

E-20-627  
#1

# Knoxville External Travel Survey Final Report

(E-20-G27a)  
James Pederson

Prepared for

NuStats  
3006 Bee Caves Rd.  
Suite A-300  
Austin, TX 78746

By

Air Quality Laboratory  
School of Civil and Environmental Engineering  
Georgia Institute of Technology  
Atlanta, GA 30332-0355



**THE AIR QUALITY  
LABORATORY**

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## Data Collection

The Georgia Institute of Technology Air Quality Laboratory collected data at 20 sites in the Knoxville, TN area over a period of 6 weeks in November and December of 2000. This data consisted of capturing the license plate information from cars entering either Knox or Blount Counties.

The data was collected in one of three ways, handwritten, voice recorder or video capture. The license plate number along with the date, time, location and vehicle direction were entered into a spreadsheet. The data in the spreadsheet was sorted against the vehicle registration database for the State of Tennessee and this merged file was then sent to NuStats for survey processing. A comparison of the data collection techniques is presented in Table 1. The video capture method was far superior to either the audio or handwritten method. The data in the table only accounts for the number of license plates entered, not the number of plates that were matched correctly. The match rate was very low for the audio method and comparable for the handwritten and video methods. There is no correction for the traffic volumes in this data which may impact the video capture method the most.

Method	Median (plates per hour)	Average (plates per hour)
audio	142	192
handwritten	79	95
video capture	225	247

A detailed description of the video capture method is given in the next section. Table 2 provides the detailed descriptive statistics for each site. A total of 29698 plates were captured at all the sites with an overall match rate of 69.0%. The original goal was set for 14250 plates matched and we exceeded that goal by 144%. Table 3 gives the site volume counts by hour.

## Equipment

### License Plate Data Capture

The vehicle license plate information is acquired with a high-resolution video camera connected to a computer with image capture capabilities. The industrial video camera is a 3-CCD chip system with a high magnification lens. The license plate image is captured with a pc-based video capture board with an external trigger. Figure 1 shows the computer system installed in a mini-van for testing. The camera is mounted on a tripod and can be placed either outside the van along the roadway or mounted in the van during inclement weather or for security reasons. Sites are selected so that both the van and camera system are well off the main thoroughfare as shown in Figure 2. A new image is captured and stored on the computer with the activation of a hand-held trigger as shown in Figure 3. Each license plate is captured as a jpeg image. Depending on traffic volume, number of vehicle lanes and site layout, up to 400 vehicles per hour can be captured with this system. The files are compiled on a daily basis and written to a CD-ROM that is then delivered to the data entry personal.



Figure 1. Computer and Video Capture System. Live video is feed through the television monitor and into the computer. Captured image is shown on the computer screen.



Figure 2. Camera along the roadway. The van is positioned immediately behind the camera so that oncoming traffic does not see the system as they approach.



Figure 3. License Plate captured as a jpeg image.



