONDITIONS

A comprehensive field inventory of the project study area was conducted in mid-June 2021 for the SR 204 at Sweetwater Station Drive/Pine Grove Drive intersection. This peak-hour volume data will be used to determine the volume of existing traffic at the study area intersection and operations/levels of service. It should be noted that there has not been a “Covid-19” adjustment to the existing traffic volumes based on recent comparisons of traffic volumes in the area which indicate that traffic volumes are back to pre-Covid levels.

Site-Generated Traffic

For purposes of defining the potential added traffic to the SR 204 at Sweetwater Boulevard intersection, two steps have been completed; first traffic expected to be generated by the 118 approved (not yet constructed) units has been added to the existing traffic. Second, future traffic due to the 63 single family units, was forecasted and also added to the existing plus approved. Trip generation estimates for both the approved 118 units and additional 63 units are presented in **Table 1**.

Table 1
TRIP GENERATION SUMMARY¹
Sweetwater Station

Time Period	118 Single-Family Units Approved	Single-Family 63 Units
Weekday Daily	1,110	600
AM Peak-Hour		
Enter	22	12
Exit	<u>67</u>	<u>38</u>
Total	89	50
PM Peak-Hour		
Enter	75	41
Exit	<u>44</u>	<u>24</u>
Total	119	65

1. ITE *TRIP GENERATION* 10th Ed. LUC #210
 (Single-Family detached).

As shown, the approved 118 units can be expected to generate a total of 89 AM peak-hour trips (22 entering and 67 exiting) and during the PM peak-hour a total of 119 trips (75 entering, 44 exiting). These trips have been assigned to the intersection’s existing traffic volumes based on the current distribution of traffic entering and exiting Sweetwater Station Drive.

The proposed addition of 63 units can be expected to generate 600 daily two-way trips with a total of 50 trips during the AM peak-hour (12 entering, 38 exiting). During the PM peak-hour, 65 trips are expected (41 entering, 24 exiting).

TRAFFIC OPERATIONS

Analysis Methodology

A primary result of capacity analysis is the assignment of Level-of-Service (LOS) to traffic facilities under various traffic flow conditions. The concept of Level-of-Service is defined as a qualitative measure describing operational conditions within a traffic stream and their perception by motorists and/or passengers. A Level-of-Service designation provides an index to the quality of traffic flow in terms of such factors as speed, travel time, freedom to maneuver, traffic interruptions, comfort, convenience, and safety.

Six Levels-of-Service are defined for each type of facility (signalized and unsignalized intersections). They are given letter designations from A to F, with LOS A representing the best operating conditions and LOS F the worst.

Since the Level-of-Service of a traffic facility is a function of the traffic flows placed upon it, such a facility may operate at a wide range of Levels-of-Service depending on the time of day, day of week, or period of a year.

Analysis Results

As part of this TIAS, capacity analyses have been performed at the study area intersection under Existing “plus approved 118 units” conditions and Existing plus approved plus the additional 63 units. The results of these analyses are summarized in **Table 2**.

Table 2
LEVEL-OF-SERVICE SUMMARY¹
Sweetwater Station

	Time Period	EXISTING + 118 Approved Units		EXISTING + 118 Units + 63 Units	
		Delay ²	LOS ³	Delay ²	LOS ³
<u>Signalized Intersection</u>					
SR 204 at Sweetwater Station Drive/ Pine Grove Drive	AM	61.4	E	63.3	E
	PM	29.6	C	33.4	C

1. Calculations completed using 6th Edition of the HCM.

2. Delay in seconds-per-vehicle.

3. LOS = Level-of-Service.

GENERAL NOTES:

For signalized intersections, Delay is representative of the average of all approaches.

As shown in Table 2, Existing plus approved conditions, the signalized intersection of SC 204 at Sweetwater Station Drive operates at a LOS E during the AM peak-hour and a LOS C during the PM peak-hour. Further review of these analyses indicate that the capacity issues are the minor street movements (NB & SB Sweetwater Station Dr/Pine Grove Dr) as well as the major street (EB & WB SC 204) left-turn movements. This combined with the high volume of through traffic on SC 204 (directional peak-hour volumes are greater than 2,600 vehicles) which are being served by two through lanes results in the operations presented.

The second column of values accounts for the addition of the 63 planned units which continue to result in a LOS E during the AM peak-hour (delay=63.3-sec) and a LOS C during the PM peak-hour (delay=33.4 sec.). Based on this a slight increase in delays can be expected at this intersection during both peak hours due to the 63-unit addition.

SUMMARY

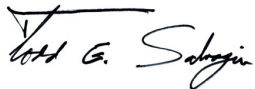
As indicated, the main issue at the SC 204 at Sweetwater Station Drive intersection is the through capacity of SC 204 combined with the high peak-hour volumes. Assuming traffic generated by the 63 single-family units, operations will be slightly impacted during both peak-hours. Traffic generated by the project will not significantly impact the eastbound and westbound through movements of SC 204 but will add traffic to the movements entering and exiting the Sweetwater Station Drive approach.

Review of the operations for the subject intersection do not indicate any "soft" improvements available to improve operations at this time. Operations with the addition of the volumes expected to be generated by the additional 63 units are not expected to significantly change the present service levels as the small increment of added traffic will affect the entering and exiting movements to/from Sweetwater Station Drive. Service levels E and C continue to be expected with the addition of the 63 units.

