



Cannon & Cannon, Inc.
Consulting Engineers • Field Surveyors

February 19, 2008

Mr. Nathan Benditz
Knoxville-Knox County Metropolitan Planning Commission
City/County Building, Suite 403
400 Main Street
Knoxville, Tennessee 37902

**RE: Traffic Evaluation for Proposed Walker Crossing Apartment Expansion
Walker Springs Lane at Gallaher View Road, City of Knoxville**

Dear Mr. Benditz:

This correspondence provides a summary of a traffic evaluation that was conducted for the proposed Walker Crossing Apartment expansion on Walker Springs Lane and adjacent to Gallaher View Road. Of particular interest in the study is whether or not to provide direct driveway access from the proposed development onto Gallaher View Road. The existing portion of the apartment development has only one access located on Walker Springs Lane.

The proposed expansion consists of an additional 52 units bringing the total number of multi-family units within the Walker Crossing Apartment development to 404 units. Access to the public street system from the development is currently provided by an existing intersection on Walker Springs Lane approximately 1,000 feet east of Gallaher View Road. The purpose of this study was the evaluation of the traffic operational and safety impact of the existing intersection of Gallaher View Road and Walker Springs Lane/Sam's Wholesale driveway. As previously mentioned, the study will evaluate the intersection under two scenarios, with and without a direct driveway access onto Gallaher View Road.

Existing and Background Conditions

Walker Springs Lane is a two-lane roadway that is classified by the MPC as a local street. The roadway pavement is approximately 24 feet wide with two 12 foot travel lanes and minimal shoulder widths. Gallaher View Road is a five-lane roadway that is classified by the MPC as a Minor Arterial. The posted speed limit on Gallaher View Road is 40 mph. A traffic count was taken by TDOT in year 2007, with a resulting average daily traffic (ADT) of 9,385.

Intersection turning movement counts were conducted during the AM, PM, and Saturday peak hours at the intersection of Gallaher View Road and Walker Springs Lane. The resulting peak hour volumes are shown on FIGURE 1. Background traffic volumes were developed for the Year 2010 by using the 2008 Existing Traffic Volumes and applying a 3.0% annual growth rate. The resulting background peak hour volumes are also shown on FIGURE 1. Unsignalized capacity analyses for the intersection of Gallaher View Road and Walker Springs Lane were conducted for each of the peak hours using the existing and background traffic volumes. The resulting levels-of-service (LOS) indicate the intersection is currently operating, and will continue to operate under background conditions, at LOS "F" and "E" for the westbound (Walker Springs Lane) and eastbound (Sam's) side street left turns, respectively.

Future Conditions

AM, PM, and Saturday peak hour traffic volume estimates for the proposed intersection were also developed for the anticipated full build-out of the apartment expansion. For the newly generated AM and PM peak traffic, local Knoxville-specific apartment trip generation data was used to estimate the newly generated trips anticipated from the 52 apartments for the weekday and AM and PM peak hours. The procedures of *Trip Generation, Seventh Edition*, published by the Institute of Transportation Engineers were used to estimate Saturday peak generated traffic. The trip generation for an average weekday resulted in 530 new trips from the proposed expansion with 265 entering and 265 exiting during the day. The AM peak hour of adjacent street traffic between 7 and 9 AM resulted in 29 new trips with 6 trips entering and 23 trips exiting the development. The PM peak hour of adjacent street traffic between 4 and 6 PM resulted in 45 new trips with 25 trips entering and 20 trips exiting the development. The Saturday peak hour of the generator resulted in 27 new trips with 12 trips entering and 15 trips exiting. Peak hour trip generation for the proposed 52 unit expansion is summarized in TABLE 1.

	AM Peak (trips/hour)	PM Peak (trips/hour)	Saturday Peak (trips/hour)
Entering Trips	6	25	12
Exiting Trips	23	20	15
TOTAL TRIPS	29	45	27

The generated trips were distributed upon the existing roadway network based on existing distribution patterns obtained from the intersection turning movement counts. FIGURE 2 illustrates the resulting trip generation and trip distribution for both proposed access scenarios (with and without the Gallaher View driveway). For the scenario with the proposed access onto Gallaher View Road an assumption was made that 25% of the traffic from the existing 352 apartment units would utilize the new driveway onto Gallaher View Road. The redistribution of the existing traffic is reflected in the assignments illustrated on the bottom sketch on FIGURE 2. FIGURE 3 shows the combined year 2010 traffic volumes reflecting the existing traffic, background traffic, and the newly generated traffic from the proposed expansion.

Evaluation

Unsignalized intersection capacity analyses were again conducted for the intersection of Gallaher View Road and Walker Springs Lane / Sam's Wholesale driveway utilizing the volumes shown in FIGURE 3. Analyses were conducted for both driveway scenarios. A summary of the capacity analyses are shown in TABLE 2.

Without Secondary Access

This first scenario assumes all existing traffic, as well as all newly generated traffic from the 52-unit expansion will utilize the existing development access onto Walker Springs Lane. The analyses show that the intersection will operate at levels-of-service of no worse than "C" during the weekday AM peak hour

TABLE 2 Capacity Analysis Summary									
	AM Peak			PM Peak			Saturday Peak		
	LOS	Delay (sec)	v/c	LOS	Delay (sec)	v/c	LOS	Delay (sec)	v/c
Gallaher View Rd at Walker Springs Ln									
2008 Existing Conditions									
Northbound Left	B	10.5	0.05	B	10.3	0.23	B	11.4	0.38
Southbound Left	A	8.4	0.04	B	11.1	0.06	A	8.6	0.02
Eastbound Left	C	22.6	0.01	D	34.0	0.13	E	37.4	0.17
Westbound	C	18.7	0.34	F	135.7	0.98	F	80.9	0.69
2010 Background Conditions									
Northbound Left	B	10.9	0.05	B	10.7	0.25	B	12.1	0.41
Southbound Left	A	8.4	0.04	B	11.5	0.07	A	8.7	0.02
Eastbound Left	C	24.6	0.02	E	40.2	0.16	E	46.1	0.22
Westbound	C	20.7	0.38	F	228.0	1.22	F	250.8	1.18
Conditions without Secondary Driveway									
Northbound Left	B	10.9	0.05	B	10.7	0.25	B	12.1	0.41
Southbound Left	A	8.5	0.05	B	11.7	0.08	A	8.8	0.03
Eastbound Left	C	24.8	0.02	E	44.0	0.18	E	49.7	0.25
Westbound	C	22.7	0.45	F	324.7	1.47	F	420.2	1.58
Conditions with Secondary Driveway									
Northbound Left	B	11.1	0.06	B	10.9	0.26	B	12.3	0.42
Southbound Left	A	8.4	0.04	B	11.4	0.05	A	8.7	0.02
Eastbound Left	D	25.3	0.02	E	37.1	0.15	E	46.1	0.25
Westbound	C	19.1	0.29	F	145.8	0.95	F	167.6	0.88
Gallaher View Rd at Proposed Driveway									
2010 Combined Conditions									
Southbound Left	A	8.2	0.00	B	11.3	0.03	A	8.8	0.01
Westbound	B	12.9	0.12	C	19.9	0.17	B	12.8	0.09

and will operate at a level of service "F" for certain turning movements during the weekday PM and Saturday peak hours. Specifically, the westbound left turn (Walker Springs Lane) is anticipated to operate at LOS "F" during both the weekday PM peak hour and the Saturday peak hour. Estimated delays for the westbound left turn are in excess of 5 minutes for both peak hours.

With Secondary Access

The second scenario assumes the installation of a site driveway from the new expansion to Gallaher View Road. It is assumed that all newly generated traffic from the 52-unit expansion will utilize this new driveway. In addition, an assumption was made that 25% of the existing apartment traffic will divert to this new driveway. The analyses show that the westbound left turn (Walker Springs Lane) is anticipated to continue to operate at LOS "F" during both the weekday PM peak hour and the Saturday peak hour. However, with the addition of the second site access the estimated delays for the westbound left turn are reduced by approximately 40%.

Signal Warrant Analysis


The intersection of Gallaher View Road and Walker Springs Lane was evaluated for potential signalization under the 2010 Combined conditions without the secondary access. Under these conditions the intersection is very close to meeting the Peak Hour warrant and with additional traffic data may very well meet the Four Hour warrant. However, due to the close proximity (less than 500 feet) of the existing signal at the intersection of Gallaher View Road and I-40 Westbound Off-Ramp additional study should be conducted.

Conclusions

The intersection of Gallaher View Road and Walker Springs Lane / Sam's Wholesale driveway is currently experiencing considerable side-street delay and poor levels-of-service. With the 52-unit expansion of the Walker Crossing Apartment development located on Walker Springs Lane, and assuming no additional driveway access points, the intersection will continue to operate at poor levels-of-service and will experience more extreme peak hour delays in excess of five minutes. The addition of a second Walker Crossing driveway, to be located on Gallaher View Road north of Walker Springs Lane, will improve the operating conditions and reduce the side street delays at the study intersection to near pre-expansion conditions.

In summary, based on the analyses of this study, the inclusion of a site access driveway onto Gallaher View Road from the Walker Crossing Apartment proposed expansion will mitigate the impact of the additional apartments. If you should have any questions, comments, or require additional information, please do not hesitate to give us a call.