**Table 2. Site Statistics**

Station Location	Date Sampled	1999 Two-Way Daily Traffic Count	1999 Estimated One-Way Daily Traffic Count	Fraction of Count During the Survey Period	Percent of Vehicles that are Passenger Vehicles	Estimated Passenger Vehicle Volume during Survey Ho
Knox County						
1. S.R. 62 (Oak Ridge Highway) at Anderson Co. Line	11/27/00	40,212	20,106	65.0%	95%	12,415
2. US 25W (Clinton Highway) at Anderson Co. Line	11/29/00	18,496	9,248	65.0%	95%	5,711
4. Raccoon Valley Road at Anderson Co. Line	11/30/00	3,302	1,651	65.0%	93%	998
5. I-75 at Anderson Co. Line	11/14/00	37,606	18,803	65.0%	78%	9,533
6. US 441 (Norris Freeway) at Anderson Co. Line	11/28/00	4,458	2,229	65.0%	95%	1,376
8. S.R. 33 (Maynardville Highway) at Union Co. Line	12/11/00	12,747	6,374	65.0%	93%	3,853
9. SR 131 (Tazewell Pike) at Union Co. Line	12/11/00	5,511	2,756	65.0%	97%	1,737
11. SR 61 (Emory Road) at Grainger Co. Line	11/16/00	1,825	913	65.0%	89%	528
12. US 11W (Rutledge Pike) at Grainger Co. Line	12/07/00	8,601	4,301	65.0%	85%	2,376
13. US 11E (Andrew Johnson Highway) at Jefferson Co. Line	12/05/00	28,265	14,133	65.0%	89%	8,176
14. US 25W (Asheville Highway) at Sevier Co. Line	12/06/00	4,574	2,287	65.0%	97%	1,442
15. I-40 at Sevier County Line	11/13/00 12/13/00	69,292	34,646	65.0%	68%	15,314
17. US 441 (Chapman Highway) at Sevier Co. Line	12/06/00	24,757	12,379	65.0%	98%	7,885
19. US 70 (Kinston Pike) at Loudon Co. Line	12/12/00	16,831	8,416	65.0%	97%	5,306
20. I-40 at Loudon Co. Line	11/16/00	84,065	42,033	65.0%	73%	19,944
Blount County						
21. US 411 (Sevierville Road) at Sevier Co. Line	12/12/00	3,404	1,702	65.0%	98%	1,084
22. US 321 (Wears Valley Road) at Sevier Co. Line	12/13/00	4,260	2,130	65.0%	95%	1,315
23. SR 73 at Sevier Co. Line	12/14/00	5,653	2,827	65.0%	95%	1,745
25. US 411 at Loudon Co. Line	12/04/00	12,851	6,426	65.0%	88%	3,675
26. US 321 (Lamar Alexander Parkway) at Loudon Co. Line	12/04/00	8,601	4,301	65.0%	89%	2,488
Total Count		401,670	200,835			

Station Location	Single Lane Capture Rate	Plates Captured Daily in One Lane	Estimated Percent of Vehicles that are External	Percent of External Vehicles that are from TN	Applicable Plates Captured	Actual Number of Plates Captured	Actual Number of Plates Match
Knox County							
1. S.R. 62 (Oak Ridge Highway) at Anderson Co. Line	40%	2,483	90%	90%	2011	2883	2128
2. US 25W (Clinton Highway) at Anderson Co. Line	50%	1,428	90%	90%	1156	2596	1765
4. Raccoon Valley Road at Anderson Co. Line	75%	749	90%	90%	606	623	453
5. I-75 at Anderson Co. Line	40%	1,907	90%	90%	1544	786	543
6. US 441 (Norris Freeway) at Anderson Co. Line	75%	1,032	90%	90%	836	548	402
8. S.R. 33 (Maynardville Highway) at Union Co. Line	75%	2,890	90%	90%	2341	2391	1836
9. SR 131 (Tazewell Pike) at Union Co. Line	75%	1,303	90%	90%	1055	787	566
11. SR 61 (Emory Road) at Grainger Co. Line	75%	396	90%	90%	321	230	177
12. US 11W (Rutledge Pike) at Grainger Co. Line	75%	1,782	90%	90%	1443	1408	1064
13. US 11E (Andrew Johnson Highway) at Jefferson Co. Line	50%	2,044	90%	90%	1656	2433	1843
14. US 25W (Asheville Highway) at Sevier Co. Line	75%	1,081	90%	90%	876	508	343
15. I-40 at Sevier County Line	40%	2,042	90%	80%	1470	3388	1242
17. US 441 (Chapman Highway) at Sevier Co. Line	50%	1,971	90%	90%	1597	2951	2361
19. US 70 (Kinston Pike) at Loudon Co. Line	50%	1,326	90%	90%	1074	1789	1373
20. I-40 at Loudon Co. Line	40%	2,659	90%	80%	1915	1974	1541
Blount County							
21. US 411 (Sevierville Road) at Sevier Co. Line	50%	271	90%	80%	195	707	513
22. US 321 (Wears Valley Road) at Sevier Co. Line	75%	986	90%	80%	710	436	305
23. SR 73 at Sevier Co. Line	75%	1,309	90%	80%	942	100	73
25. US 411 at Loudon Co. Line	50%	919	90%	80%	662	2390	1363
26. US 321 (Lamar Alexander Parkway) at Loudon Co. Line	75%	1,866	90%	80%	1343	770	607
Total Count		30444			23755	29698	20498