If operations during the AM peak-hour are to improve, physical improvements would be needed for the intersection however, minor street(s) enhancements will not gain a significant improvement in operations. The existing geometry for the Sweetwater Station Drive approach is more than adequate for the current traffic loadings. The main capacity issue is the existing cross-section of SC 204 being a four-lane divided cross-section that currently serves approximately 45,000 vehicles per-day (based on PM peak-hour counts and TADA stations #051-0321 & 051-0323).

If you have any questions or comments regarding any information contained within this memo, please contact me at (803) 361 3265.

Regards,



Todd E. Salvagin, Principal
EPC, LLC

Attachments



EPC, LLC
COA No. PEF007836
Expires 06-30-2022



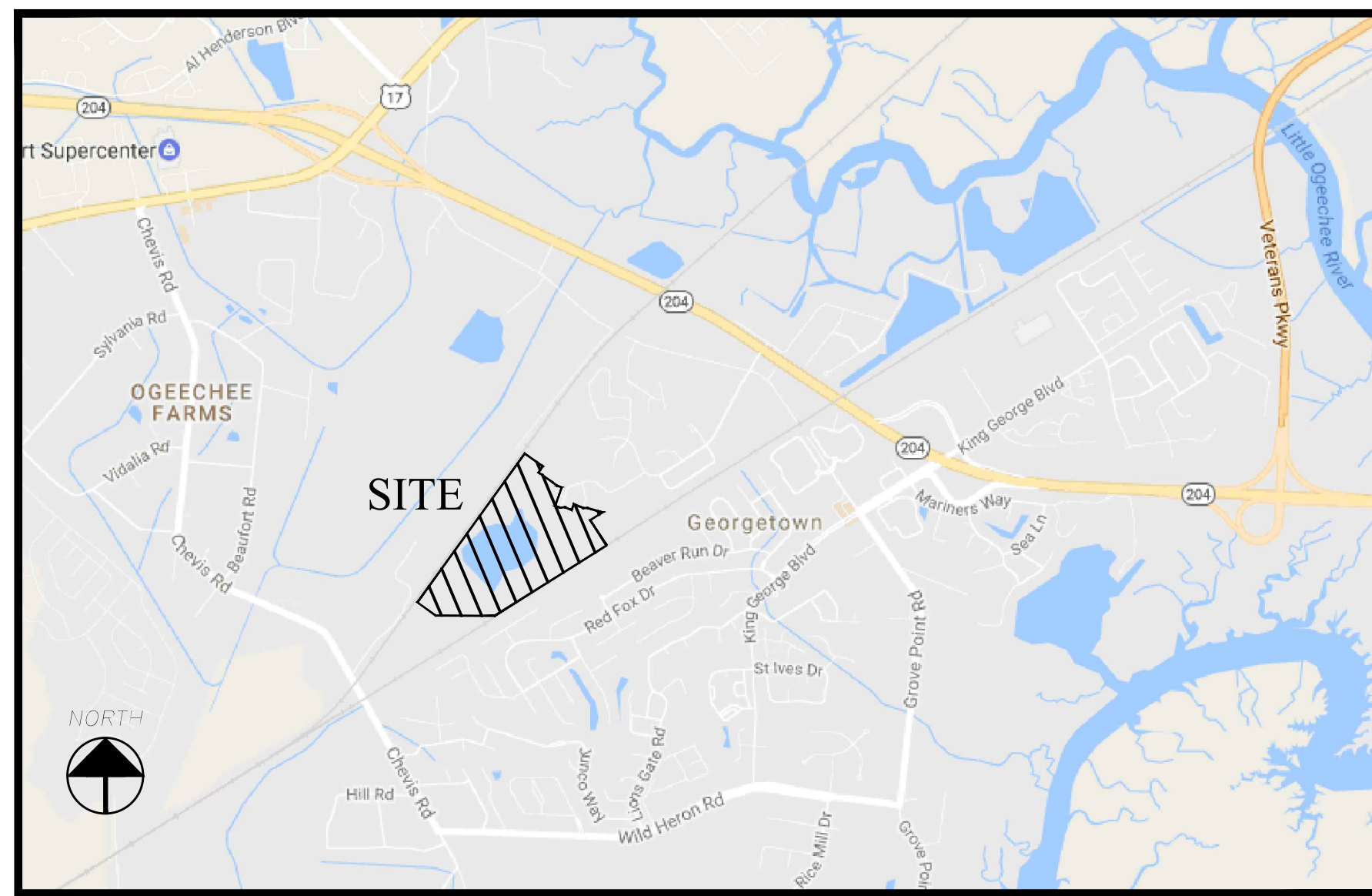
NOT TO SCALE

Figure 1
SITE LOCATION MAP
Sweetwater Station
Savannah, GA



EPC, LLC

VICINITY MAP:



Revised Master Phasing Plan

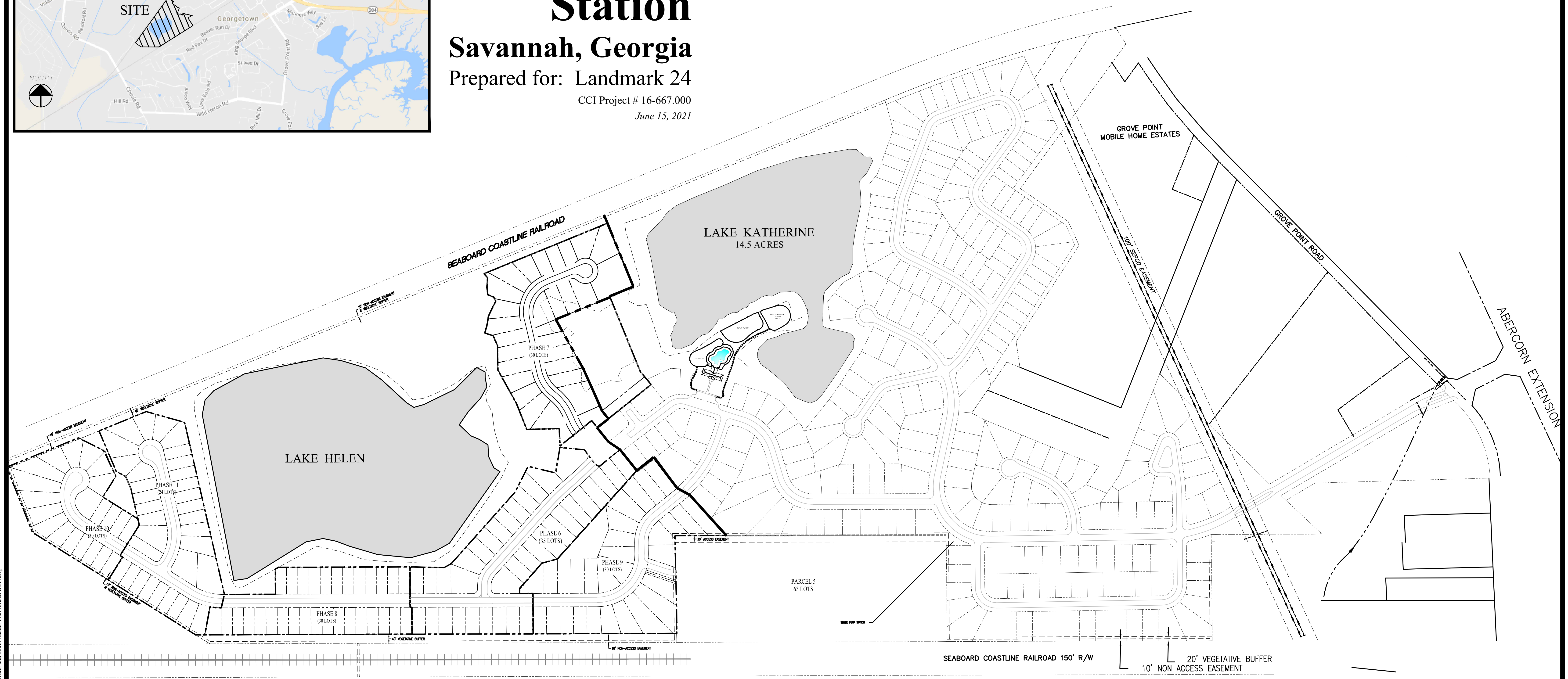
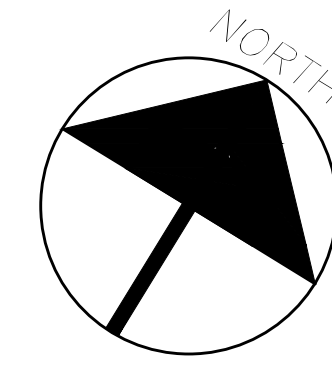
Sweetwater Station

Savannah, Georgia

Prepared for: Landmark 24

CCI Project # 16-667.000

June 15, 2021

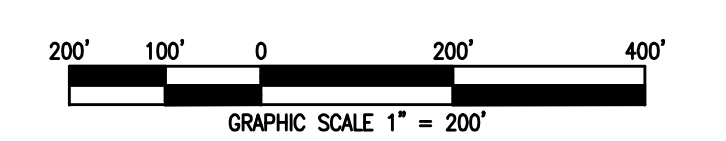


NUMBER OF LOTS:

PHASE 6:	35 - 60 LOTS (CONSTRUCTED)
PHASE 7:	30 - 60 LOTS (CONSTRUCTED)
PHASE 8:	30 - 50 LOTS
PHASE 9:	30 - 60 LOTS (UNDER CONSTRUCTION)
PHASE 10:	24 - 50 LOTS
PHASE 11:	24 - 50 LOTS
PARCEL 5:	63 - 34 LOTS
TOTAL:	243 LOTS

GEORGETOWN SUBDIVISION

COLEMAN COMPANY, INC.
 17 PARK OF COMMERCE | SUITE 201
 SAVANNAH, GA 31405
 (D) 912.200.3041 | (F) 912.200.3056



This is the 2021-2020 plan. mcdkennic
 DRAWING PATH: \\192.168.0.242\2016\16-198-000\DWG\Support\16-667-Water and Sewer Master Plan revised DCP.dwg

COUNT DATA

SHORT COUNTS, LLC

735 Maryland St
Columbia, SC 29201

We can't say we're the Best, but you Can!