Sincerely,

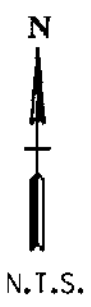


Alan L. Childers, P.E.
Vice President

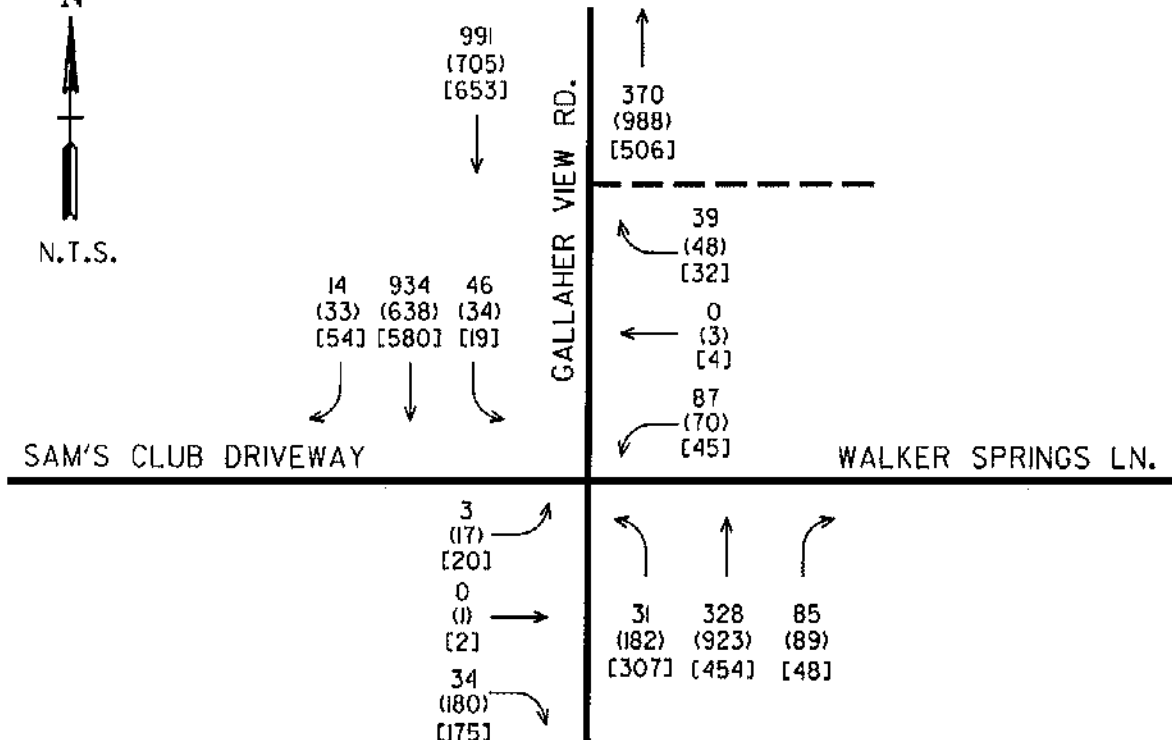
Attachments: Figures
Appendix

cc: Mr. Durant Bell
Mr. Brad Salsbury

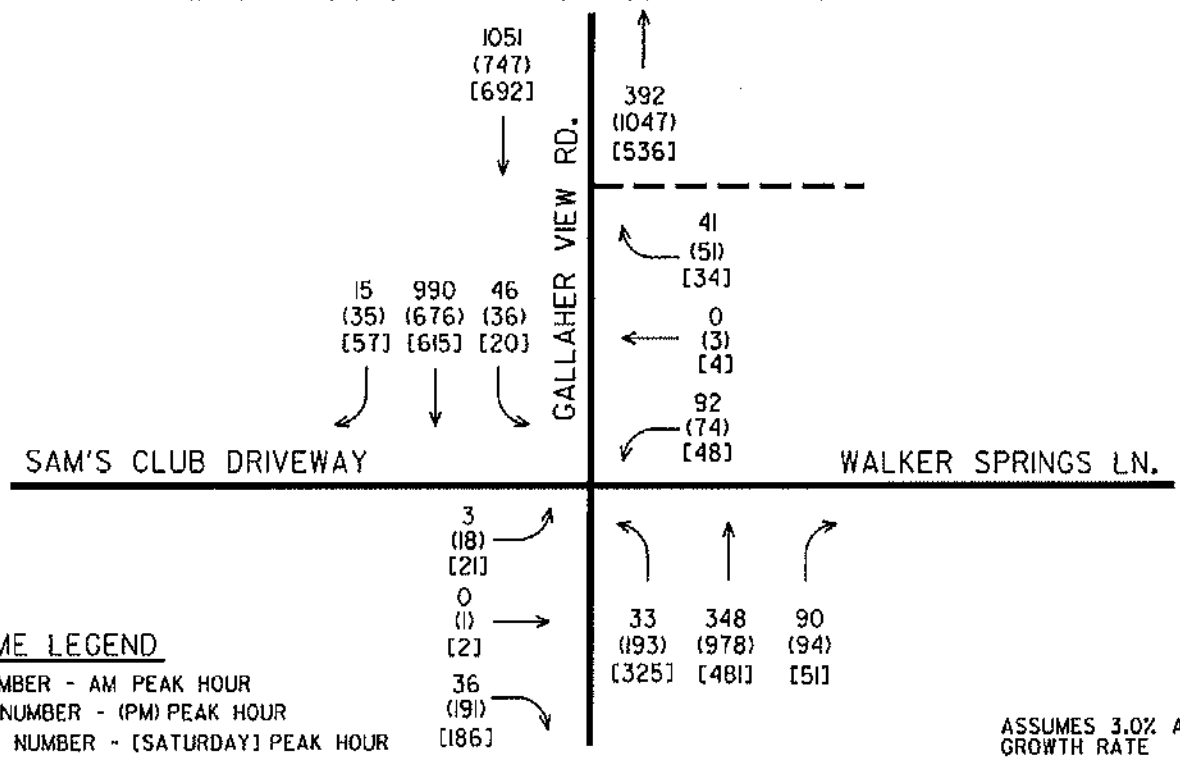




EXISTING TRAFFIC VOLUMES



BACKGROUND TRAFFIC VOLUMES (2010)



VOLUME LEGEND

TOP NUMBER - AM PEAK HOUR
 MIDDLE NUMBER - (PM) PEAK HOUR
 BOTTOM NUMBER - (SATURDAY) PEAK HOUR

ASSUMES 3.0% ANNUAL GROWTH RATE



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FIGURE 1
 EXISTING TRAFFIC VOLUMES
 BACKGROUND TRAFFIC VOLUMES (2010)

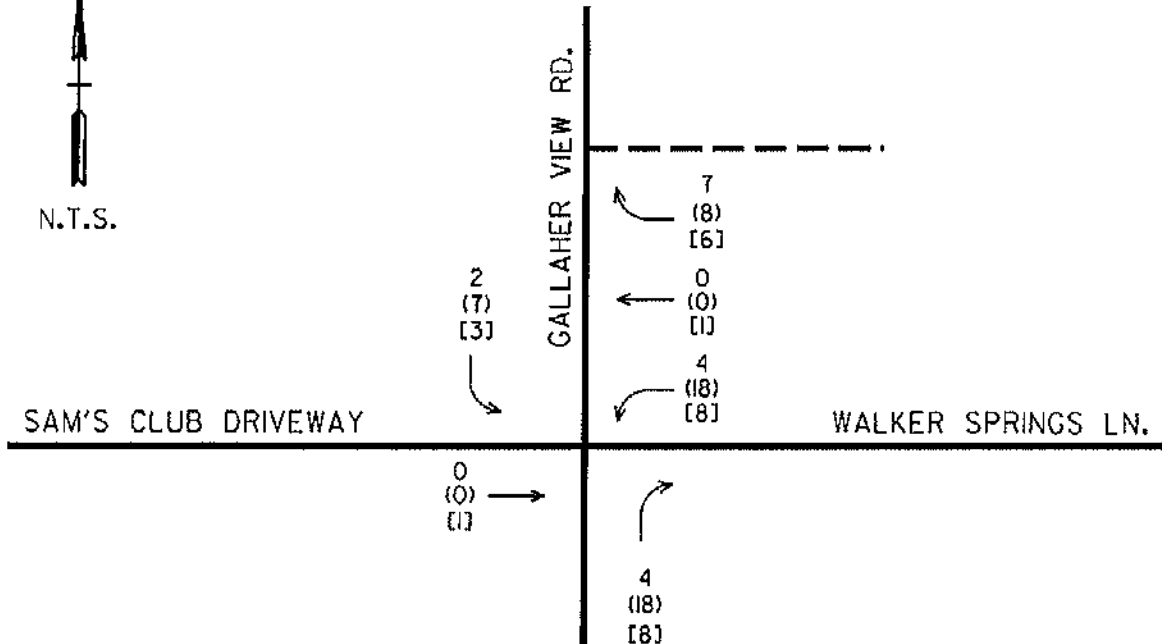
WALKER CROSSING APARTMENTS
 TRAFFIC IMPACT STUDY

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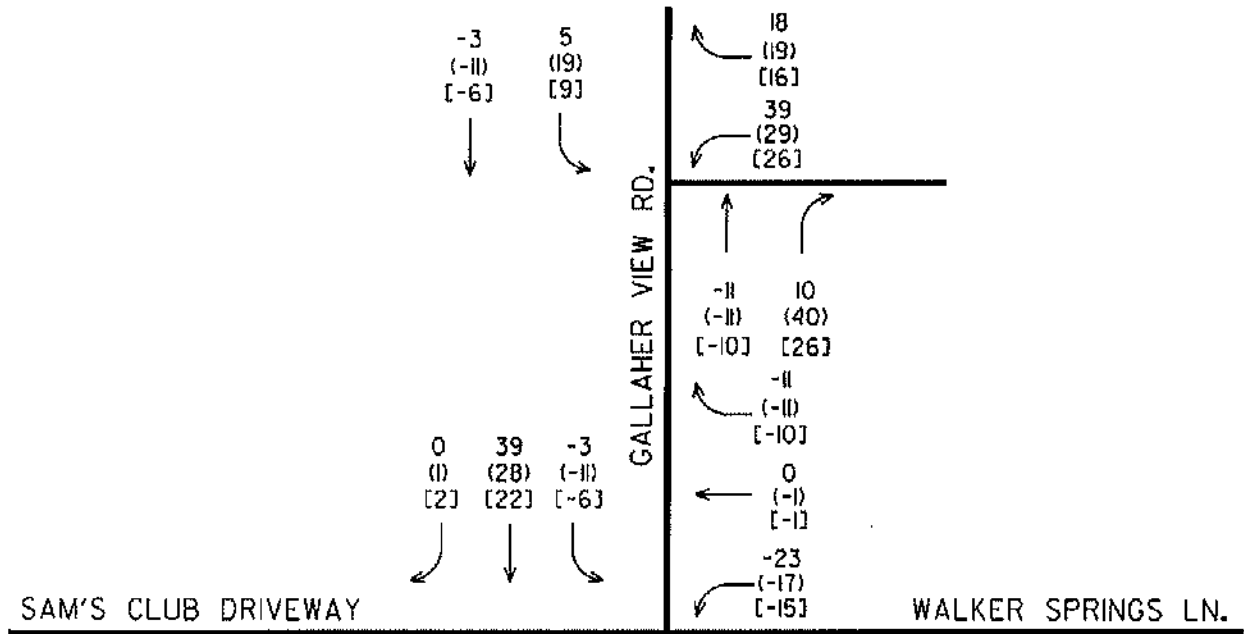


N.T.S.

GENERATED TRIPS W/O PROPOSED DRIVEWAY

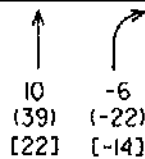
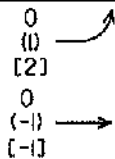


GENERATED TRIPS W/ PROPOSED DRIVEWAY



VOLUME LEGEND

TOP NUMBER - AM PEAK HOUR
 MIDDLE NUMBER - (PM) PEAK HOUR
 BOTTOM NUMBER - (SATURDAY) PEAK HOUR



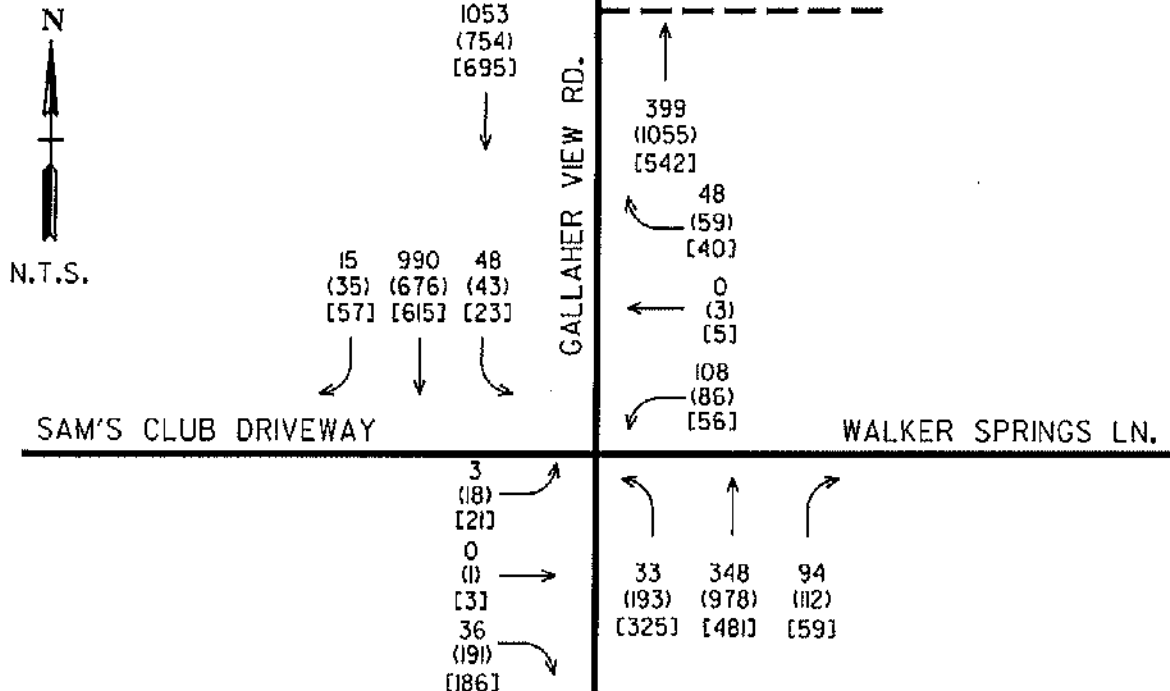
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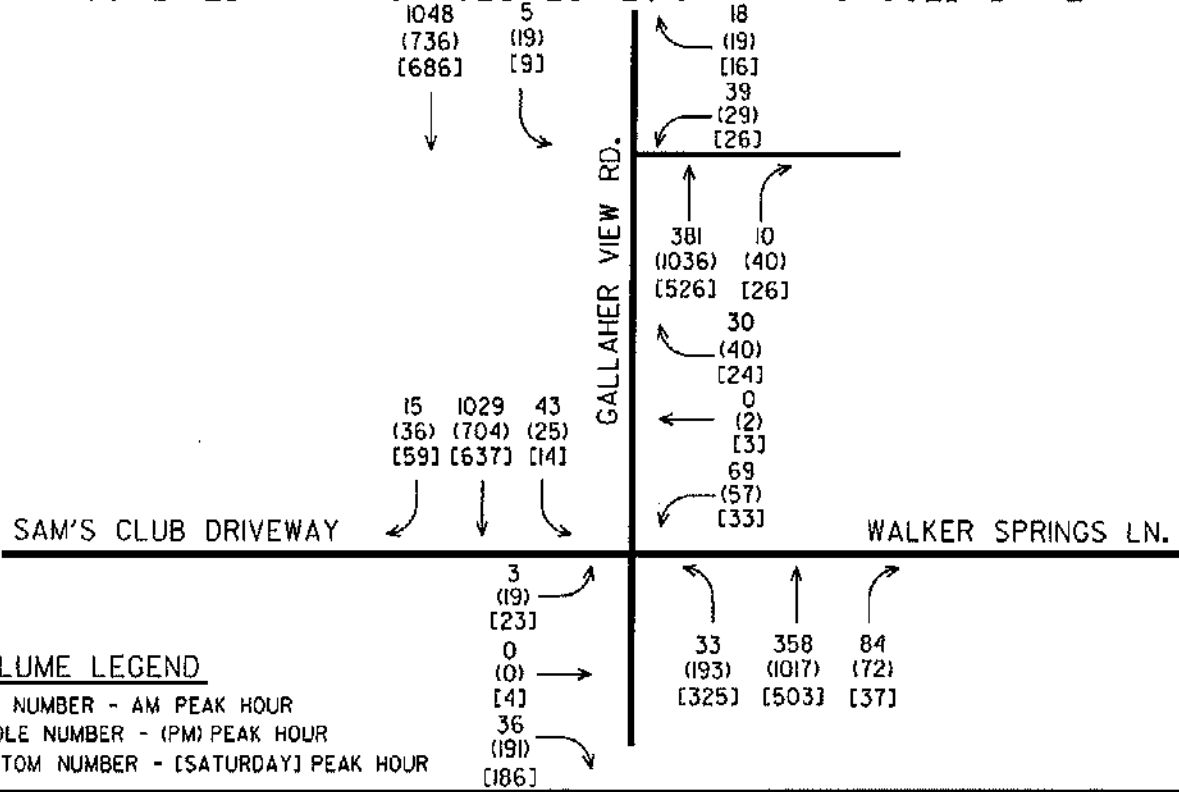
FIGURE 2
GENERATED TRIPS (2010)