Station Location	Estimated Plate Match Rate	Estimated Number of Plates Matched	Percent of Goal Matched	Estimated Response Rate	Valid Responses per Day	Totals at 1.5 days of Data Collection
Knox County						
1. S.R. 62 (Oak Ridge Highway) at Anderson Co. Line	60%	1207	176%	5%	60	91
2. US 25W (Clinton Highway) at Anderson Co. Line	60%	694	254%	5%	35	52
4. Raccoon Valley Road at Anderson Co. Line	60%	364	125%	5%	18	27
5. I-75 at Anderson Co. Line	60%	927	59%	5%	46	69
6. US 441 (Norris Freeway) at Anderson Co. Line	60%	502	80%	5%	25	38
8. S.R. 33 (Maynardville Highway) at Union Co. Line	60%	1404	131%	5%	70	105
9. SR 131 (Tazewell Pike) at Union Co. Line	60%	633	89%	5%	32	47
11. SR 61 (Emory Road) at Grainger Co. Line	60%	192	92%	5%	10	14
12. US 11W (Rutledge Pike) at Grainger Co. Line	60%	866	123%	5%	43	65
13. US 11E (Andrew Johnson Highway) at Jefferson Co. Line	60%	993	186%	5%	50	75
14. US 25W (Asheville Highway) at Sevier Co. Line	60%	526	65%	5%	26	39
15. I-40 at Sevier County Line	60%	882	141%	5%	44	66
17. US 441 (Chapman Highway) at Sevier Co. Line	60%	958	246%	5%	48	72
19. US 70 (Kinston Pike) at Loudon Co. Line	60%	645	213%	5%	32	48
20. I-40 at Loudon Co. Line	60%	1149	134%	5%	57	86
						-
Blount County						
						-
21. US 411 (Sevierville Road) at Sevier Co. Line	60%	117	438%	5%	6	9
22. US 321 (Wears Valley Road) at Sevier Co. Line	60%	426	72%	5%	21	32
23. SR 73 at Sevier Co. Line	60%	565	13%	5%	28	42
25. US 411 at Loudon Co. Line	60%	397	343%	5%	20	30
26. US 321 (Lamar Alexander Parkway) at Loudon Co. Line	60%	806	75%	5%	40	60
Total Count		14253	144%		713	1069

