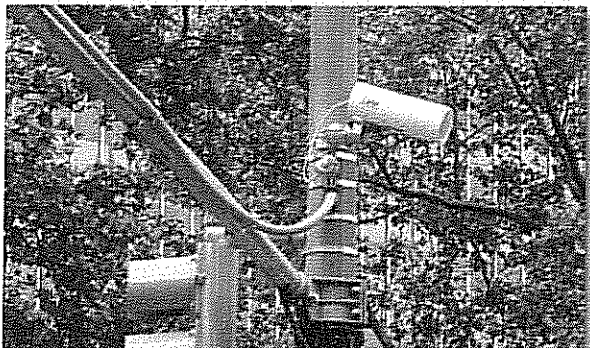


TTMS TRAVEL TIME MEASUREMENT SYSTEM



With the PIPS Travel Time Measurement System (TTMS), safety and traffic professionals can monitor network capacity and performance as well as traffic movements along sections of highway or through road construction zones.

TTMS is an Automatic License Plate Recognition (ALPR) system that analyzes traffic patterns in real time. The system records the date, time and the license plate of a passing vehicle between two or more points. When a vehicle passes the first camera, a picture of the license plate is taken and Optical Character Recognition (OCR) is performed. An encrypted version of the license plate number is stored in a central server database along with a date/time stamp. Once the vehicle passes the second camera, the license plate number is captured and transferred to the central server to be matched to the initial image. A statistical analysis of each plate match is used to determine the current average travel time of each road segment monitored. This information can be used to determine average speeds, calculate travel times, detect incidents and more.



The TTMS system consists of a network of PIPS Spike+ or SpikeHD integrated ALPR camera and processor systems which capture plates and process information at each node for input into the PIPS TTMS engine, which incorporates over 10 **9660** of development effort.

> Features

Integrated travel time measurement system that includes all necessary hardware and software from one source

Self triggered license plate image capture around the clock

TTMS calculates travel times, detects incidents and provides a real time web update for each segment

> Traffic Monitoring

Real-time reporting on the status of the road network and incident detection

Reports data around the clock enabling personnel to maintain up to the minute awareness of traffic issues

> Network Capability and Performance

In this application, the system is used to develop an understanding of road network capacity and performance

Traffic management personnel can utilize road segment travel time data to make determinations regarding road capacity

TTMS Travel Time Data

PIPS TECHNOLOGY Travel Time Measurement System

Network: Thelwall southbound

Travel Times

Traffic Flow Graph

Travel Times Graph

Timestamp	Link Operational	Period	Travel Time	Samples	Plates In	Plates Out	Matches	Matches Calc	Validity
2005-01-13 07:15:00	2005-01-13 07:04:52	300	620	207	77	616	11	11	OK
2005-01-13 07:19:00	2005-01-13 07:08:54	300	600	222	81	618	19	19	OK
2005-01-13 07:23:00	2005-01-13 07:08:54	300	620	231	81	619	19	19	OK
2005-01-13 07:27:00	2005-01-13 07:08:54	300	610	203	66	612	11	11	OK
2005-01-13 07:31:00	2005-01-13 07:08:54	300	635	267	72	620	13	12	OK
2005-01-13 07:35:00	2005-01-13 07:08:54	300	624	267	41	618	9	9	OK
2005-01-13 07:39:00	2005-01-13 07:08:54	300	614	307	30	608	0	0	Low # of Matches
2005-01-13 07:43:00	2005-01-13 07:08:54	300	618	244	63	624	9	9	OK
2005-01-13 07:47:00	2005-01-13 07:08:54	300	618	248	63	624	9	9	OK
2005-01-13 07:51:00	2005-01-13 07:08:54	300	607	267	42	609	9	9	OK
2005-01-13 07:55:00	2005-01-13 07:08:54	300	616	267	45	608	13	13	OK
2005-01-13 07:59:00	2005-01-13 07:08:54	300	615	174	45	601	11	11	OK
2005-01-13 08:03:00	2005-01-13 07:08:54	300	600	214	62	605	0	0	OK
2005-01-13 08:07:00	2005-01-13 07:08:54	300	609	166	33	607	0	0	OK
2005-01-13 08:11:00	2005-01-13 07:08:54	300	619	187	26	60	13	12	OK
2005-01-13 08:15:00	2005-01-13 07:08:54	300	607	171	37	600	10	9	OK
2005-01-13 08:19:00	2005-01-13 07:08:54	300	615	187	34	604	10	10	OK
2005-01-13 08:23:00	2005-01-13 07:08:54	300	617	187	31	609	9	9	OK
2005-01-13 08:27:00	2005-01-13 07:08:54	300	608	179	36	603	11	11	OK
2005-01-13 08:31:00	2005-01-13 07:08:54	300	619	187	28	60	13	13	OK
2005-01-13 08:35:00	2005-01-13 07:08:54	300	601	184	37	609	12	12	OK
2005-01-13 08:39:00	2005-01-13 07:08:54	300	602	174	34	60	12	12	OK
2005-01-13 08:43:00	2005-01-13 07:08:54	300	607	181	37	60	11	11	OK
2005-01-13 08:47:00	2005-01-13 07:08:54	300	618	146	26	60	0	0	OK
2005-01-13 08:51:00	2005-01-13 07:08:54	300	618	159	26	60	10	10	OK
2005-01-13 08:55:00	2005-01-13 07:08:54	300	615	159	31	60	14	14	OK
2005-01-13 08:59:00	2005-01-13 07:08:54	300	606	159	29	60	11	11	OK
2005-01-13 09:03:00	2005-01-13 07:08:54	300	604	161	32	61	12	12	OK
2005-01-13 09:07:00	2005-01-13 07:08:54	300	617	139	34	61	10	10	OK

Next

TTMS Travel Time Graph