WALKER CROSSING APARTMENTS
TRAFFIC IMPACT STUDY

COMBINED TRAFFIC VOLUMES (2010) W/O PROPOSED DRIVEWAY



COMBINED TRAFFIC VOLUMES (2010) W/ PROPOSED DRIVEWAY



VOLUME LEGEND

TOP NUMBER - AM PEAK HOUR
 MIDDLE NUMBER - (PM) PEAK HOUR
 BOTTOM NUMBER - [SATURDAY] PEAK HOUR



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FIGURE 3
 COMBINED TRAFFIC VOLUMES (2010)

WALKER CROSSING APARTMENTS
 TRAFFIC IMPACT STUDY

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 Knoxville, TN. 37922

Intersection: Gallaher View @ Walker Spr
 Date: 2/6/08
 Counted By: DB & BH
 Weather: am rain pm sun

File Name : gallaher view_walker springs_2_6_08_am_pm
 Site Code : 00000000
 Start Date : 02/06/2008
 Page No : 1

Groups Printed- Unshifted

Same

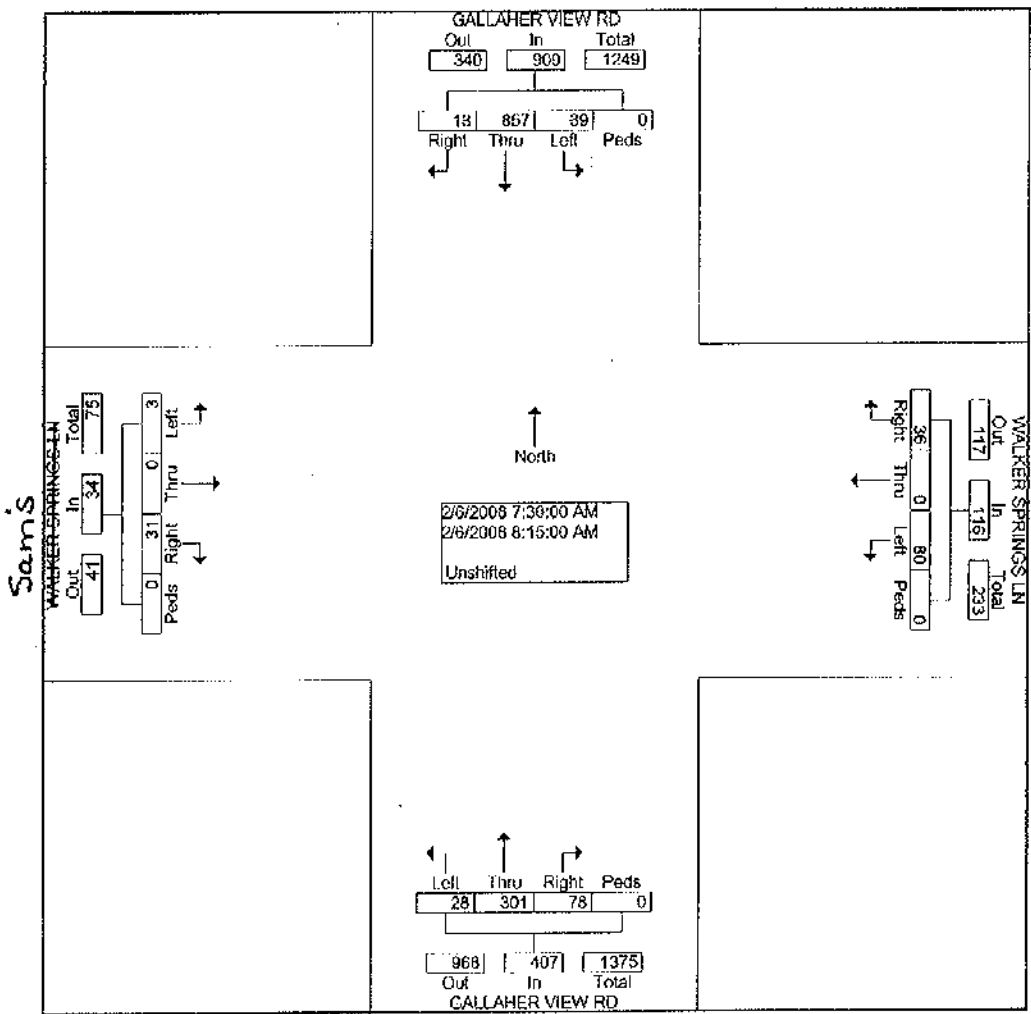
Start Time Factor	GALLAHER VIEW RD Southbound					WALKER SPRINGS LN Westbound					GALLAHER VIEW RD Northbound					WALKER SPRINGS LN Eastbound					Int. Total
	Left	Thru	Rght	Peds	App. Total	Left	Thru	Rght	Peds	App. Total	Left	Thru	Rght	Peds	App. Total	Left	Thru	Rght	Peds	App. Total	
07:00 AM	0	108	5	0	113	10	0	4	0	14	4	37	8	0	49	0	0	3	0	3	179
07:15 AM	6	190	7	0	203	22	0	3	0	25	7	45	9	0	61	0	0	5	0	5	294
07:30 AM	8	211	3	0	222	26	0	7	0	33	6	74	17	0	97	1	0	6	0	7	359
07:45 AM	4	240	5	0	249	9	0	19	0	28	6	77	16	0	99	2	0	13	0	15	391
Total	18	749	20	0	787	67	0	33	0	100	23	233	50	0	306	3	0	27	0	30	1223
08:00 AM	10	237	5	0	252	10	0	6	0	16	9	70	17	0	96	0	0	8	0	8	372
08:15 AM	17	169	0	0	186	35	0	4	0	39	7	80	28	0	115	0	0	4	0	4	344
08:30 AM	14	174	7	0	195	27	3	8	0	38	8	65	48	0	121	0	0	5	0	5	359
08:45 AM	5	126	5	0	136	23	0	7	0	30	8	56	29	0	93	2	1	8	0	11	270
Total	46	706	17	0	789	95	3	25	0	123	32	271	122	0	425	2	1	25	0	28	1345
*** BREAK ***																					
04:00 PM	3	138	9	0	150	11	2	6	0	19	47	124	15	0	186	6	0	40	0	46	401
04:15 PM	4	134	12	0	150	12	0	6	0	18	59	133	19	0	211	4	0	40	0	44	423
04:30 PM	8	131	10	0	149	8	1	12	0	21	38	146	15	0	199	3	0	34	0	37	406
04:45 PM	7	146	6	0	159	15	0	9	0	24	39	182	20	0	241	4	0	46	0	50	474
Total	22	549	37	0	608	46	3	33	0	82	183	585	69	0	837	17	0	160	0	177	1704
05:00 PM	6	135	6	0	147	17	1	9	0	27	44	216	17	0	277	2	0	40	0	42	493
05:15 PM	8	151	11	0	170	12	0	10	0	22	48	246	21	0	315	6	0	41	0	47	554
05:30 PM	10	153	7	0	170	20	2	16	0	38	36	203	24	0	263	4	1	38	0	43	514
05:45 PM	9	143	10	0	162	8	0	11	0	19	37	178	31	0	246	7	0	39	0	46	473
Total	33	582	34	0	649	57	3	46	0	106	165	843	93	0	1101	19	1	158	0	178	2034
Grand Total	119	2586	108	0	2813	265	9	137	0	411	403	1932	334	0	2669	41	2	370	0	413	6306
Approch %	4.2	91.9	3.8	0.0		64.5	2.2	33.3	0.0		15.1	72.4	12.5	0.0		9.9	0.5	89.6	0.0		
Total %	1.9	41.0	1.7	0.0	44.6	4.2	0.1	2.2	0.0	6.5	6.4	30.6	5.3	0.0	42.3	0.7	0.0	5.9	0.0	6.5	

Factor: 1.09

Intersection: Gallaher View @ Walker Spr
 Date: 2/6/08
 Counted By: DB & BH
 Weather: am rain pm sun

Sams

Start Time	GALLAHER VIEW RD Southbound					WALKER SPRINGS LN Westbound					GALLAHER VIEW RD Northbound					WALKER SPRINGS LN Eastbound					Int. Total
	Left	Thru	Rght	Peds	App. Total	Left	Thru	Rght	Peds	App. Total	Left	Thru	Rght	Peds	App. Total	Left	Thru	Rght	Peds	App. Total	
Peak Hour From 07:00 AM to 11:45 AM - Peak 1 of 1																					
Intersection																					
07:30 AM	39	857	13	0	909	80	0	36	0	116	28	301	78	0	407	3	0	31	0	34	1466
Volume Percent	4.3	94.3	1.4	0.0		69.0	0.0	31.0	0.0		6.9	74.0	19.2	0.0		8.8	0.0	91.2	0.0		
07:45 AM	4	240	5	0	249	9	0	19	0	28	6	77	16	0	99	2	0	13	0	15	391
Volume Peak Factor																					
High Int.																					
08:00 AM	10	237	5	0	252	35	0	4	0	39	7	80	28	0	115	2	0	13	0	15	15
Volume Peak Factor	0.902					0.744					0.885					0.567					



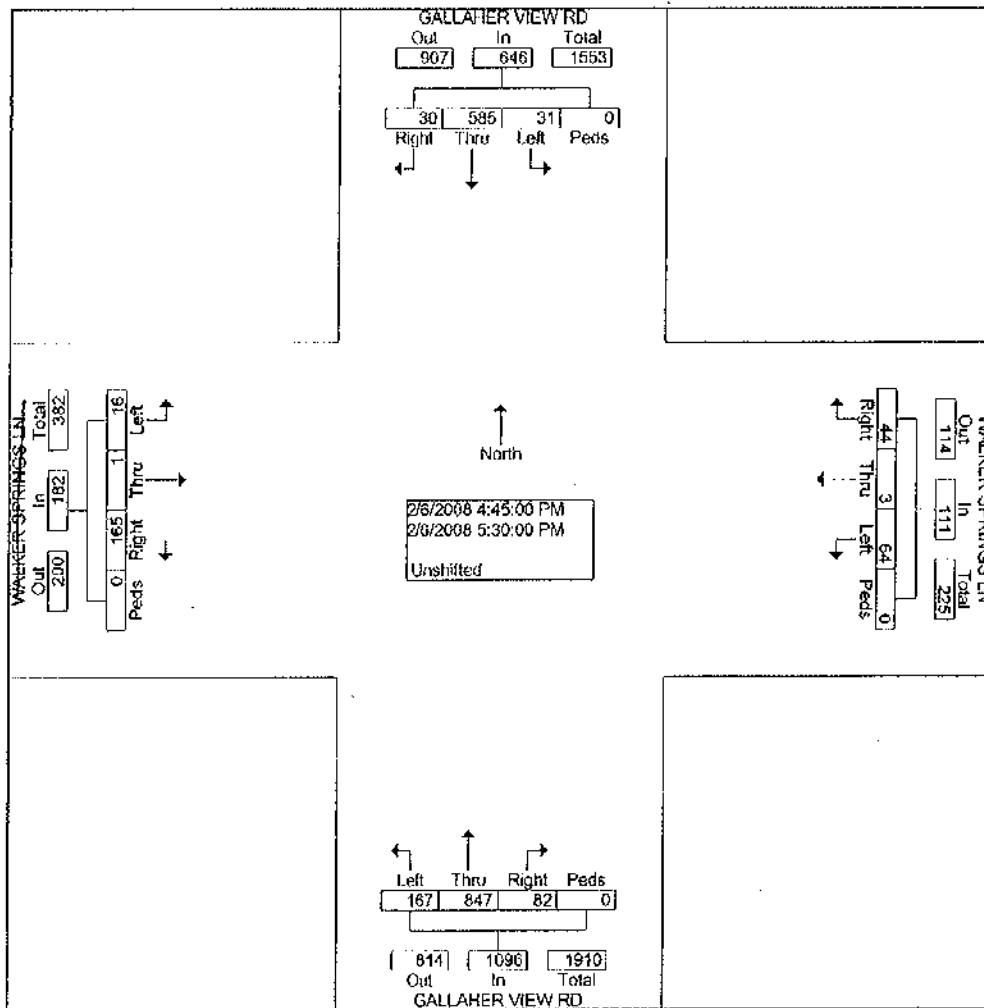
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File Name : gallaher view_walker springs_2_6_08_am_pm
 Site Code : 00000000
 Start Date : 02/06/2008
 Page No : 3