**Table 3. Site Volumes by Date and Hour**

Filename	Site #	Date	Time	method	Records	Tot. Volume		Plates	Tot. Volume	Comment
						(Period)	total hour			
Site1b.dat	1	11/27/2000	9:00	hand	10	1175	1	10	1175	
Site1b.dat	1	11/27/2000	10:00	hand	43	1087	1	43	1087	
Site1b.dat	1	11/27/2000	11:00	video	20	1120	1	20	1120	
Site1b.dat	1	11/27/2000	7:00	hand	26	472	0.17	153	1727	beg. 7:50
Site1b.dat	1	11/27/2000	8:00	hand	211	1533	1	211	1533	
Site1b.dat	1	11/27/2000	9:00	hand	207	1175	1	207	1175	
Site1b.dat	1	11/27/2000	10:00	hand	186	788	0.67	278	299	end 10:40
Site1c.dat	1	11/27/2000	12:00	video	180	816	0.33	545	816	beg. 12:20
Site1c.dat	1	11/27/2000	13:00	video	276	1089	1	276	1089	
Site1c.dat	1	11/27/2000	14:00	video	727	1309	1	727	1309	
Site1c.dat	1	11/27/2000	15:00	video	506	2072	1	506	2072	
Site1c.dat	1	11/27/2000	16:00	video	122	2399	1	122	2399	
Site1c.dat	1	11/27/2000	17:00	video	223	2756	1	223	2756	
Site1c.dat	1	11/27/2000	18:00	video	145	944	0.5	290	944	end 18:30
Site2.dat	2	11/29/2000	9:00	video	190	No Data	0.1	1900	No Data	beg. late in hour
Site2.dat	2	11/29/2000	10:00	video	150	No Data	1	150	No Data	
Site2b.dat	2	11/29/2000	8:00	video	327	No Data	1	327	No Data	
Site2b.dat	2	11/29/2000	9:00	video	273	No Data	1	273	No Data	
Site2c.dat	2	11/29/2000	10:00	video	79	No Data	0.1	790	No Data	beg. late in hour
Site2c.dat	2	11/29/2000	11:00	video	225	No Data	1	225	No Data	
Site2c.dat	2	11/29/2000	12:00	video	83	No Data	1	83	No Data	
Site2c.dat	2	11/29/2000	13:00	video	88	No Data	1	88	No Data	
Site2c.dat	2	11/29/2000	14:00	video	65	No Data	1	65	No Data	
Site2c.dat	2	11/29/2000	15:00	video	541	No Data	1	541	No Data	
Site2c.dat	2	11/29/2000	16:00	video	362	No Data	1	362	No Data	
Site2c.dat	2	11/29/2000	17:00	video	213	No Data	0.25	852	No Data	end 5:15
Site4.dat	4	11/30/2000	8:00	video	31	56	1	31	56	
Site4.dat	4	11/30/2000	9:00	video	36	52	1	36	52	
Site4.dat	4	11/30/2000	10:00	video	52	69	1	52	69	
Site4.dat	4	11/30/2000	11:00	video	30	41	0.75	40	58	end 11:45
Site4.dat	4	11/30/2000	12:00	video	3	20	0.1	30	77	beg./end 12:30
Site4.dat	4	11/30/2000	13:00	video	3	19	0.25	12	70	beg. 1:45
Site4.dat	4	11/30/2000	14:00	video	8	94	1	8	94	
Site4.dat	4	11/30/2000	11:00	video	8	17	0.25	32	58	beg. 11:45
Site4.dat	4	11/30/2000	12:00	video	26	59	0.75	35	77	end 12:45
Site4.dat	4	11/30/2000	14:00	video	27	94	1	27	94	
Site4.dat	4	11/30/2000	15:00	video	92	163	1	92	163	
Site4.dat	4	11/30/2000	17:00	video	14	56	0.66	21	225	end 5:20
Site4.dat	4	11/30/2000	15:00	video	43	93	0.5	86	163	beg. 3:30
Site4.dat	4	11/30/2000	16:00	video	166	228	1	166	228	
Site4.dat	4	11/30/2000	17:00	video	63	56	0.25	252	225	end 5:15
Site5a.dat	5	11/14/2000	10:00	audio	4	261	0.17	24	24	beg. 10:50
Site5a.dat	5	11/14/2000	11:00	audio	89	930	1	89	930	
Site5a.dat	5	11/14/2000	12:00	audio	76	972	1	76	972	
Site5a.dat	5	11/14/2000	13:00	audio	109	1043	1	109	1043	
Site5a.dat	5	11/14/2000	14:00	audio	133	978	1	133	987	
Site5a.dat	5	11/14/2000	15:00	audio	126	1076	1	126	1076	
Site5a.dat	5	11/14/2000	16:00	audio	222	1096	1	222	1096	