File Name : Abercorn St @ Sweetwater Station Dr
Site Code :
Start Date : 06/17/2021
Page No : 1

Groups Printed- Passenger Vehicles - Heavy Vehicles - Buses

Start Time	Sweetwater Station Dr Southbound				Abercorn St Westbound				Sweetwater Station Dr Northbound				Abercorn St Eastbound				Int. Total
	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	
07:00	4	0	4	0	3	315	1	0	14	0	20	0	2	536	7	0	906
07:15	6	1	2	0	5	332	4	0	5	0	17	0	0	669	7	0	1048
07:30	9	0	7	0	14	390	0	0	4	0	33	0	0	662	12	0	1131
07:45	5	0	4	0	13	360	3	0	11	0	20	0	2	658	8	0	1084
Total	24	1	17	0	35	1397	8	0	34	0	90	0	4	2525	34	0	4169
08:00	1	0	3	0	10	315	2	0	9	0	22	0	1	670	16	0	1049
08:15	2	1	2	0	8	312	0	0	5	1	28	0	0	671	4	0	1034
08:30	2	0	2	0	7	336	3	0	10	0	23	0	1	629	10	0	1023
08:45	7	0	1	0	12	338	1	0	13	0	15	0	1	599	10	0	997
Total	12	1	8	0	37	1301	6	0	37	1	88	0	3	2569	40	0	4103
16:00	6	0	0	0	12	673	7	0	11	0	16	0	2	480	19	0	1226
16:15	4	0	2	0	14	686	3	0	17	0	14	0	2	427	6	0	1175
16:30	2	1	3	0	19	721	8	0	7	0	8	0	3	394	10	0	1176
16:45	2	0	2	0	20	672	5	0	15	0	13	0	2	389	14	0	1134
Total	14	1	7	0	65	2752	23	0	50	0	51	0	9	1690	49	0	4711
17:00	2	0	4	0	21	668	3	0	15	0	14	0	3	450	17	0	1197
17:15	2	0	3	0	23	656	7	0	9	0	10	0	4	483	11	0	1208
17:30	3	0	3	0	23	678	8	0	10	0	12	0	2	455	9	0	1203
17:45	4	0	3	0	26	663	3	0	10	0	4	0	3	369	15	0	1100
Total	11	0	13	0	93	2665	21	0	44	0	40	0	12	1757	52	0	4708
Grand Total	61	3	45	0	230	8115	58	0	165	1	269	0	28	8541	175	0	17691
Apprch %	56	2.8	41.3	0	2.7	96.6	0.7	0	37.9	0.2	61.8	0	0.3	97.7	2	0	
Total %	0.3	0	0.3	0	1.3	45.9	0.3	0	0.9	0	1.5	0	0.2	48.3	1	0	
Passenger Vehicles	57	3	44	0	225	7874	57	0	156	1	266	0	27	8312	165	0	17187
% Passenger Vehicles	93.4	100	97.8	0	97.8	97	98.3	0	94.5	100	98.9	0	96.4	97.3	94.3	0	97.2
Heavy Vehicles	4	0	1	0	5	233	1	0	8	0	3	0	1	213	9	0	478
% Heavy Vehicles	6.6	0	2.2	0	2.2	2.9	1.7	0	4.8	0	1.1	0	3.6	2.5	5.1	0	2.7
Buses	0	0	0	0	0	8	0	0	1	0	0	0	0	16	1	0	26
% Buses	0	0	0	0	0	0.1	0	0	0.6	0	0	0	0	0.2	0.6	0	0.1

SHORT COUNTS, LLC

735 Maryland St
Columbia, SC 29201

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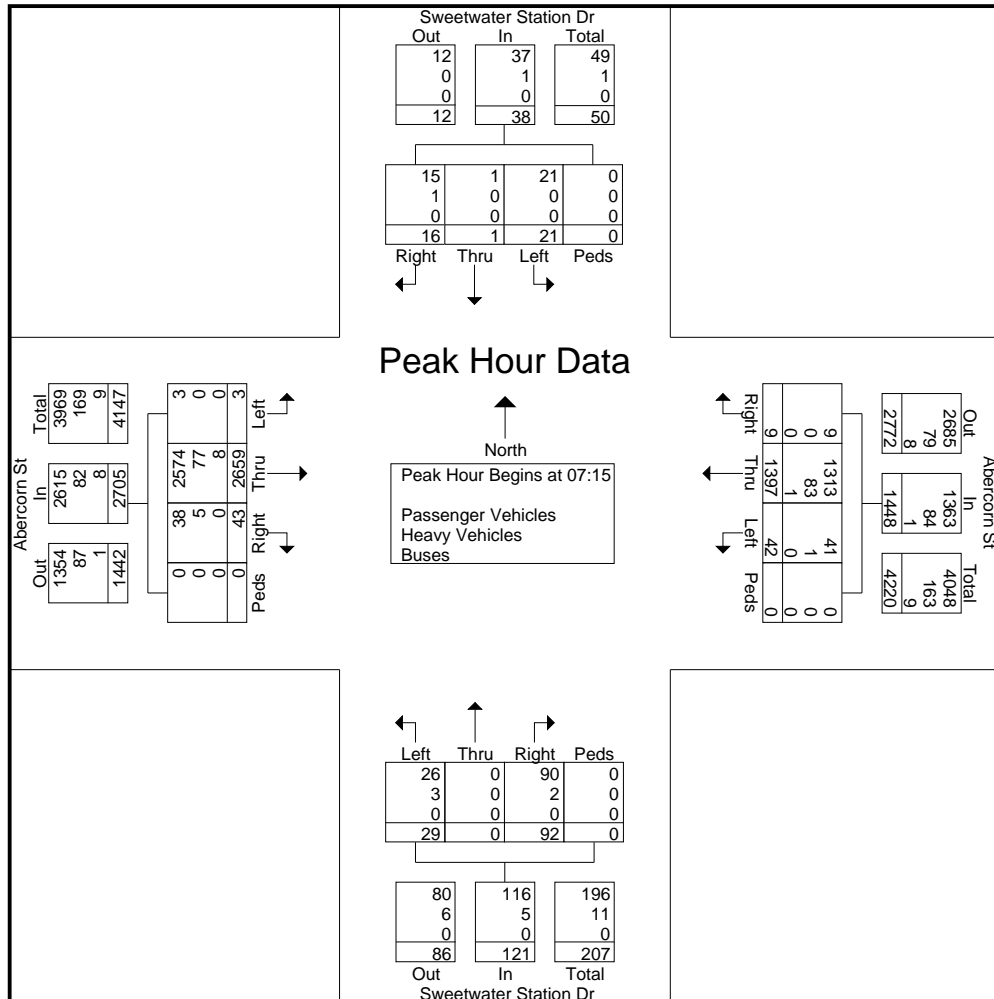
File Name : Abercorn St @ Sweetwater Station Dr