Intersection: Gallaher View @ Walker Spr
 Date: 2/6/08
 Counted By: DB & BH
 Weather: am rain pm sun

Sam's

Start Time	GALLAHER VIEW RD Southbound					WALKER SPRINGS LN Westbound					GALLAHER VIEW RD Northbound					WALKER SPRINGS LN 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 From 12:00 PM to 05:45 PM - Peak 1 of 1																					
Intersection																					
n																					
04:45 PM																					
Volume	31	585	30	0	646	64	3	44	0	111	167	847	82	0	1096	16	1	165	0	182	2035
Percent	4.8	90.6	4.6	0.0		57.7	2.7	39.6	0.0		15.2	77.3	7.5	0.0		8.8	0.5	90.7	0.0		
05:15																					
Volume	8	151	11	0	170	12	0	10	0	22	48	246	21	0	315	6	0	41	0	47	554
Peak Factor																					
High Int.																					
05:15 PM																					
Volume	8	151	11	0	170	20	2	16	0	38	48	246	21	0	315	4	0	46	0	50	0.918
Peak Factor	0.950					0.730					0.870					0.910					



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Intersection: Gallaher View @ Walker Spr
 Date: 2/9/08
 Counted By: DB
 Weather: Clear

File Name : gallaher view_walker springs_2_9_08
 Site Code : 00000000
 Start Date : 02/09/2008 *Saturday*
 Page No : 1

Groups Printed- Unshifted

Sam's

Start Time	GALLAHER VIEW Southbound					WALKER SPRINGS Westbound					GALLAHER VIEW Northbound					WALKER SPRINGS 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	
Factor	1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0		
11:30 AM	4	150	15	0	169	12	1	3	0	16	46	91	8	0	145	4	0	42	0	46	376
11:45 AM	2	149	16	0	167	13	0	7	0	20	58	98	9	0	165	4	0	38	0	42	394
Total	6	299	31	0	336	25	1	10	0	36	104	189	17	0	310	8	0	80	0	88	770
12:00 PM	4	144	18	0	166	10	1	6	0	19	57	118	17	0	192	8	0	48	0	56	433
12:15 PM	5	127	8	0	140	13	1	9	0	23	68	111	9	0	188	2	0	49	0	51	402
12:30 PM	3	137	11	0	151	17	0	7	0	24	68	102	10	0	180	6	1	26	0	33	388
12:45 PM	8	171	14	0	193	11	1	3	0	15	72	125	12	0	209	2	1	57	0	60	477
Total	20	579	51	0	650	51	3	27	0	81	265	456	48	0	769	18	2	180	0	200	1700
01:00 PM	3	130	13	0	146	10	1	13	0	24	88	118	18	0	224	4	0	48	0	52	446
01:15 PM	5	142	16	0	163	7	2	9	0	18	79	109	8	0	196	8	0	44	0	52	429
Grand Total	34	115	111	0	1295	93	7	59	0	159	536	872	91	0	1499	38	2	352	0	392	3345
Apprch %	2.6	88.8	8.6	0.0		58.5	4.4	37.1	0.0		35.8	58.2	6.1	0.0		9.7	0.5	89.8	0.0		
Total %	1.0	34.4	3.3	0.0	38.7	2.8	0.2	1.8	0.0	4.8	16.0	26.1	2.7	0.0	44.8	1.1	0.1	10.5	0.0	11.7	

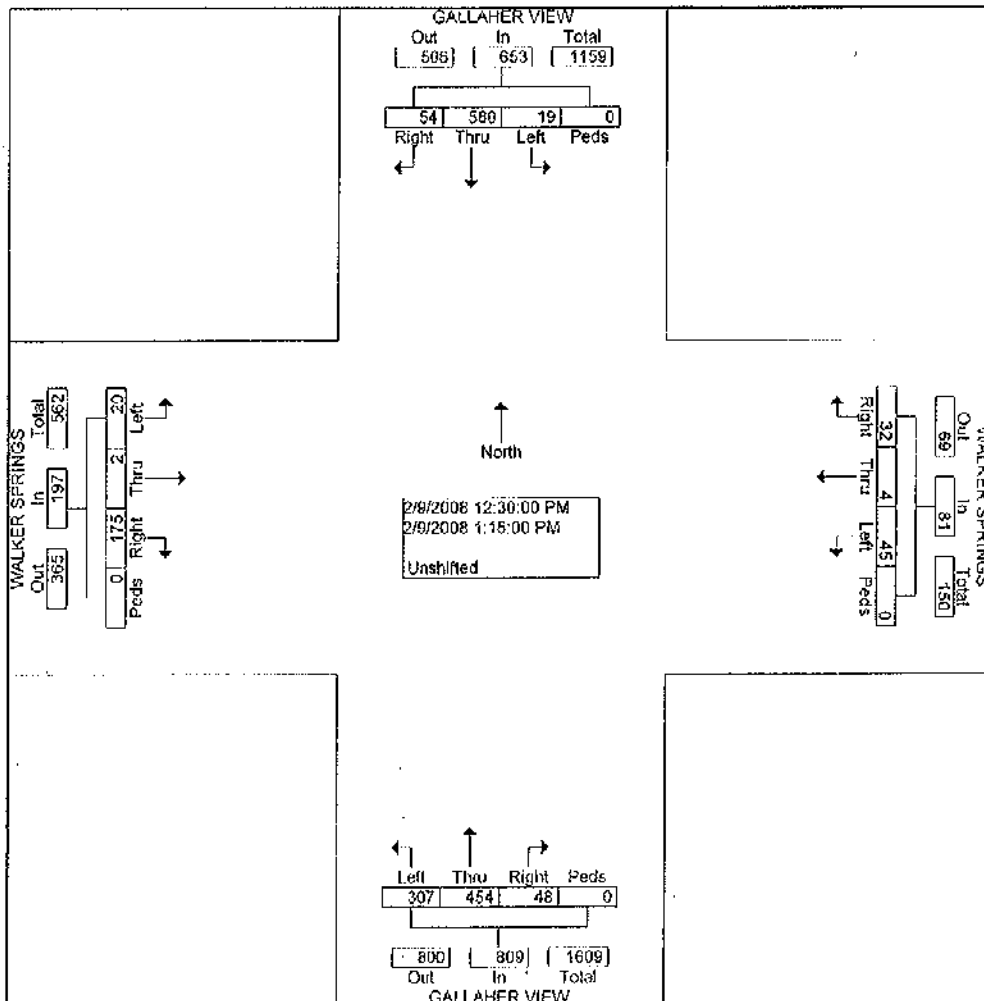
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Intersection: Gallaher View @ Walker Spr
 Date: 2/9/08
 Counted By: DB
 Weather: Clear

File Name : gallaher view_walker springs_2_9_08
 Site Code : 00000000
 Start Date : 02/09/2008 *Saturday*
 Page No : 2

Sam's

Start Time	GALLAHER VIEW Southbound					WALKER SPRINGS Westbound					GALLAHER VIEW Northbound					WALKER SPRINGS 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 From 11:30 AM to 01:15 PM - Peak 1 of 1																					
Intersection	12:30 PM																				
Volume	19	580	54	0	653	45	4	32	0	81	307	454	48	0	809	20	2	175	0	197	1740
Percent	2.9	88.8	8.3	0.0		55.6	4.9	39.5	0.0		37.9	56.1	5.9	0.0		10.2	1.0	88.8	0.0		
Volume	8	171	14	0	193	11	1	3	0	15	72	125	12	0	209	2	1	57	0	60	477
Peak Factor	0.846					0.844					0.903					0.821					0.912
High Int.	12:45 PM					12:30 PM					01:00 PM					12:45 PM					
Volume	8	171	14	0	193	17	0	7	0	24	88	118	18	0	224	2	1	57	0	60	
Peak Factor																					



Traffic Stations

Rec	Station Number	County	Location	Year	Annual Average Daily Count	Remarks	Route Number	Route Name	Is Station Out?
1	000428	Knox	WALKER SPRINGS RD-KNOXVILLE	2007	10795		03778	3778	N
2	000428	Knox	WALKER SPRINGS RD-KNOXVILLE	2006	11615	AADT GREATER THAN EXPECTED VALUE BASED ON PREVIOUS YEARS DATA	03778	3778	N
3	000428	Knox	WALKER SPRINGS RD-KNOXVILLE	2005	10083		03778	3778	N
4	000428	Knox	WALKER SPRINGS RD-KNOXVILLE	2004	11030		03778	3778	N
5	000428	Knox	WALKER SPRINGS RD-KNOXVILLE	2003	11225	AADT LESS THAN EXPECTED VALUE BASED ON PREVIOUS YEARS DATA	03778	3778	N
6	000428	Knox	WALKER SPRINGS RD-KNOXVILLE	2002	18329		03778	3778	N
7	000428	Knox	WALKER SPRINGS RD-KNOXVILLE	2001	15616	2ND YR COUNT	03778	3778	N
8	000428	Knox	WALKER SPRINGS RD-KNOXVILLE	2000	6849		03778	3778	N

Traffic Stations

Rec	Station Number	County	Location	Year	Annual Average Daily Count	Remarks	Route Number	Route Name	Is Station Out?
1	000429	Knox	GALLAHER SPRINGS RD-KNOXVILLE	2007	9385		04828	4828	N
2	000429	Knox	GALLAHER SPRINGS RD-KNOXVILLE	2006	9599		04828	4828	N
3	000429	Knox	GALLAHER SPRINGS RD-KNOXVILLE	2005	9243		04828	4828	N
4	000429	Knox	GALLAHER SPRINGS RD-KNOXVILLE	2004	9296	EST	04828	4828	N
5	000429	Knox	GALLAHER SPRINGS RD-KNOXVILLE	2003	9428		04828	4828	N
6	000429	Knox	GALLAHER SPRINGS RD-KNOXVILLE	2002	8610		04828	4828	N
7	000429	Knox	GALLAHER SPRINGS RD-KNOXVILLE	2001	9432		04828	4828	N
8	000429	Knox	GALLAHER SPRINGS RD-KNOXVILLE	2000	9875		04828	4828	N