Note: All t  
are at the t  
otherwise t

First half hour was t

Site5b.dat	5	11/14/2000	13:00	audio	9	269	0.33	27	1043	beg. 13:40
Site5b.dat	5	11/14/2000	14:00	audio	18	480	0.5	36	987	end 14:30
Site6.dat	6	11/28/2000	10:00	video	28	61	0.66	42	83	beg. 10:20
Site6.dat	6	11/28/2000	11:00	video	78	110	1	78	110	
Site6.dat	6	11/28/2000	12:00	video	11	18	0.25	44	90	end 12:15
Site6.dat	6	11/28/2000	13:00	video	37	49	0.5	74	97	beg. 13:30
Site6.dat	6	11/28/2000	14:00	video	91	131	1	91	131	
Site6.dat	6	11/28/2000	15:00	video	125	170	1	125	170	
Site6.dat	6	11/28/2000	16:00	video	117	154	1	117	154	
Site6.dat	6	11/28/2000	17:00	video	67	45	0.25	268	139	end 17:15
Site8.dat	8	12/11/2000	7:00	video	77	No Data	0.33	233	No Data	beg. 7:40
Site8.dat	8	12/11/2000	8:00	video	481	No Data	1	481	No Data	
Site8.dat	8	12/11/2000	9:00	video	192	No Data	1	192	No Data	
Site8.dat	8	12/11/2000	10:00	video	275	499	1	275	499	
Site8.dat	8	12/11/2000	11:00	video	251	394	1	251	394	
Site8.dat	8	12/11/2000	12:00	video	52	95	0.17	306	429	end 12:10
Site8a.dat	8	12/11/2000	13:00	video	198	324	0.75	264	424	beg. 13:15
Site8a.dat	8	12/11/2000	14:00	video	318	410	1	318	410	
Site8a.dat	8	12/11/2000	15:00	video	245	463	1	245	463	
Site8a.dat	8	12/11/2000	16:00	video	259	460	1	259	460	
Site8a.dat	8	12/11/2000	17:00	video	41	108	0.17	241	395	end 17:10
Site9.dat	9	12/11/2000	8:00	hand	98	No Data	1	98	No Data	
Site9.dat	9	12/11/2000	9:00	hand	110	No Data	1	110	No Data	
Site9.dat	9	12/11/2000	10:00	hand	99		1	99		Only Traffic Vol. Data after 10:15
Site9.dat	9	12/11/2000	11:00	hand	98	132	1	98	132	From 10:15-11:00
Site9.dat	9	12/11/2000	12:00	hand	84	129	1	84	129	
Site9.dat	9	12/11/2000	13:00	hand	70	70	0.5	140	142	end 13:30
Site9.dat	9	12/11/2000	14:00	hand	57	113	0.67	85	147	beg. 14:20
Site9.dat	9	12/11/2000	15:00	hand	88	125	1	88	125	
Site9.dat	9	12/11/2000	16:00	hand	85	139	0.67	127	179	end 16:40
Site11.dat	11	11/16/2000	8:00	hand	25	54	1	25	54	
Site11.dat	11	11/16/2000	9:00	hand	34	47	1	34	47	
Site11.dat	11	11/16/2000	10:00	hand	36	36	1	36	36	
Site11.dat	11	11/16/2000	11:00	hand	19	43	1	19	43	
Site11.dat	11	11/16/2000	12:00	hand	20	32	0.67	30	41	end 12:40
Site11.dat	11	11/16/2000	14:00	hand	36	53	1	36	53	
Site11.dat	11	11/16/2000	15:00	hand	33	51	1	33	51	
Site11.dat	11	11/16/2000	16:00	hand	27	43	0.67	40	65	end 16:40
Site12.dat	12	12/07/2000	7:00	video	98	172	0.5	196	377	beg. 7:30
Site12.dat	12	12/07/2000	8:00	video	210	256	1	210	256	
Site12.dat	12	12/07/2000	9:00	video	183	241	1	183	241	
Site12.dat	12	12/07/2000	10:00	video	163	222	1	163	222	
Site12.dat	12	12/07/2000	11:00	video	150	186	1	150	186	
Site12.dat	12	12/07/2000	12:00	video	27	47	0.1	270	175	end just after 12:00
Site12.dat	12	12/07/2000	13:00	video	89	219	1	89	219	
Site12.dat	12	12/07/2000	14:00	video	137	244	1	137	244	
Site12.dat	12	12/07/2000	15:00	video	179	230	1	179	230	
Site12.dat	12	12/07/2000	16:00	video	171	247	1	171	247	
Site13.dat	13	12/05/2000	7:00	video	163	569	0.5	326	1144	beg. 7:30
Site13.dat	13	12/05/2000	8:00	video	386	735	1	386	735	
Site13a.d at	13	12/05/2000	9:00	video	273	615	1	273	615	