Site Code :

Start Date : 06/17/2021

Page No : 3

Start Time	Sweetwater Station Dr Southbound					Abercorn St Westbound					Sweetwater Station Dr Northbound					Abercorn St Eastbound					Int. 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 08:45 - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 07:15																					
07:15	6	1	2	0	9	5	332	4	0	341	5	0	17	0	22	0	669	7	0	676	1048
07:30	9	0	7	0	16	14	390	0	0	404	4	0	33	0	37	0	662	12	0	674	1131
07:45	5	0	4	0	9	13	360	3	0	376	11	0	20	0	31	2	658	8	0	668	1084
08:00	1	0	3	0	4	10	315	2	0	327	9	0	22	0	31	1	670	16	0	687	1049
Total Volume	21	1	16	0	38	42	1397	9	0	1448	29	0	92	0	121	3	2659	43	0	2705	4312
% App. Total	55.3	2.6	42.1	0		2.9	96.5	0.6	0		24	0	76	0		0.1	98.3	1.6	0		
PHF	.583	.250	.571	.000	.594	.750	.896	.563	.000	.896	.659	.000	.697	.000	.818	.375	.992	.672	.000	.984	.953
Passenger Vehicles	21	1	15	0	37	41	1313									2574					
% Passenger Vehicles	100	100	93.8	0	97.4	97.6	94.0	100	0	94.1	89.7	0	97.8	0	95.9	100	96.8	88.4	0	96.7	95.8
Heavy Vehicles	0	0	1	0	1	1	83	0	0	84	3	0	2	0	5	0	77	5	0	82	172
% Heavy Vehicles	0	0	6.3	0	2.6	2.4	5.9	0	0	5.8	10.3	0	2.2	0	4.1	0	2.9	11.6	0	3.0	4.0
Buses	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	8	0	0	8	9
% Buses	0	0	0	0	0	0	0.1	0	0	0.1	0	0	0	0	0	0	0.3	0	0	0.3	0.2



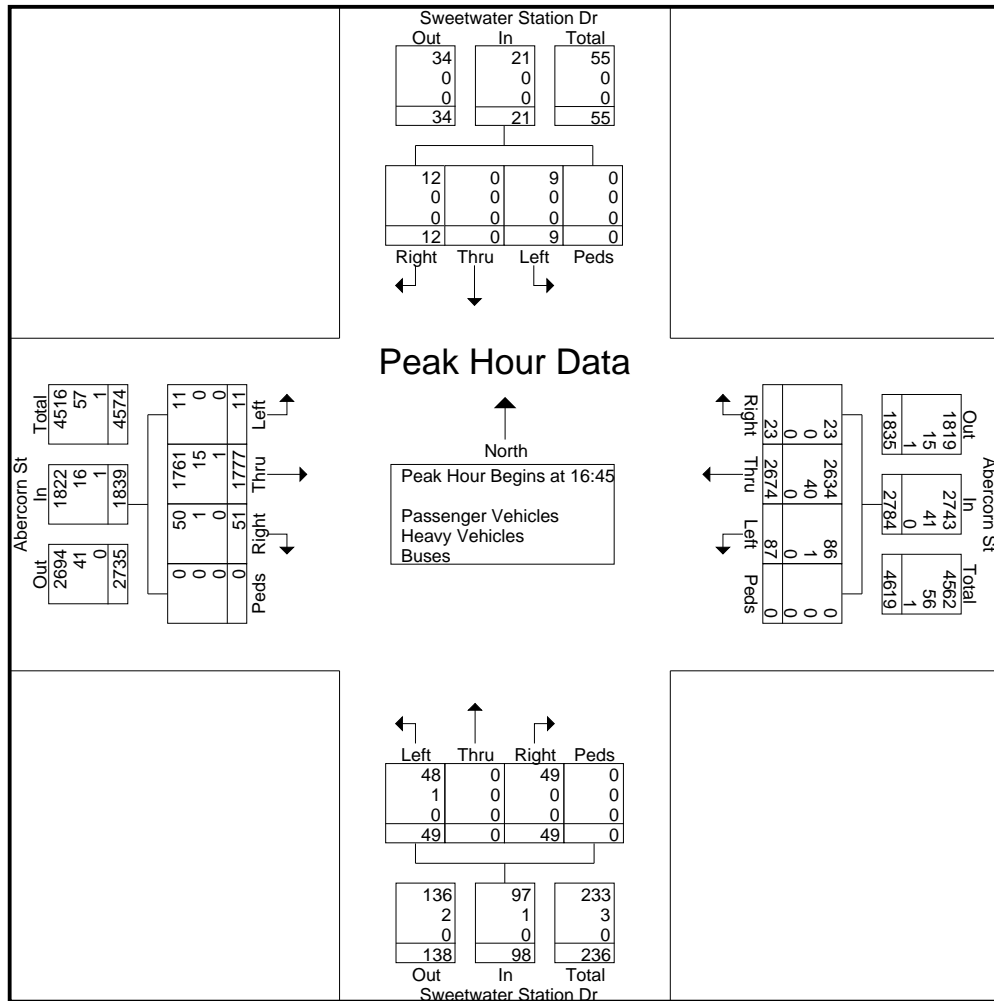
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File Name : Abercorn St @ Sweetwater Station Dr
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Start Date : 06/17/2021
Page No : 4