Local Apartment Trip Generation Study

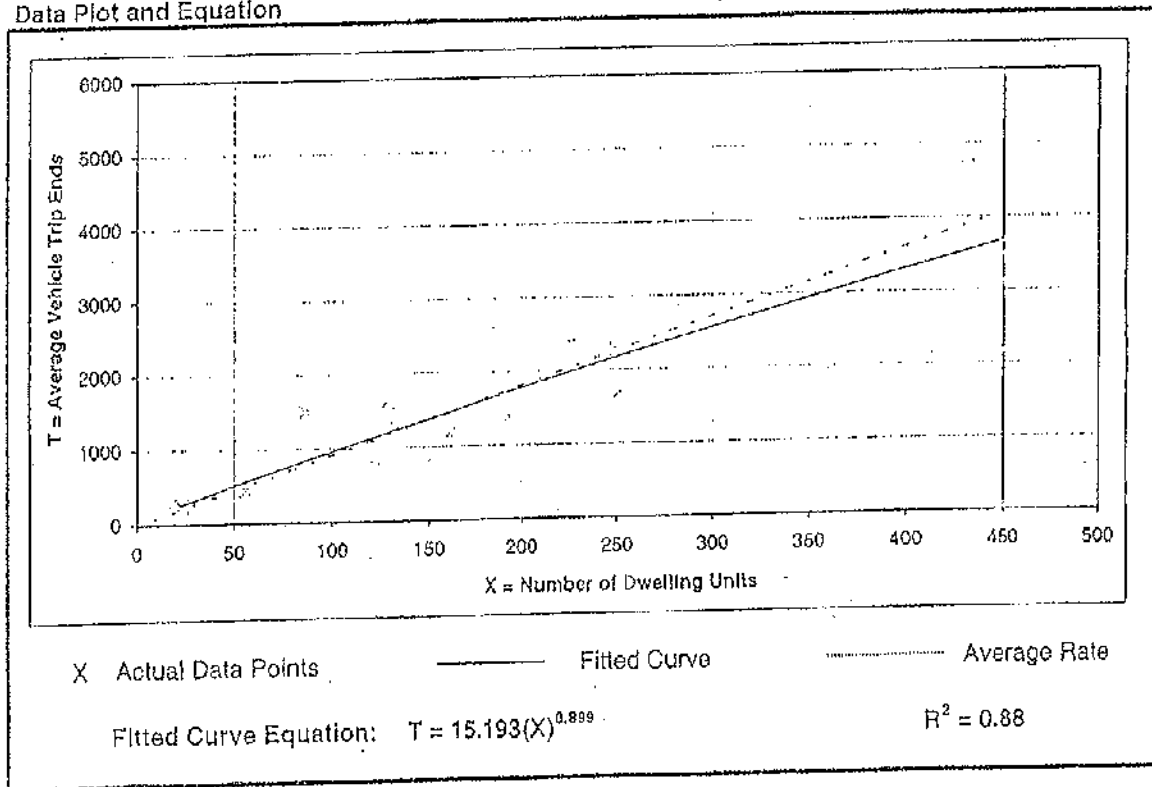
Average Vehicle Trip Ends vs: Dwelling Units
On a: Weekday

Number of Studies: 13
Average Number of Dwelling Units: 193
Directional Distribution: 50% entering, 50% exiting

Trip Generation Per Dwelling Unit

Average Rate	Ranges of Rates	Standard Deviation
9.03	6.59 - 17.41	2.47

Data Plot and Equation



Local Apartment Trip Generation Study

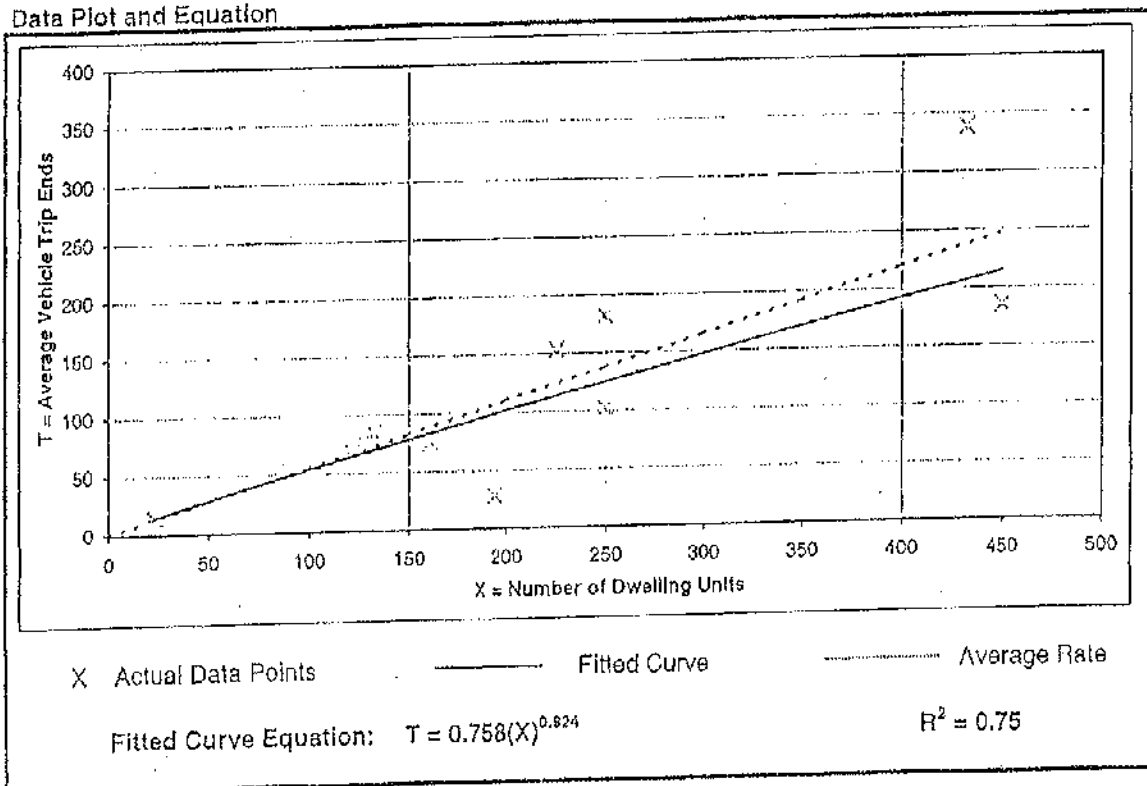
Average Vehicle Trip Ends vs: Dwelling Units
 On a: Weekday,
 Peak Hour of Adjacent Street Traffic,
 One Hour Between 7 and 9 a.m.

Number of Studies: 13
 Average Number of Dwelling Units: 193
 Directional Distribution: 22% entering, 78% exiting

Trip Generation Per Dwelling Unit

Average Rate	Ranges of Rates	Standard Deviation
0.55	0.14 - 0.78	0.18

Data Plot and Equation



Local Apartment Trip Generation Study

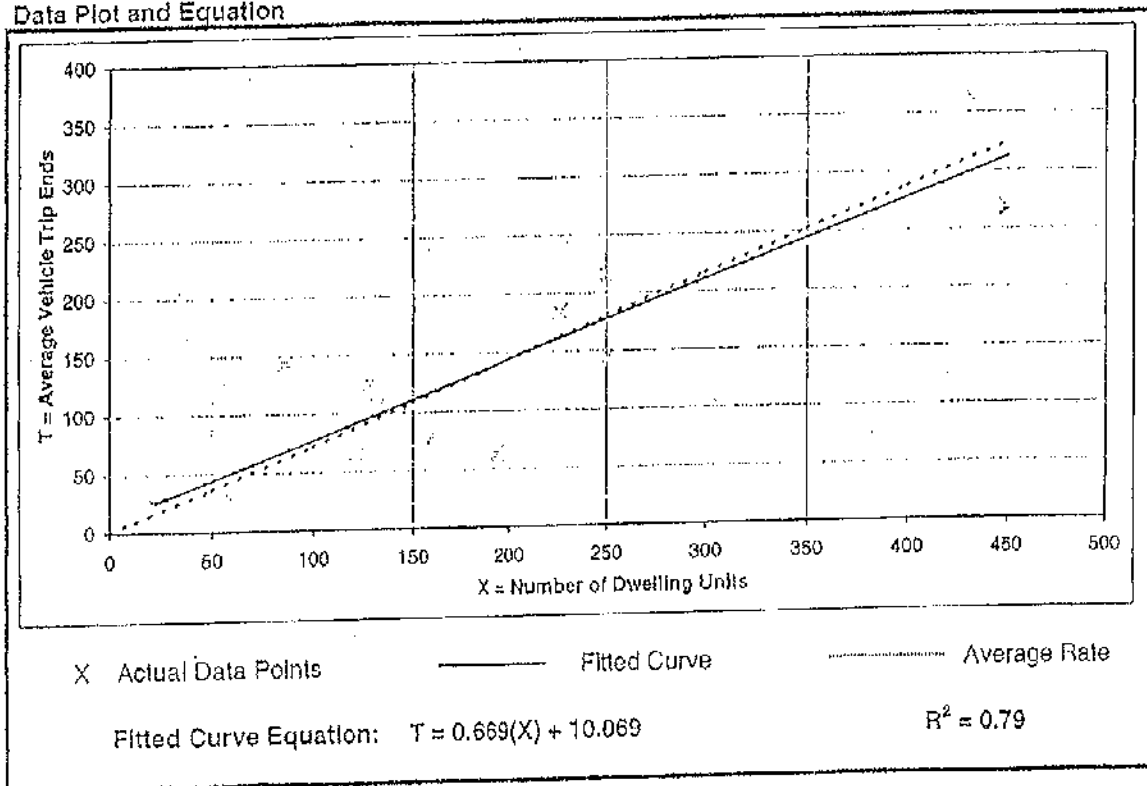
Average Vehicle Trip Ends vs: Dwelling Units
 On a: Weekday,
 Peak Hour of Adjacent Street Traffic,
 One Hour Between 4 and 6 p.m.

Number of Studies: 13
 Average Number of Dwelling Units: 193
 Directional Distribution: 55% entering, 45% exiting

Trip Generation Per Dwelling Unit

Average Rate	Ranges of Rates	Standard Deviation
0.72	0.32 - 1.66	0.25

Data Plot and Equation



Trip Generation (Existing Development)

Apartments: 352 units

Weekday Trips

$$T = 15.193(352)^{0.899}$$

$$R^2 = 0.88$$

$$T = 2,958$$

$$50\% \text{ entering} = 1,479$$

$$50\% \text{ exiting} = 1,479$$

AM Peak

$$T = 0.758(352)^{0.924}$$

$$R^2 = 0.75$$

$$T = 171$$

$$22\% \text{ entering} = 38$$

$$78\% \text{ exiting} = 133$$

PM Peak

$$T = 0.669(352) + 10,069$$

$$R^2 = 0.79$$

$$T = 246$$

$$55\% \text{ entering} = 135$$

$$45\% \text{ exiting} = 111$$

Trip Generation (Proposed Development)

Apartments: 52 units

Weekday Trips

$$T = 15.193(52)^{0.899}$$

$$R^2 = 0.88$$

$$T = 530$$

$$50\% \text{ entering} = 265$$

$$50\% \text{ exiting} = 265$$

AM Peak

$$T = 0.758(52)^{0.924}$$

$$R^2 = 0.75$$

$$T = 29$$

$$22\% \text{ entering} = 6$$

$$78\% \text{ exiting} = 23$$

PM Peak

$$T = 0.669(52) + 10.069$$

$$R^2 = 0.79$$

$$T = 45$$

$$55\% \text{ entering} = 25$$

$$45\% \text{ exiting} = 20$$

Trip Generation - Saturday (Proposed Development)