Between 9 A.M. and  
plates were captured

Site13a.d at	13	12/05/2000	10:00	video	267	558	1	267	558	
Site13b.d at	13	12/05/2000	11:00	video	326	541	1	326	541	
Site13b.d at	13	12/05/2000	12:00	video	36	138	0.1	360	512	end 12:05
Site13b.d at	13	12/05/2000	14:00	video	219	577	1	219	577	
Site13b.d at	13	12/05/2000	15:00	video	383	670	1	383	670	
Site13b.d at	13	12/05/2000	16:00	video	364	711	1	364	711	
Site13b.d at	13	12/05/2000	17:00	video	17	182	0.17	100	734	end 17:11
Site14.dat	14	12/06/2000	7:00	hand	27	42	0.25	108	233	beg. 7:45
Site14.dat	14	12/06/2000	8:00	hand	79	134	1	79	134	
Site14.dat	14	12/06/2000	9:00	hand	82	117	1	82	117	
Site14.dat	14	12/06/2000	10:00	hand	66	112	1	66	112	
Site14.dat	14	12/06/2000	11:00	hand	86	100	1	86	100	
Site14.dat	14	12/06/2000	12:00	hand	53	111	1	53	111	
Site14.dat	14	12/06/2000	14:00	hand	74	115	1	74	115	
Site14.dat	14	12/06/2000	15:00	hand	39		0.17	229		end 15:10
Site15a.d at	15	11/13/2000	15:00	audio	202	1092	0.83	243	1448	beg. 15:10
Site15a.d at	15	11/13/2000	16:00	audio	390	1520	1	390	1520	
Site15a.d at	15	11/13/2000	17:00	audio	142	388	0.33	430	1573	end 17:20
Site15chu ck.dat	15	12/13/2000	9:00	video	115	No Data	0.75	153	No Data	beg. 9:15
Site15chu ck.dat	15	12/13/2000	10:00	video	136	No Data	1	136	No Data	
Site15chu ck.dat	15	12/13/2000	11:00	video	93	No Data	1	93	No Data	
Site15chu ck.dat	15	12/13/2000	12:00	video	10	No Data	0.1	100	No Data	end just after 12:00
Site15chu ck.dat	15	12/13/2000	13:00	video	147	No Data	1	147	No Data	
Site15chu ck.dat	15	12/13/2000	15:00	video	53	No Data	1	53	No Data	
Site15chu ck.dat	15	12/13/2000	16:00	video	79	No Data	1	79	No Data	
Site15j.dat	15	11/13/2000	8:00	audio	88	845	0.67	131	1106	beg. 8:20
Site15j.dat	15	11/13/2000	10:00	audio	11		0.1	110		beg. 10:17
Site15j.dat	15	11/13/2000	11:00	audio	179	740	0.5	358	1437	end 11:30
Site15j.dat	15	11/13/2000	13:00	audio	63	332	0.17	371	1456	beg. 13:15
Site15j.dat	15	11/13/2000	15:00	audio	80	1078	0.67	119	1448	end 15:40
Site15r.dat	15	11/13/2000	10:00	audio	74	1099	0.75	99	1408	beg. 10:15
Site15r.dat	15	11/13/2000	11:00	audio	112	1437	1	112	1437	
Site15r.dat	15	11/13/2000	12:00	audio	22		0.1	220		end 12:05
Site15r.dat	15	11/13/2000	8:00	audio	150	1106	1	150	1106	
Site15r.dat	15	11/13/2000	9:00	audio	215	1208	1	215	1208	
Site15r.dat	15	11/13/2000	10:00	audio	34	309	0.25	136	1408	end 10:15
Site15r.dat	15	11/13/2000	12:00	audio	351	1475	1	351	1475	
Site15r.dat	15	11/13/2000	13:00	audio	95	369	0.67	142	1456	beg. 13:40