Start Time	Sweetwater Station Dr Southbound					Abercorn St Westbound					Sweetwater Station Dr Northbound					Abercorn St Eastbound					Int. 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 16:00 to 17:45 - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 16:45																					
16:45	2	0	2	0	4	20	672	5	0	697	15	0	13	0	28	2	389	14	0	405	1134
17:00	2	0	4	0	6	21	668	3	0	692	15	0	14	0	29	3	450	17	0	470	1197
17:15	2	0	3	0	5	23	656	7	0	686	9	0	10	0	19	4	483	11	0	498	1208
17:30	3	0	3	0	6	23	678	8	0	709	10	0	12	0	22	2	455	9	0	466	1203
Total Volume	9	0	12	0	21	87	2674	23	0	2784	49	0	49	0	98	11	1777	51	0	1839	4742
% App. Total	42.9	0	57.1	0		3.1	96	0.8	0		50	0	50	0		0.6	96.6	2.8	0		
PHF	.750	.000	.750	.000	.875	.946	.986	.719	.000	.982	.817	.000	.875	.000	.845	.688	.920	.750	.000	.923	.981
Passenger Vehicles	9	0	12	0	21	86	2634				98.0	0	100	0	99.0	1761					
% Passenger Vehicles	100	0	100	0	100	98.9	98.5	100	0	98.5	98.0	0	100	0	99.0	100	99.1	98.0	0	99.1	98.8
Heavy Vehicles	0	0	0	0	0	1	40	0	0	41	1	0	0	0	1	0	15	1	0	16	58
% Heavy Vehicles	0	0	0	0	0	1.1	1.5	0	0	1.5	2.0	0	0	1.0	0	0.8	2.0	0	0	0.9	1.2
Buses	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	1
% Buses	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.1	0	0	0	0.1	0.0



CAPACITY ANALYSIS

SWEETWATER TIMING REVIEW

AM EXISTING

5: Sweetwater Station Dr/Pine Grove Dr & Abercorn St

07/12/2021



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↘	↑↑	↗	↘	↑↑	↗		↖	↗		↕	
Traffic Volume (veh/h)	3	2659	54	53	1397	9	45	0	143	21	1	16
Future Volume (veh/h)	3	2659	54	53	1397	9	45	0	143	21	1	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		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
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1856	1722	1870	1811	1870	1737	1870	1856	1870	1870	1796
Adj Flow Rate, veh/h	3	2799	57	56	1471	9	47	0	0	22	1	17
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	3	12	2	6	2	11	2	3	2	2	7
Cap, veh/h	7	2467	1021	72	2533	1167	223	0		129	15	79
Arrive On Green	0.00	0.70	0.70	0.04	0.74	0.74	0.12	0.00	0.00	0.12	0.12	0.12
Sat Flow, veh/h	1781	3526	1459	1781	3441	1585	1460	0	1572	768	126	660
Grp Volume(v), veh/h	3	2799	57	56	1471	9	47	0	0	40	0	0
Grp Sat Flow(s),veh/h/ln	1781	1763	1459	1781	1721	1585	1460	0	1572	1554	0	0
Q Serve(g_s), s	0.3	105.0	1.8	4.7	29.6	0.2	0.7	0.0	0.0	0.0	0.0	0.0
Cycle Q Clear(g_c), s	0.3	105.0	1.8	4.7	29.6	0.2	3.7	0.0	0.0	3.0	0.0	0.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	0.55		0.42
Lane Grp Cap(c), veh/h	7	2467	1021	72	2533	1167	223	0		224	0	0
V/C Ratio(X)	0.43	1.13	0.06	0.78	0.58	0.01	0.21	0.00		0.18	0.00	0.00
Avail Cap(c_a), veh/h	83	2467	1021	83	2533	1167	223	0		224	0	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	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	74.5	22.5	7.0	71.3	9.1	5.3	59.7	0.0	0.0	59.4	0.0	0.0
Incr Delay (d2), s/veh	36.8	66.1	0.1	33.0	1.0	0.0	2.1	0.0	0.0	1.7	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	0.2	59.5	0.6	2.8	9.9	0.1	1.8	0.0	0.0	1.5	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	111.3	88.7	7.1	104.3	10.1	5.3	61.8	0.0	0.0	61.2	0.0	0.0
LnGrp LOS	F	F	A	F	B	A	E	A		E	A	A
Approach Vol, veh/h		2859			1536			47	A		40	
Approach Delay, s/veh		87.1			13.5			61.8			61.2	
Approach LOS		F			B			E			E	
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	13.0	112.0		25.0	7.6	117.4		25.0				
Change Period (Y+Rc), s	7.0	7.0		7.0	7.0	7.0		7.0				
Max Green Setting (Gmax), s	7.0	104.0		18.0	7.0	104.0		18.0				
Max Q Clear Time (g_c+I1), s	6.7	107.0		5.0	2.3	31.6		5.7				
Green Ext Time (p_c), s	0.0	0.0		0.1	0.0	16.0		0.1				

Intersection Summary

HCM 6th Ctrl Delay	61.4
HCM 6th LOS	E

Notes

Unsignalized Delay for [NBR] is excluded from calculations of the approach delay and intersection delay.