Apartments (220): 52 units

Saturday Peak Hour of Generator - ITE p. 312

avg. rate = 0.52

$R^2 = 0.56$

$T = 0.52(52) = 27$

assume 45% entering = 12

55% exiting = 15

Existing Development

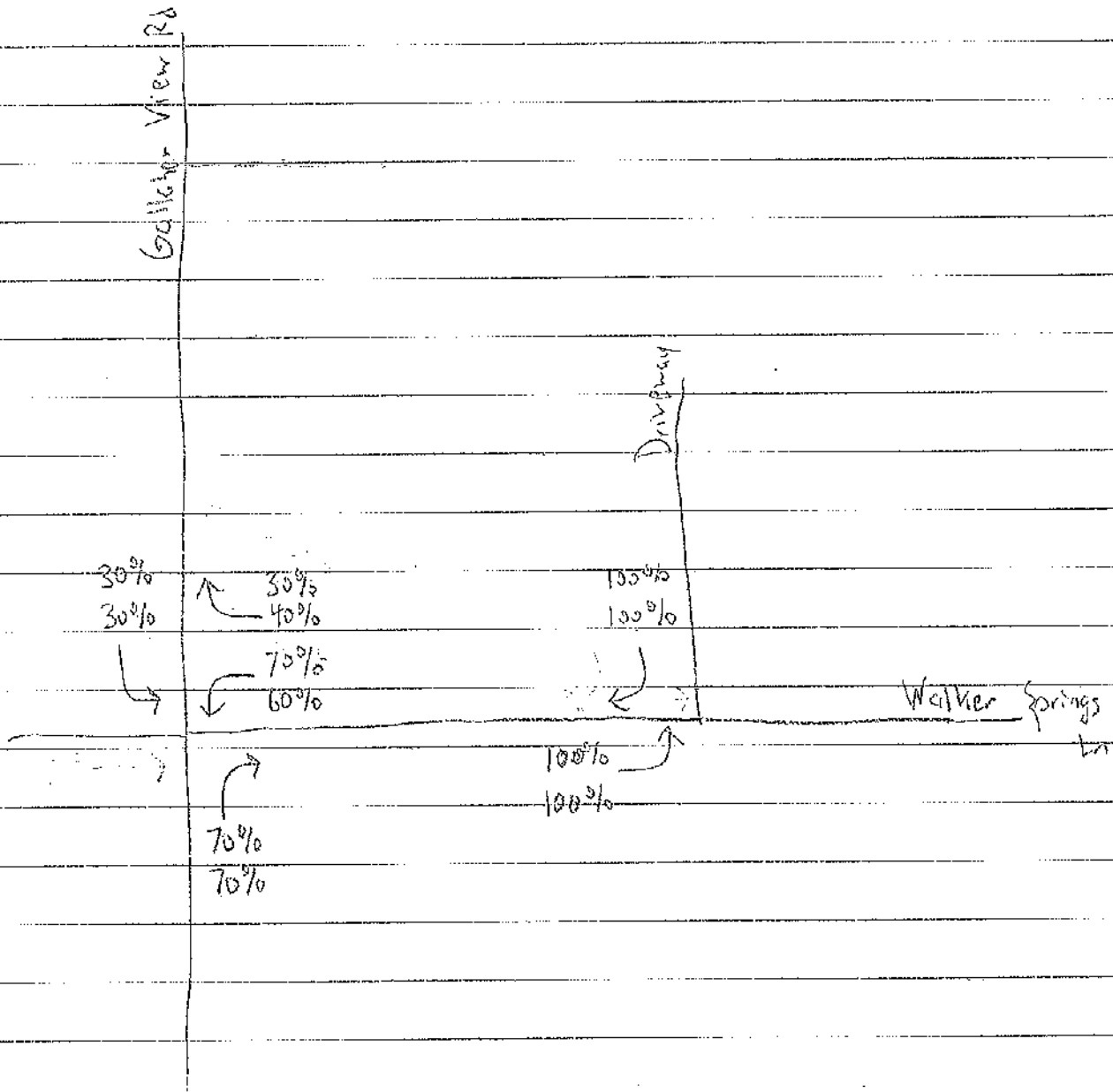
352 units

$T = 0.52(352) = 183$

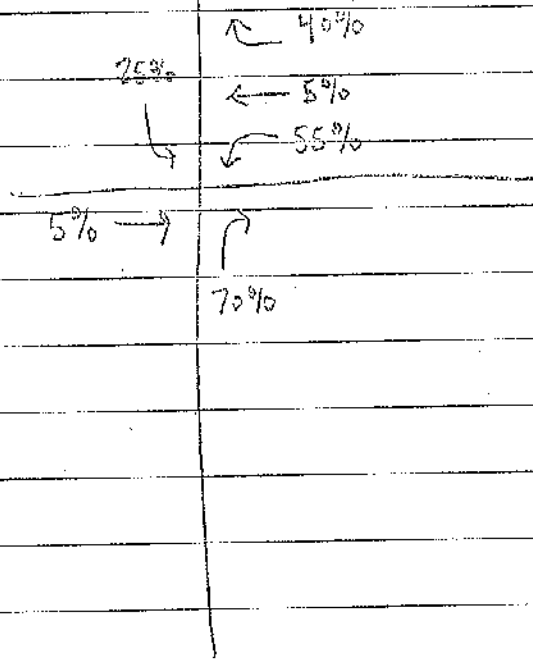
45% entering = 82

55% exiting = 101

Trip Distribution (Existing Driveway Only)



Trip Distribution - Saturday (Existing Driveway Only)



TWO-WAY STOP CONTROL SUMMARY							
General Information				Site Information			
Analyst	BJH			Intersection	Gallaher View / Walker Springs		
Agency/Co.	Cannon & Cannon			Jurisdiction	City of Knoxville		
Date Performed	2/7/2008			Analysis Year	2008		
Analysis Time Period	Existing AM						
Project Description 804-0000 Walker Crossing Apartments							
East/West Street: Walker Springs Ln				North/South Street: Gallaher View Rd			
Intersection Orientation: North-South				Study Period (hrs): 0.25			
Vehicle Volumes and Adjustments							
Major Street	Northbound			Southbound			
Movement	1	2	3	4	5	6	
	L	T	R	L	T	R	
Volume (veh/h)	31	328	85	43	934	14	
Peak-Hour Factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94	
Hourly Flow Rate, HFR (veh/h)	32	348	90	45	993	14	
Percent Heavy Vehicles	2	--	--	2	--	--	
Median Type	Two Way Left Turn Lane						
RT Channelized			0				0
Lanes	1	2	0	1	2		1
Configuration	L	T	TR	L	T		R
Upstream Signal		0			0		
Minor Street	Eastbound			Westbound			
Movement	7	8	9	10	11	12	
	L	T	R	L	T	R	
Volume (veh/h)	3	0	34	87	0	39	
Peak-Hour Factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94	
Hourly Flow Rate, HFR (veh/h)	3	0	36	92	0	41	
Percent Heavy Vehicles	2	2	2	2	2	2	
Percent Grade (%)		0			0		
Flared Approach		N			N		
Storage		0			0		
RT Channelized			0				0
Lanes	0	1	1	0	1		0
Configuration	LT		R		LTR		
Delay, Queue Length, and Level of Service							
Approach	Northbound	Southbound	Westbound			Eastbound	
Movement	1	4	7	8	9	10	11
Lane Configuration	L	L	LTR			LT	R
v (veh/h)	32	45	133			3	36
C (m) (veh/h)	684	1118	395			207	519
v/c	0.05	0.04	0.34			0.01	0.07
95% queue length	0.15	0.13	1.46			0.04	0.22
Control Delay (s/veh)	10.5	8.4	18.7			22.6	12.5
LOS	B	A	C			C	B
Approach Delay (s/veh)	--	--	18.7			13.2	
Approach LOS	--	--	C			B	

TWO-WAY STOP CONTROL SUMMARY							
General Information				Site Information			
Analyst	BJH			Intersection	Gallaher View / Walker Springs		
Agency/Co.	Cannon & Cannon			Jurisdiction	City of Knoxville		
Date Performed	2/7/2008			Analysis Year	2008		
Analysis Time Period	Existing PM						
Project Description 804-0000 Walker Crossing Apartments							
East/West Street: Walker Springs Ln				North/South Street: Gallaher View Rd			
Intersection Orientation: North-South				Study Period (hrs): 0.25			
Vehicle Volumes and Adjustments							
Major Street	Northbound			Southbound			
Movement	1	2	3	4	5	6	
	L	T	R	L	T	R	
Volume (veh/h)	182	923	89	34	638	33	
Peak-Hour Factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	
Hourly Flow Rate, HFR (veh/h)	197	1003	96	36	693	35	
Percent Heavy Vehicles	2	--	--	2	--	--	
Median Type	Two Way Left Turn Lane						
RT Channelized			0			0	
Lanes	1	2	0	1	2	1	
Configuration	L	T	TR	L	T	R	
Upstream Signal		0			0		
Minor Street	Eastbound			Westbound			
Movement	7	8	9	10	11	12	
	L	T	R	L	T	R	
Volume (veh/h)	17	1	180	70	3	48	
Peak-Hour Factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	
Hourly Flow Rate, HFR (veh/h)	18	1	195	76	3	52	
Percent Heavy Vehicles	2	2	2	2	2	2	
Percent Grade (%)		0			0		
Flared Approach		N			N		
Storage		0			0		
RT Channelized			0			0	
Lanes	0	1	1	0	1	0	
Configuration	LT		R		LTR		
Delay, Queue Length, and Level of Service							
Approach	Northbound	Southbound	Westbound			Eastbound	
Movement	1	4	7	8	9	10	11
Lane Configuration	L	L	LTR			LT	R
v (veh/h)	197	36	131			19	195
C (m) (veh/h)	871	631	134			143	650
v/c	0.23	0.06	0.98			0.13	0.30
95% queue length	0.87	0.18	6.82			0.45	1.26
Control Delay (s/veh)	10.3	11.1	135.7			34.0	12.9
LOS	B	B	F			D	B
Approach Delay (s/veh)	--	--	135.7			14.8	
Approach LOS	--	--	F			B	

TWO-WAY STOP CONTROL SUMMARY							
General Information				Site Information			
Analyst	BJH			Intersection	Gallaher View / Walker Springs		
Agency/Co.	Cannon & Cannon			Jurisdiction	City of Knoxville		
Date Performed	2/7/2008			Analysis Year	2008		
Analysis Time Period	Existing Saturday						
Project Description 804-0000 Walker Crossing Apartments							
East/West Street: Walker Springs Ln				North/South Street: Gallaher View Rd			
Intersection Orientation: North-South				Study Period (hrs): 0.25			
Vehicle Volumes and Adjustments							
Major Street	Northbound			Southbound			
Movement	1	2	3	4	5	6	
	L	T	R	L	T	R	
Volume (veh/h)	307	454	48	19	580	54	
Peak-Hour Factor, PHF	0.91	0.91	0.91	0.91	0.91	0.91	
Hourly Flow Rate, HFR (veh/h)	337	498	52	20	637	59	
Percent Heavy Vehicles	2	--	--	2	--	--	
Median Type	Two Way Left Turn Lane						
RT Channelized			0				0
Lanes	1	2	0	1	2	1	
Configuration	L	T	TR	L	T	R	
Upstream Signal		0			0		
Minor Street	Eastbound			Westbound			
Movement	7	8	9	10	11	12	
	L	T	R	L	T	R	
Volume (veh/h)	20	2	175	45	4	32	
Peak-Hour Factor, PHF	0.91	0.91	0.91	0.91	0.91	0.91	
Hourly Flow Rate, HFR (veh/h)	21	2	192	49	4	35	
Percent Heavy Vehicles	2	2	2	2	2	2	
Percent Grade (%)	0			0			
Flared Approach		N			N		
Storage		0			0		
RT Channelized			0			0	
Lanes	0	1	1	0	1	0	
Configuration	LT		R		LTR		
Delay, Queue Length, and Level of Service							
Approach	Northbound	Southbound	Westbound			Eastbound	
Movement	1	4	7	8	9	10	11
Lane Configuration	L	L	LTR			LT	R
v (veh/h)	337	20	88			23	192
C (m) (veh/h)	896	1016	127			134	678
v/c	0.38	0.02	0.69			0.17	0.28
95% queue length	1.76	0.06	3.80			0.60	1.16
Control Delay (s/veh)	11.4	8.6	80.9			37.4	12.4
LOS	B	A	F			E	B
Approach Delay (s/veh)	--	--	80.9			15.1	
Approach LOS	--	--	F			C	

TWO-WAY STOP CONTROL SUMMARY			
General Information		Site Information	
Analyst	BJH	Intersection	Gallaher View / Walker Springs
Agency/Co.	Cannon & Cannon	Jurisdiction	City of Knoxville
Date Performed	2/7/2008	Analysis Year	2010
Analysis Time Period	Background AM		

Project Description <i>804-0000 Walker Crossing Apartments</i>	
East/West Street: <i>Walker Springs Ln</i>	North/South Street: <i>Gallaher View Rd</i>
Intersection Orientation: <i>North-South</i>	Study Period (hrs): <i>0.25</i>

Vehicle Volumes and Adjustments							
Major Street	Northbound			Southbound			
	Movement	1	2	3	4	5	6
		L	T	R	L	T	R
Volume (veh/h)		33	348	90	46	990	15
Peak-Hour Factor, PHF		0.94	0.94	0.94	0.94	0.94	0.94
Hourly Flow Rate, HFR (veh/h)		35	370	95	48	1053	15
Percent Heavy Vehicles		2	--	--	2	--	--
Median Type	<i>Two Way Left Turn Lane</i>						
RT Channelized				0			0
Lanes		1	2	0	1	2	1
Configuration		L	T	TR	L	T	R
Upstream Signal			0			0	

Minor Street	Eastbound			Westbound			
	Movement	7	8	9	10	11	12
		L	T	R	L	T	R
Volume (veh/h)		3	0	36	92	0	41
Peak-Hour Factor, PHF		0.94	0.94	0.94	0.94	0.94	0.94
Hourly Flow Rate, HFR (veh/h)		3	0	38	97	0	43
Percent Heavy Vehicles		2	2	2	2	2	2
Percent Grade (%)		0			0		
Flared Approach			N			N	
Storage			0			0	
RT Channelized				0			0
Lanes		0	1	1	0	1	0
Configuration		LT		R		LTR	