Site15r.dat	15	11/13/2000	14:00	audio	89	345	0.33	270	1541	end 14:20
Site15r.dat	15	11/13/2000	12:00	audio	27		0.1	270		beg: 12:55
Site15r.dat	15	11/13/2000	13:00	audio	252	1456	1	252	1456	
Site15r.dat	15	11/13/2000	14:00	audio	179	748	0.5	358	1541	end 14:30
Site17r.dat	17	12/06/2000	7:00	video	180	514	0.5	360	1054	beg: 7:30
Site17r.dat	17	12/06/2000	8:00	video	481	822	1	481	822	
Site17r.dat	17	12/06/2000	9:00	video	409	671	1	409	671	
Site17a.d	17	12/06/2000	10:00	video	238	489	0.8	298	621	end 10:47
Site17b.d	17	12/06/2000	10:00	video	81	132	0.2	405	621	beg: 10:47
Site17b.d	17	12/06/2000	11:00	video	414	647	1	414	647	
Site17b.d	17	12/06/2000	12:00	video	63	172	0.2	315	675	end shortly after 12:00
Site17b.d	17	12/06/2000	13:00	video	152	301	0.5	304	630	beg: 13:30
Site17b.d	17	12/06/2000	14:00	video	304	704	1	304	704	
Site17b.d	17	12/06/2000	15:00	video	380	750	1	380	750	
Site17b.d	17	12/06/2000	16:00	video	246	583	0.67	367	765	end 16:41
Site19r.dat	19	12/12/2000	8:00	video	68	566	1	68	566	
Site19r.dat	19	12/12/2000	9:00	video	206	455	1	206	455	
Site19r.dat	19	12/12/2000	10:00	video	219	402	1	219	402	
Site19r.dat	19	12/12/2000	11:00	video	199	506	1	199	506	
Site19r.dat	19	12/12/2000	12:00	video	268	405	1	268	405	
Site19r.dat	19	12/12/2000	14:00	video	202	446	1	202	446	
Site19r.dat	19	12/12/2000	15:00	video	292	520	1	292	520	
Site19r.dat	19	12/12/2000	16:00	video	335	554	1	335	554	
Site20r.dat	20	11/15/2000	7:00	hand	79	271	0.25	316	1096	beg: 7:45
Site20r.dat	20	11/15/2000	8:00	hand	136	962	1	136	962	
Site20r.dat	20	11/15/2000	9:00	hand	168	953	1	168	953	
Site20r.dat	20	11/15/2000	10:00	hand	230	984	1	230	984	
Site20r.dat	20	11/15/2000	11:00	hand	247	1030	1	247	1030	
Site20r.dat	20	11/15/2000	12:00	hand	56	235	0.33	170	1009	end 12:20
Site20r.dat	20	11/15/2000	13:00	hand	106	596	0.5	212	1193	beg: 13:30
Site20r.dat	20	11/15/2000	14:00	hand	235	1160	1	235	1160	
Site20r.dat	20	11/15/2000	15:00	hand	203	1349	1	203	1349	
Site20r.dat	20	11/15/2000	16:00	hand	178	1456	1	178	1456	
Site20r.dat	20	11/15/2000	17:00	hand	91	765	0.5	182	1424	end 17:30
Site20r.dat	20	11/15/2000	16:00	hand	108	774	0.5	216	1456	beg: 16:33
Site20r.dat	20	11/15/2000	17:00	hand	136	765	0.5	272	1424	end 17:30
Site21r.dat	21	12/12/2000	8:00	hand	25	40	0.33	76	211	beg: 8:40
Site21r.dat	21	12/12/2000	9:00	hand	105	184	1	105	184	
Site21r.dat	21	12/12/2000	10:00	hand	107	190	1	107	190	
Site21r.dat	21	12/12/2000	11:00	hand	132	191	1	132	191	
Site21r.dat	21	12/12/2000	12:00	hand	106	218	1	106	218	
Site21r.dat	21	12/12/2000	13:00	hand	122	201	1	122	201	
Site21r.dat	21	12/12/2000	14:00	hand	110	223	1	110	223	
Site22n.d	22	12/13/2000	9:00	hand	9	27	0.5	18	70	beg: 9:30
Site22n.d	22	12/13/2000	10:00	hand	18	76	1	18	76	On Site 22, I assumed the n and s v