SWEETWATER TIMING REVIEW

PM EXISTING

8: Sweetwater Station Dr/Pine Grove Dr & Abercorn St

07/12/2021



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↗	↘	↖	↗	↘		↖	↗		↕	
Traffic Volume (veh/h)	11	1777	79	134	2674	23	71	0	71	9	0	12
Future Volume (veh/h)	11	1777	79	134	2674	23	71	0	71	9	0	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		1.00	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
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1841	1870	1870	1856	1870	1870	1870	1856	1870	1870	1856
Adj Flow Rate, veh/h	11	1851	82	140	2785	24	74	0	0	9	0	12
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, %	2	4	2	2	3	2	2	2	3	2	2	3
Cap, veh/h	22	2473	1121	162	2770	1245	140	0		68	12	61
Arrive On Green	0.01	0.71	0.71	0.09	0.79	0.79	0.06	0.00	0.00	0.06	0.00	0.06
Sat Flow, veh/h	1781	3497	1585	1781	3526	1585	1474	0	1572	547	193	987
Grp Volume(v), veh/h	11	1851	82	140	2785	24	74	0	0	21	0	0
Grp Sat Flow(s),veh/h/ln	1781	1749	1585	1781	1763	1585	1474	0	1572	1727	0	0
Q Serve(g_s), s	0.9	49.4	2.4	11.6	117.9	0.5	5.6	0.0	0.0	0.0	0.0	0.0
Cycle Q Clear(g_c), s	0.9	49.4	2.4	11.6	117.9	0.5	7.3	0.0	0.0	1.8	0.0	0.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	0.43		0.57
Lane Grp Cap(c), veh/h	22	2473	1121	162	2770	1245	140	0		141	0	0
V/C Ratio(X)	0.50	0.75	0.07	0.86	1.01	0.02	0.53	0.00		0.15	0.00	0.00
Avail Cap(c_a), veh/h	59	2473	1121	178	2770	1245	221	0		229	0	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	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	73.6	13.7	6.8	67.3	16.1	3.5	69.2	0.0	0.0	66.8	0.0	0.0
Incr Delay (d2), s/veh	16.8	2.1	0.1	31.2	18.4	0.0	3.1	0.0	0.0	0.5	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	0.5	17.7	0.8	6.6	41.9	0.1	2.9	0.0	0.0	0.8	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	90.5	15.8	6.9	98.5	34.5	3.5	72.4	0.0	0.0	67.3	0.0	0.0
LnGrp LOS	F	B	A	F	F	A	E	A		E	A	A
Approach Vol, veh/h		1944			2949			74	A		21	
Approach Delay, s/veh		15.8			37.3			72.4			67.3	
Approach LOS		B			D			E			E	
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	20.6	113.1		16.3	8.8	124.9		16.3				
Change Period (Y+Rc), s	7.0	7.0		7.0	7.0	7.0		7.0				
Max Green Setting (Gmax), s	15.0	96.0		18.0	5.0	106.0		18.0				
Max Q Clear Time (g_c+I1), s	13.6	51.4		3.8	2.9	119.9		9.3				
Green Ext Time (p_c), s	0.0	22.3		0.0	0.0	0.0		0.2				

Intersection Summary

HCM 6th Ctrl Delay	29.6
HCM 6th LOS	C

Notes

Unsignalized Delay for [NBR] is excluded from calculations of the approach delay and intersection delay.