Delay, Queue Length, and Level of Service									
Approach	Northbound	Southbound	Westbound			Eastbound			
	Movement	1	4	7	8	9	10	11	12
Lane Configuration		L	L	LTR			LT		R
v (veh/h)		35	48	140			3	38	
C (m) (veh/h)		648	1093	368			187	496	
v/c		0.05	0.04	0.38			0.02	0.08	
95% queue length		0.17	0.14	1.74			0.05	0.25	
Control Delay (s/veh)		10.9	8.4	20.7			24.6	12.9	
LOS		B	A	C			C	B	
Approach Delay (s/veh)		--	--	20.7			13.7		
Approach LOS		--	--	C			B		

TWO-WAY STOP CONTROL SUMMARY

General Information		Site Information	
Analyst	BJH	Intersection	Gallaher View / Walker Springs
Agency/Co.	Cannon & Cannon	Jurisdiction	City of Knoxville
Date Performed	2/7/2008	Analysis Year	2010
Analysis Time Period	Background PM		

Project Description: 804-0000 Walker Crossing Apartments	
East/West Street: Walker Springs Ln	North/South Street: Gallaher View Rd
Intersection Orientation: North-South	Study Period (hrs): 0.25

Vehicle Volumes and Adjustments						
Major Street	Northbound			Southbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume (veh/h)	193	978	94	36	676	35
Peak-Hour Factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Hourly Flow Rate, HFR (veh/h)	209	1063	102	39	734	38
Percent Heavy Vehicles	2	--	--	2	--	--
Median Type	Two Way Left Turn Lane					
RT Channelized			0			0
Lanes	1	2	0	1	2	1
Configuration	L	T	TR	L	T	R
Upstream Signal		0			0	
Minor Street	Eastbound			Westbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume (veh/h)	18	1	191	74	3	51
Peak-Hour Factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Hourly Flow Rate, HFR (veh/h)	19	1	207	80	3	55
Percent Heavy Vehicles	2	2	2	2	2	2
Percent Grade (%)	0			0		
Flared Approach		N			N	
Storage		0			0	
RT Channelized			0			0
Lanes	0	1	1	0	1	0
Configuration	LT		R		LTR	

Delay, Queue Length, and Level of Service								
Approach	Northbound	Southbound	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration	L	L	LTR			LT	R	
v (veh/h)	209	39	138			20	207	
C (m) (veh/h)	839	595	113			122	630	
v/c	0.25	0.07	1.22			0.16	0.33	
95% queue length	0.98	0.21	8.92			0.56	1.43	
Control Delay (s/veh)	10.7	11.5	228.0			40.2	13.5	
LOS	B	B	F			E	B	
Approach Delay (s/veh)	--	--	228.0			15.8		
Approach LOS	--	--	F			C		

TWO-WAY STOP CONTROL SUMMARY			
General Information		Site Information	
Analyst	BJH	Intersection	Gallaher View / Walker Springs
Agency/Co.	Cannon & Cannon	Jurisdiction	City of Knoxville
Date Performed	2/7/2008	Analysis Year	2010
Analysis Time Period	Background Saturday		

Project Description 804-0000 Walker Crossing Apartments	
East/West Street: Walker Springs Ln	North/South Street: Gallaher View Rd
Intersection Orientation: North-South	Study Period (hrs): 0.25

Vehicle Volumes and Adjustments						
Major Street	Northbound			Southbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume (veh/h)	325	481	51	20	615	57
Peak-Hour Factor, PHF	0.91	0.91	0.91	0.91	0.91	0.91
Hourly Flow Rate, HFR (veh/h)	357	528	56	21	675	62
Percent Heavy Vehicles	2	--	--	2	--	--
Median Type	Two Way Left Turn Lane					
RT Channelized			0			0
Lanes	1	2	0	1	2	1
Configuration	L	T	TR	L	T	R
Upstream Signal		0			0	

Minor Street	Eastbound			Westbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume (veh/h)	21	2	186	48	4	34
Peak-Hour Factor, PHF	0.91	0.91	0.91	0.91	0.91	0.91
Hourly Flow Rate, HFR (veh/h)	23	2	204	52	4	37
Percent Heavy Vehicles	2	2	2	2	2	2
Percent Grade (%)	0			0		
Flared Approach		N			N	
Storage		0			0	
RT Channelized			0			0
Lanes	0	1	1	0	1	0
Configuration	LT		R		LTR	

Delay, Queue Length, and Level of Service								
Approach	Northbound	Southbound	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration	L	L	LTR			LT	R	
v (veh/h)	357	21	93			25	204	
C (m) (veh/h)	865	987	79			112	658	
v/c	0.41	0.02	1.18			0.22	0.31	
95% queue length	2.04	0.07	6.84			0.80	1.32	
Control Delay (s/veh)	12.1	8.7	250.8			46.1	12.9	
LOS	B	A	F			E	B	
Approach Delay (s/veh)	--	--	250.8			16.5		
Approach LOS	--	--	F			C		

TWO-WAY STOP CONTROL SUMMARY

General Information		Site Information	
Analyst	BJH	Intersection	Gallagher View / Walker Springs
Agency/Co.	Cannon & Cannon	Jurisdiction	City of Knoxville
Date Performed	2/7/2008	Analysis Year	2010
Analysis Time Period	Combined AM		

Project Description *Walker Crossing Apartments without Proposed Driveway*
 East/West Street: *Walker Springs Ln* North/South Street: *Gallagher View Rd*
 Intersection Orientation: *North-South* Study Period (hrs): *0.25*

Vehicle Volumes and Adjustments

Major Street	Northbound			Southbound		
	1	2	3	4	5	6
Movement	L	T	R	L	T	R
Volume (veh/h)	33	348	94	48	990	15
Peak-Hour Factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94
Hourly Flow Rate, HFR (veh/h)	35	370	100	51	1053	15
Percent Heavy Vehicles	2	--	--	2	--	--
Median Type	Two Way Left Turn Lane					
RT Channelized			0			0
Lanes	1	2	0	1	2	1
Configuration	L	T	TR	L	T	R
Upstream Signal		0			0	

Minor Street	Eastbound			Westbound		
	7	8	9	10	11	12
Movement	L	T	R	L	T	R
Volume (veh/h)	3	0	36	108	0	48
Peak-Hour Factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94
Hourly Flow Rate, HFR (veh/h)	3	0	38	114	0	51
Percent Heavy Vehicles	2	2	2	2	2	2
Percent Grade (%)	0			0		
Flared Approach		N			N	
Storage		0			0	
RT Channelized			0			0
Lanes	0	1	1	0	1	0
Configuration	LT		R		LTR	

Delay, Queue Length, and Level of Service

Approach	Northbound	Southbound	Westbound			Eastbound		
	1	4	7	8	9	10	11	12
Movement	L	L	LTR			LT		R
v (veh/h)	35	51	165			3		38
C (m) (veh/h)	648	1088	365			185		496
v/c	0.05	0.05	0.45			0.02		0.08
95% queue length	0.17	0.15	2.27			0.05		0.25
Control Delay (s/veh)	10.9	8.5	22.7			24.8		12.9
LOS	B	A	C			C		B
Approach Delay (s/veh)	--	--	22.7			13.7		
Approach LOS	--	--	C			B		

TWO-WAY STOP CONTROL SUMMARY							
General Information				Site Information			
Analyst	BJH			Intersection	Gallagher View / Walker Springs		
Agency/Co.	Cannon & Cannon			Jurisdiction	City of Knoxville		
Date Performed	2/7/2008			Analysis Year	2010		
Analysis Time Period	Combined PM						
Project Description Walker Crossing Apartments without Proposed Driveway							
East/West Street: Walker Springs Ln				North/South Street: Gallagher View Rd			
Intersection Orientation: North-South				Study Period (hrs): 0.25			
Vehicle Volumes and Adjustments							
Major Street	Northbound			Southbound			
Movement	1	2	3	4	5	6	
	L	T	R	L	T	R	
Volume (veh/h)	193	978	112	43	676	35	
Peak-Hour Factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	
Hourly Flow Rate, HFR (veh/h)	209	1063	121	46	734	38	
Percent Heavy Vehicles	2	--	--	2	--	--	
Median Type	Two Way Left Turn Lane						
RT Channelized			0			0	
Lanes	1	2	0	1	2	1	
Configuration	L	T	TR	L	T	R	
Upstream Signal		0			0		
Minor Street	Eastbound			Westbound			
Movement	7	8	9	10	11	12	
	L	T	R	L	T	R	
Volume (veh/h)	18	1	191	86	3	59	
Peak-Hour Factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	
Hourly Flow Rate, HFR (veh/h)	19	1	207	93	3	64	
Percent Heavy Vehicles	2	2	2	2	2	2	
Percent Grade (%)	0			0			
Flared Approach		N			N		
Storage		0			0		
RT Channelized			0			0	
Lanes	0	1	1	0	1	0	
Configuration	LT		R		LTR		
Delay, Queue Length, and Level of Service							
Approach	Northbound	Southbound	Westbound			Eastbound	
Movement	1	4	7	8	9	10	11
Lane Configuration	L	L		LTR		LT	R
v (veh/h)	209	46		160		20	207
C (m) (veh/h)	839	586		109		112	630
v/c	0.25	0.08		1.47		0.18	0.33
95% queue length	0.98	0.25		11.56		0.62	1.43
Control Delay (s/veh)	10.7	11.7		324.7		44.0	13.5
LOS	B	B		F		E	B
Approach Delay (s/veh)	--	--		324.7		16.2	
Approach LOS	--	--		F		C	

TWO-WAY STOP CONTROL SUMMARY			
General Information		Site Information	
Analyst	BJH	Intersection	Gallaher View / Walker Springs
Agency/Co.	Cannon & Cannon	Jurisdiction	City of Knoxville
Date Performed	2/7/2008	Analysis Year	2010
Analysis Time Period	Combined Saturday		

Project Description <i>Walker Crossing Apartments without Proposed Driveway</i>	
East/West Street: <i>Walker Springs Ln</i>	North/South Street: <i>Gallaher View Rd</i>
Intersection Orientation: <i>North-South</i>	Study Period (hrs): <i>0.25</i>

Vehicle Volumes and Adjustments

Major Street	Northbound			Southbound			
	Movement	1	2	3	4	5	6
		L	T	R	L	T	R
Volume (veh/h)		325	481	59	23	615	57
Peak-Hour Factor, PHF		0.91	0.91	0.91	0.91	0.91	0.91
Hourly Flow Rate, HFR (veh/h)		357	528	64	25	675	62
Percent Heavy Vehicles		2	--	--	2	--	--
Median Type	<i>Two Way Left Turn Lane</i>						
RT Channelized				0			0
Lanes		1	2	0	1	2	1
Configuration		L	T	TR	L	T	R
Upstream Signal			0			0	

Minor Street	Eastbound			Westbound			
	Movement	7	8	9	10	11	12
		L	T	R	L	T	R
Volume (veh/h)		21	3	186	56	5	40
Peak-Hour Factor, PHF		0.91	0.91	0.91	0.91	0.91	0.91
Hourly Flow Rate, HFR (veh/h)		23	3	204	61	5	43
Percent Heavy Vehicles		2	2	2	2	2	2
Percent Grade (%)			0			0	
Flared Approach			N			N	
Storage			0			0	
RT Channelized				0			0
Lanes		0	1	1	0	1	0
Configuration		LT		R		LTR	

Delay, Queue Length, and Level of Service

Approach	Northbound	Southbound	Westbound			Eastbound			
	Movement	1	4	7	8	9	10	11	12
Lane Configuration		L	L		LTR		LT		R
v (veh/h)		357	25		109		26		204
C (m) (veh/h)		865	980		69		106		658
v/c		0.41	0.03		1.58		0.25		0.31
95% queue length		2.04	0.08		9.36		0.89		1.32
Control Delay (s/veh)		12.1	8.8		420.2		49.7		12.9
LOS		B	A		F		E		B
Approach Delay (s/veh)		--	--		420.2		17.1		
Approach LOS		--	--		F		C		

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TWO-WAY STOP CONTROL SUMMARY

General Information		Site Information	
Analyst	BJH	Intersection	Gallaher View / Walker Springs
Agency/Co.	Cannon & Cannon	Jurisdiction	City of Knoxville
Date Performed	2/7/2008	Analysis Year	2010
Analysis Time Period	Combined AM		

Project Description: Walker Crossing Apartments with Proposed Driveway	
East/West Street: Walker Springs Ln	North/South Street: Gallaher View Rd
Intersection Orientation: North-South	Study Period (hrs): 0.25

Vehicle Volumes and Adjustments

Major Street	Northbound			Southbound		
	1	2	3	4	5	6
Movement	L	T	R	L	T	R
Volume (veh/h)	33	358	84	43	1029	15
Peak-Hour Factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94
Hourly Flow Rate, HFR (veh/h)	35	380	89	45	1094	15
Percent Heavy Vehicles	2	--	--	2	--	--
Median Type	Two Way Left Turn Lane					
RT Channelized			0			0
Lanes	1	2	0	1	2	1
Configuration	L	T	TR	L	T	R
Upstream Signal		0			0	