Data Collected was

at	Site22n.d	22	12/13/2000	11:00	hand	27	76	1	27	76	respectively. It is a 1 lane road
at	Site22n.d	22	12/13/2000	12:00	hand	36	70	1	36	70	
at	Site22n.d	22	12/13/2000	13:00	hand	41	61	1	41	61	
at	Site22n.d	22	12/13/2000	14:00	hand	31	72	1	31	72	
at	Site22n.d	22	12/13/2000	15:00	hand	42	75	1	42	75	
at	Site22n.d	22	12/13/2000	16:00	hand	14	40	0.5	28	40	end 16:34
at	Site22s.d	22	12/13/2000	10:00	hand	17	57	0.5	34	57	beg: 10:30
at	Site22s.d	22	12/13/2000	11:00	hand	34	57	1	34	57	
at	Site22s.d	22	12/13/2000	12:00	hand	33	66	1	33	66	
at	Site22s.d	22	12/13/2000	13:00	hand	29	76	1	29	76	
at	Site22s.d	22	12/13/2000	14:00	hand	37	66	1	37	66	
at	Site22s.d	22	12/13/2000	15:00	hand	48	73	1	48	73	
at	Site22s.d	22	12/13/2000	16:00	hand	20	67	0.67	30	81	end 16:41
at	Site23.dat	23	12/14/2000	9:00	hand	6	8	1	6	8	
at	Site23.dat	23	12/14/2000	10:00	hand	5	11	0.33	15	20	beg: 10:39
at	Site23.dat	23	12/14/2000	11:00	hand	27	30	1	27	30	
at	Site23.dat	23	12/14/2000	12:00	hand	22	36	1	22	36	
at	Site23.dat	23	12/14/2000	14:00	hand	22	39	1	22	39	
at	Site23.dat	23	12/14/2000	15:00	hand	18	11	0.33	55	57	end 15:20
at	Site25.dat	25	12/04/2000	8:00	video	175	No Data	0.67	261	No Data	beg: 8:19
at	Site25.dat	25	12/04/2000	9:00	video	174	No Data	1	174	No Data	
at	Site25.dat	25	12/04/2000	10:00	video	238	322	1	238	322	Traffic Vol. Data does not start until
at	Site25.dat	25	12/04/2000	11:00	video	222	404	1	222	404	
at	Site25.dat	25	12/04/2000	12:00	video	59	99	0.25	236	412	end 12:15
at	Site25.dat	25	12/04/2000	13:00	video	47	118	0.17	276	493	beg: 13:52
at	Site25.dat	25	12/04/2000	14:00	video	214	418	1	214	418	
at	Site25.dat	25	12/04/2000	15:00	video	65	97	0.25	260	507	end 15:15
at	Site25TW	25	12/04/2000	15:00	video	222	410	0.67	331	507	beg: 15:22
at	Site25TW	25	12/04/2000	16:00	video	297	607	1	297	607	
at	Site25TW	25	12/04/2000	17:00	video	65	197	0.17	382	197	end 17:09
at	Site26.dat	26	12/04/2000	9:00	hand	70	197	0.9	78	197	
at	Site26.dat	26	12/04/2000	10:00	hand	73	199	1	73	199	beg: 9:06
at	Site26.dat	26	12/04/2000	11:00	hand	66	237	1	66	237	
at	Site26.dat	26	12/04/2000	13:00	hand	89	257	1	89	257	
at	Site26.dat	26	12/04/2000	14:00	hand	91	259	1	91	259	
at	Site26.dat	26	12/04/2000	15:00	hand	89	309	1	89	309	
at	Site26.dat	26	12/04/2000	16:00	hand	93	359	1	93	359	
at	Site26.dat	26	12/04/2000	17:00	hand	101	273	0.75	135	348	end 17:45
at	Site26Re	26	12/04/2000	7:00	hand	29	219	0.67	43	282	beg: 7:20
at	Site26Re	26	12/04/2000	8:00	hand	74	250	1	74	250	
at	Site26Re	26	12/04/2000	9:00	hand	4	48	0.1	40	197	end 9:06

\* Site26Re

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