SWEETWATER TIMING REVIEW

AM EXISTING PLUS 118 PLUS 63

5: Sweetwater Station Dr/Pine Grove Dr & Abercorn St

07/13/2021



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↗	↘	↖	↗	↘	↖	↗	↘	↖	↗	↘
Traffic Volume (veh/h)	3	2659	60	59	1397	9	54	0	172	21	1	16
Future Volume (veh/h)	3	2659	60	59	1397	9	54	0	172	21	1	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		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
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1856	1722	1870	1811	1870	1737	1870	1856	1870	1870	1796
Adj Flow Rate, veh/h	3	2799	63	62	1471	9	57	0	0	22	1	17
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	3	12	2	6	2	11	2	3	2	2	7
Cap, veh/h	7	2453	1016	79	2533	1167	223	0		131	15	80
Arrive On Green	0.00	0.70	0.70	0.04	0.74	0.74	0.12	0.00	0.00	0.12	0.12	0.12
Sat Flow, veh/h	1781	3526	1459	1781	3441	1585	1460	0	1572	778	126	668
Grp Volume(v), veh/h	3	2799	63	62	1471	9	57	0	0	40	0	0
Grp Sat Flow(s),veh/h/ln	1781	1763	1459	1781	1721	1585	1460	0	1572	1572	0	0
Q Serve(g_s), s	0.3	104.4	2.1	5.2	29.6	0.2	1.7	0.0	0.0	0.0	0.0	0.0
Cycle Q Clear(g_c), s	0.3	104.4	2.1	5.2	29.6	0.2	4.7	0.0	0.0	3.0	0.0	0.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	0.55		0.42
Lane Grp Cap(c), veh/h	7	2453	1016	79	2533	1167	223	0		226	0	0
V/C Ratio(X)	0.43	1.14	0.06	0.79	0.58	0.01	0.26	0.00		0.18	0.00	0.00
Avail Cap(c_a), veh/h	83	2453	1016	83	2533	1167	223	0		226	0	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	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	74.5	22.8	7.3	71.0	9.1	5.3	60.1	0.0	0.0	59.4	0.0	0.0
Incr Delay (d2), s/veh	36.8	68.9	0.1	36.8	1.0	0.0	2.7	0.0	0.0	1.7	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	0.2	60.3	0.6	3.1	9.9	0.1	2.2	0.0	0.0	1.5	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	111.3	91.7	7.4	107.8	10.1	5.3	62.8	0.0	0.0	61.1	0.0	0.0
LnGrp LOS	F	F	A	F	B	A	E	A		E	A	A
Approach Vol, veh/h		2865			1542			57	A		40	
Approach Delay, s/veh		89.9			14.0			62.8			61.1	
Approach LOS		F			B			E			E	
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	13.6	111.4		25.0	7.6	117.4		25.0				
Change Period (Y+Rc), s	7.0	7.0		7.0	7.0	7.0		7.0				
Max Green Setting (Gmax), s	7.0	104.0		18.0	7.0	104.0		18.0				
Max Q Clear Time (g_c+I1), s	7.2	106.4		5.0	2.3	31.6		6.7				
Green Ext Time (p_c), s	0.0	0.0		0.1	0.0	16.0		0.1				

Intersection Summary

HCM 6th Ctrl Delay	63.3
HCM 6th LOS	E

Notes

Unsignalized Delay for [NBR] is excluded from calculations of the approach delay and intersection delay.

SWEETWATER TIMING REVIEW

PM EXISTING PLUS 118 PLUS 63

8: Sweetwater Station Dr/Pine Grove Dr & Abercorn St

07/13/2021



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↗	↘	↖	↗	↘	↖	↗	↘		↕	↘
Traffic Volume (veh/h)	11	1777	94	160	2674	23	83	0	83	9	0	12
Future Volume (veh/h)	11	1777	94	160	2674	23	83	0	83	9	0	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		1.00	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
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1841	1870	1870	1856	1870	1870	1870	1856	1870	1870	1856
Adj Flow Rate, veh/h	11	1851	98	167	2785	24	86	0	0	9	0	12
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, %	2	4	2	2	3	2	2	2	3	2	2	3
Cap, veh/h	22	2410	1092	178	2738	1231	152	0		75	12	70
Arrive On Green	0.01	0.69	0.69	0.10	0.78	0.78	0.07	0.00	0.00	0.07	0.00	0.07
Sat Flow, veh/h	1781	3497	1585	1781	3526	1585	1464	0	1572	572	173	993
Grp Volume(v), veh/h	11	1851	98	167	2785	24	86	0	0	21	0	0
Grp Sat Flow(s),veh/h/ln	1781	1749	1585	1781	1763	1585	1464	0	1572	1737	0	0
Q Serve(g_s), s	0.9	52.4	3.1	14.0	116.5	0.5	6.9	0.0	0.0	0.0	0.0	0.0
Cycle Q Clear(g_c), s	0.9	52.4	3.1	14.0	116.5	0.5	8.6	0.0	0.0	1.7	0.0	0.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	0.43		0.57
Lane Grp Cap(c), veh/h	22	2410	1092	178	2738	1231	152	0		158	0	0
V/C Ratio(X)	0.50	0.77	0.09	0.94	1.02	0.02	0.57	0.00		0.13	0.00	0.00
Avail Cap(c_a), veh/h	59	2410	1092	178	2738	1231	221	0		232	0	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	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	73.6	15.4	7.7	67.0	16.7	3.8	68.5	0.0	0.0	65.5	0.0	0.0
Incr Delay (d2), s/veh	16.8	2.4	0.2	49.5	21.6	0.0	3.3	0.0	0.0	0.4	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	0.5	19.3	1.0	8.7	43.4	0.1	3.4	0.0	0.0	0.8	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	90.5	17.8	7.9	116.6	38.3	3.8	71.8	0.0	0.0	65.9	0.0	0.0
LnGrp LOS	F	B	A	F	F	A	E	A		E	A	A
Approach Vol, veh/h		1960			2976			86	A		21	
Approach Delay, s/veh		17.7			42.4			71.8			65.9	
Approach LOS		B			D			E			E	
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	22.0	110.3		17.7	8.8	123.5		17.7				
Change Period (Y+Rc), s	7.0	7.0		7.0	7.0	7.0		7.0				
Max Green Setting (Gmax), s	15.0	96.0		18.0	5.0	106.0		18.0				
Max Q Clear Time (g_c+I1), s	16.0	54.4		3.7	2.9	118.5		10.6				
Green Ext Time (p_c), s	0.0	21.6		0.0	0.0	0.0		0.2				

Intersection Summary

HCM 6th Ctrl Delay	33.4
HCM 6th LOS	C

Notes

Unsignalized Delay for [NBR] is excluded from calculations of the approach delay and intersection delay.