Minor Street	Eastbound			Westbound		
	7	8	9	10	11	12
Movement	L	T	R	L	T	R
Volume (veh/h)	3	0	36	69	0	30
Peak-Hour Factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94
Hourly Flow Rate, HFR (veh/h)	3	0	38	73	0	31
Percent Heavy Vehicles	2	2	2	2	2	2
Percent Grade (%)	0			0		
Flared Approach		N			N	
Storage		0			0	
RT Channelized			0			0
Lanes	0	1	1	0	1	0
Configuration	LT		R		LTR	

Delay, Queue Length, and Level of Service

Approach	Northbound	Southbound	Westbound			Eastbound		
	1	4	7	8	9	10	11	12
Movement	L	L	LTR	LT	R			
v (veh/h)	35	45	104	3	38			
C (m) (veh/h)	625	1089	359	180	481			
v/c	0.06	0.04	0.29	0.02	0.08			
95% queue length	0.18	0.13	1.18	0.05	0.26			
Control Delay (s/veh)	11.1	8.4	19.1	25.3	13.1			
LOS	B	A	C	D	B			
Approach Delay (s/veh)	--	--	19.1	14.0				
Approach LOS	--	--	C	B				

TWO-WAY STOP CONTROL SUMMARY

General Information		Site Information	
Analyst	BJH	Intersection	Gallaher View / Walker Springs
Agency/Co.	Cannon & Cannon	Jurisdiction	City of Knoxville
Date Performed	2/7/2008	Analysis Year	2010
Analysis Time Period	Combined PM		

Project Description: Walker Crossing Apartments with Proposed Driveway
 East/West Street: Walker Springs Ln North/South Street: Gallaher View Rd
 Intersection Orientation: North-South Study Period (hrs): 0.25

Vehicle Volumes and Adjustments

Major Street	Northbound			Southbound			
	Movement	1	2	3	4	5	6
		L	T	R	L	T	R
Volume (veh/h)		193	1017	72	25	704	36
Peak-Hour Factor, PHF		0.92	0.92	0.92	0.92	0.92	0.92
Hourly Flow Rate, HFR (veh/h)		209	1105	78	27	765	39
Percent Heavy Vehicles		2	--	--	2	--	--
Median Type	Two Way Left Turn Lane						
RT Channelized				0			0
Lanes		1	2	0	1	2	1
Configuration		L	T	TR	L	T	R
Upstream Signal			0			0	

Minor Street	Eastbound			Westbound			
	Movement	7	8	9	10	11	12
		L	T	R	L	T	R
Volume (veh/h)		19	0	191	57	2	40
Peak-Hour Factor, PHF		0.92	0.92	0.92	0.92	0.92	0.92
Hourly Flow Rate, HFR (veh/h)		20	0	207	61	2	43
Percent Heavy Vehicles		2	2	2	2	2	2
Percent Grade (%)			0			0	
Flared Approach			N			N	
Storage			0			0	
RT Channelized				0			0
Lanes		0	1	1	0	1	0
Configuration		LT		R		LTR	

Delay, Queue Length, and Level of Service

Approach	Northbound	Southbound	Westbound			Eastbound			
	Movement	1	4	7	8	9	10	11	12
Lane Configuration		L	L		LTR		LT		R
v (veh/h)		209	27		106		20		207
C (m) (veh/h)		816	586		111		132		616
v/c		0.26	0.05		0.95		0.15		0.34
95% queue length		1.02	0.14		6.00		0.52		1.48
Control Delay (s/veh)		10.9	11.4		145.8		37.1		13.8
LOS		B	B		F		E		B
Approach Delay (s/veh)		--	--		145.8		15.8		
Approach LOS		--	--		F		C		

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TWO-WAY STOP CONTROL SUMMARY							
General Information				Site Information			
Analyst	BJH			Intersection	Gallaher View / Walker Springs		
Agency/Co.	Cannon & Cannon			Jurisdiction	City of Knoxville		
Date Performed	2/7/2008			Analysis Year	2010		
Analysis Time Period	Combined Saturday						
Project Description Walker Crossing Apartments with Proposed Driveway							
East/West Street: Walker Springs Ln				North/South Street: Gallaher View Rd			
Intersection Orientation: North-South				Study Period (hrs): 0.25			
Vehicle Volumes and Adjustments							
Major Street	Northbound			Southbound			
Movement	1	2	3	4	5	6	
	L	T	R	L	T	R	
Volume (veh/h)	325	503	37	14	637	59	
Peak-Hour Factor, PHF	0.91	0.91	0.91	0.91	0.91	0.91	
Hourly Flow Rate, HFR (veh/h)	357	552	40	15	699	64	
Percent Heavy Vehicles	2	--	--	2	--	--	
Median Type	Two Way Left Turn Lane						
RT Channelized			0				0
Lanes	1	2	0	1	2		1
Configuration	L	T	TR	L	T		R
Upstream Signal		0			0		
Minor Street	Eastbound			Westbound			
Movement	7	8	9	10	11	12	
	L	T	R	L	T	R	
Volume (veh/h)	23	4	186	33	3	24	
Peak-Hour Factor, PHF	0.91	0.91	0.91	0.91	0.91	0.91	
Hourly Flow Rate, HFR (veh/h)	25	4	204	36	3	26	
Percent Heavy Vehicles	2	2	2	2	2	2	
Percent Grade (%)	0			0			
Flared Approach		N			N		
Storage		0			0		
RT Channelized			0				0
Lanes	0	1	1	0	1		0
Configuration	LT		R		LTR		
Delay, Queue Length, and Level of Service							
Approach	Northbound	Southbound	Westbound			Eastbound	
Movement	1	4	7	8	9	10	11
Lane Configuration	L	L	LTR			LT	R
v (veh/h)	357	15	65			29	204
C (m) (veh/h)	845	980	74			116	646
v/c	0.42	0.02	0.88			0.25	0.32
95% queue length	2.12	0.05	4.41			0.92	1.35
Control Delay (s/veh)	12.3	8.7	167.6			46.1	13.1
LOS	B	A	F			E	B
Approach Delay (s/veh)	--	--	167.6			17.2	
Approach LOS	--	--	F			C	

TWO-WAY STOP CONTROL SUMMARY							
General Information				Site Information			
Analyst	BJH			Intersection	Gallagher View / Site Driveway		
Agency/Co.	Cannon & Cannon			Jurisdiction	City of Knoxville		
Date Performed	2/7/2008			Analysis Year	2010		
Analysis Time Period	Combined AM						
Project Description Walker Crossing Apartments with Proposed Driveway							
East/West Street: Proposed Driveway				North/South Street: Gallagher View Rd			
Intersection Orientation: North-South				Study Period (hrs): 0.25			
Vehicle Volumes and Adjustments							
Major Street	Northbound			Southbound			
Movement	1	2	3	4	5	6	
	L	T	R	L	T	R	
Volume (veh/h)		381	10	5	1048		
Peak-Hour Factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94	
Hourly Flow Rate, HFR (veh/h)	0	405	10	5	1114	0	
Percent Heavy Vehicles	0	--	--	2	--	--	
Median Type	Two Way Left Turn Lane						
RT Channelized			0				0
Lanes	0	2	0	1	2		0
Configuration		T	TR	L	T		
Upstream Signal		0			0		
Minor Street	Eastbound			Westbound			
Movement	7	8	9	10	11	12	
	L	T	R	L	T	R	
Volume (veh/h)				39		18	
Peak-Hour Factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94	
Hourly Flow Rate, HFR (veh/h)	0	0	0	41	0	19	
Percent Heavy Vehicles	0	0	0	2	0	2	
Percent Grade (%)	0			0			
Flared Approach		N			N		
Storage		0			0		
RT Channelized			0			0	
Lanes	0	0	0	0	0	0	
Configuration					LR		
Delay, Queue Length, and Level of Service							
Approach	Northbound	Southbound	Westbound			Eastbound	
Movement	1	4	7	8	9	10	11
Lane Configuration		L		LR			
v (veh/h)		5		60			
C (m) (veh/h)		1140		513			
v/c		0.00		0.12			
95% queue length		0.01		0.39			
Control Delay (s/veh)		8.2		12.9			
LOS		A		B			
Approach Delay (s/veh)	--	--		12.9			
Approach LOS	--	--		B			

TWO-WAY STOP CONTROL SUMMARY			
General Information		Site Information	
Analyst	BJH	Intersection	Gallaher View / Site Driveway
Agency/Co.	Cannon & Cannon	Jurisdiction	City of Knoxville
Date Performed	2/7/2008	Analysis Year	2010
Analysis Time Period	Combined PM		
Project Description: Walker Crossing Apartments with Proposed Driveway			
East/West Street: Proposed Driveway		North/South Street: Gallaher View Rd	
Intersection Orientation: North-South		Study Period (hrs): 0.25	

Vehicle Volumes and Adjustments						
Major Street	Northbound			Southbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume (veh/h)		1036	40	19	736	
Peak-Hour Factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Hourly Flow Rate, HFR (veh/h)	0	1126	43	20	799	0
Percent Heavy Vehicles	0	--	--	2	--	--
Median Type	Two Way Left Turn Lane					
RT Channelized			0			0
Lanes	0	2	0	1	2	0
Configuration		T	TR	L	T	
Upstream Signal		0			0	
Minor Street	Eastbound			Westbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume (veh/h)				29		19
Peak-Hour Factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Hourly Flow Rate, HFR (veh/h)	0	0	0	31	0	20
Percent Heavy Vehicles	0	0	0	2	0	2
Percent Grade (%)		0			0	
Flared Approach		N			N	
Storage		0			0	
RT Channelized			0			0
Lanes	0	0	0	0	0	0
Configuration					LR	

Delay, Queue Length, and Level of Service							
Approach	Northbound	Southbound	Westbound			Eastbound	
Movement	1	4	7	8	9	10	11
Lane Configuration		L		LR			
v (veh/h)		20		51			
C (m) (veh/h)		593		293			
v/c		0.03		0.17			
95% queue length		0.10		0.62			
Control Delay (s/veh)		11.3		19.9			
LOS		B		C			
Approach Delay (s/veh)	--	--		19.9			
Approach LOS	--	--		C			

TWO-WAY STOP CONTROL SUMMARY

General Information		Site Information	
Analyst	BJH	Intersection	Gallaher View / Site Driveway
Agency/Co.	Cannon & Cannon	Jurisdiction	City of Knoxville
Date Performed	2/7/2008	Analysis Year	2010
Analysis Time Period	Combined Saturday		

Project Description		Walker Crossing Apartments with Proposed Driveway	
East/West Street:		Proposed Driveway	
North/South Street:		Gallaher View Rd	
Intersection Orientation:		North-South	
Study Period (hrs):		0.25	

Vehicle Volumes and Adjustments

Major Street	Northbound			Southbound			
	Movement	1	2	3	4	5	6
		L	T	R	L	T	R
Volume (veh/h)			526	26	9	686	
Peak-Hour Factor, PHF		0.91	0.91	0.91	0.91	0.91	0.91
Hourly Flow Rate, HFR (veh/h)		0	578	28	9	753	0
Percent Heavy Vehicles		0	--	--	2	--	--
Median Type	Two Way Left Turn Lane						
RT Channelized				0			0
Lanes		0	2	0	1	2	0
Configuration			T	TR	L	T	
Upstream Signal			0			0	

Minor Street	Eastbound			Westbound			
	Movement	7	8	9	10	11	12
		L	T	R	L	T	R
Volume (veh/h)					26		16
Peak-Hour Factor, PHF		0.91	0.91	0.91	0.91	0.91	0.91
Hourly Flow Rate, HFR (veh/h)		0	0	0	28	0	17
Percent Heavy Vehicles		0	0	0	2	0	2
Percent Grade (%)			0			0	
Flared Approach			N			N	
Storage			0			0	
RT Channelized				0			0
Lanes		0	0	0	0	0	0
Configuration						LR	

Delay, Queue Length, and Level of Service

Approach	Northbound	Southbound	Westbound			Eastbound		
			7	8	9	10	11	12
Movement	1	4						
Lane Configuration		L		LR				
v (veh/h)		9		45				
C (m) (veh/h)		968		505				
v/c		0.01		0.09				
95% queue length		0.03		0.29				
Control Delay (s/veh)		8.8		12.8				
LOS		A		B				
Approach Delay (s/veh)	--	--		12.8				
Approach LOS	--	--		B				

