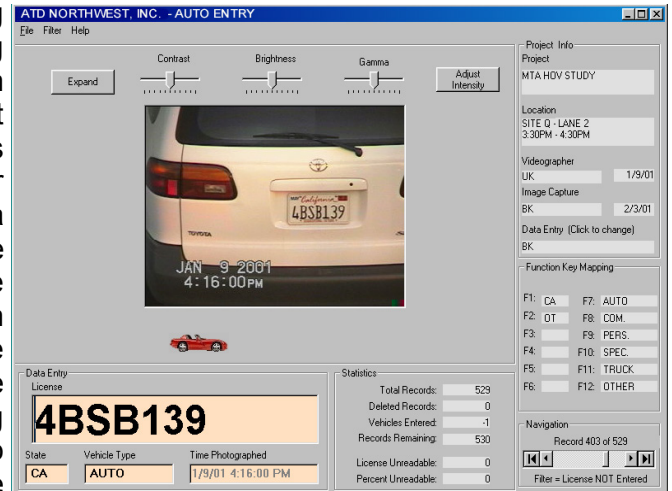


CORRIDOR & CORDON LP MATCHING STUDIES

SCOPE FOR PROFESSIONAL TRAFFIC DATA COLLECTION SERVICES

BACKGROUND:

ATD Northwest Inc. provides a unique service to planning and development groups for traffic engineering organizations. We employ a license plate retrieval system to gather information regarding vehicular movement throughout a pre-determined area. This technique is particularly applicable to cordon, corridor or traffic generator studies. We gather video license plate information at a number of sites surrounding a given area or corridor. We record the lane, direction of flow, time and date at mainline sites and each entry and exit point. All of the plates from each site are entered into a comprehensive database wherein the plates can be matched from one site to the next. We can determine the traffic volume traveling between sites, the time it takes an individual vehicle to travel from one site to the next and the average transit time for all vehicles. Traffic Generator studies are conducted by placing cameras at an entrance or exit to measure cars originating at a specific location such as a school, business park, manufacturing plant, shopping mall or government facility. ATD has conducted license plate surveys from Virginia to California over the past 20 years. Some studies last for only a few hours while others last for up to twenty-four hours. We have developed safe, practical techniques to collect the data in a rapid and efficient manner.



Data Collection: We must first determine a suitable data retrieval site. We review published maps to locate appropriate over-crossings or side-of-the road locations to establish camera sites. Preliminary site surveys should be made as a follow-up to identify problems that do not show up on the map information. When possible, it is best to choose over-crossings with pedestrian walkways and easy access parking for a remote vehicle. If possible, avoid crossings that are too narrow, have high traffic volume, or have fencing obstructions. One "High-Speed Color Camera Package" is to be used for each traffic lane to be surveyed. When recording lanes in both directions, cameras are to be positioned on both sides of the crossing and it is important to make certain there is sufficient access to service both sides of the crossing.

Highway encroachment permits are normally required when conducting surveys. Make certain such considerations are arranged for as early as possible. Local jurisdictions are very protective of their "turf" and respecting this concept can save a lot of trouble in the field. Be sure to notify DOT, police, sheriff and other personnel.

A van or small motorhome is suitable for use as a remote vehicle. However, a compact car is more practical for some camera locations. One person should be assigned to each camera location. For safety reasons, a minimum of two people are required during the set-up process. In addition, a qualified field supervisor is necessary to visit each site on a regular schedule in case of accident or malfunction. ATD field supervisors are equipped with all necessary equipment to repair or replace any of the ATD video equipment should a malfunction occur.

Safety cones and signs are normally required to mark off space for a remote vehicle and camera locations. If space is limited, flagging personnel may also be necessary. All individuals working at the recording site should be provided with reflective vests and helmets. We require that site personnel be issued written safety instructions prior to the survey date. On site safety instructions must be given.

Computer assisted data input and reduction is usually conducted at our ATD Redmond, WA facility. On occasion, a consultant may prefer to do manual data reduction and rent the data reduction equipment from ATD. "Data Reduction Packages" may be set-up at a location near the retrieval site one day prior to the survey date. A qualified field supervisor should coordinate the installation as well as provide equipment operation & data entry procedural training. For manual data entry, Individuals with data input and/or typing skills are best suited for the reduction process. An individual can usually enter between 150 and 200 license plates per station/hour. The ADT of the lanes and periods to be surveyed should be determined in advance in order to effectively estimate the number of data reduction packages and personnel required to input all data within the required processing period.

Pricing Elements: When a traffic consultant or government project engineer is considering the use of a license plate matching study for his planning purposes, he must generate at least a rough estimate for the costs of such a program. Although it is difficult to come up with an exact estimate for a video license plate survey, we believe that one must consider at least five elements to develop a good first cut. (1.) First, the purpose of the survey must be carefully considered and a task order generated which establishes the work to be done. (2.) Next, there is the field data collection process. Each data collection site must be surveyed and safety arrangements made for data collection personnel and traffic vehicles. (3.) After the data has been collected, license plates must be entered into a computer data base so that they may collated and processed. License plates must be matched and tabulated for each site, travel times calculated and any classification or other pertinent data entered into a report format.(4.) A comprehensive report must be generated so that the traffic engineer can develop intelligent conclusions form the data. (5.) A traffic engineer must review the data and the final report to determine how the results affect the model or plan under consideration.

Purpose & Design: As data collection and processing company, ATD Northwest is not in a position to estimate the costs for this part of a study since the variables include the level of talent of the engineering consultants that are to be utilized and the number of hours assigned to the task.

License Plate Data Collection: The factors that enter into the data collection costs include the distances to the data collection sites which involve freight costs, travel time, air fare, car rental, per diem, etc. The actual nature of the site will determine the cost of equipment rental, day or night surveillance, traffic volume, the number of lanes to be surveyed, period of study, safety requirements, and manpower costs. (Please call us for a computer generated cost estimate when you know the actual location, time and traffic volumes of the site for your study!)

License Plate Data Analysis: Once the data has been collected on video tape, it is important to process it in a rapid and concise manner. We utilize automated license plate readers whenever possible. However, some manual data entry is always necessary in a license plate matching study. Our Redmond, WA data reduction center employs as many stations as needed to reduce the data and enter it into a compatible computer format within one week after the data has been collected. It will cost about \$0.30 per plate to perform this data entry process. Under normal survey conditions, about 5% of the traffic data may be lost because of factors such as "no plates", obscuration, or intermediate lane changes.

Report Generation: A comprehensive report must be generated which shows the traffic distribution from each entry and exit point compared to all origins or destinations to or from that site. Costs will vary with the magnitude of the study and can be computed on an hourly basis.

Result Analysis: As with the report, the analysis of the results will vary with the magnitude of the study and must be computed on an individual basis.

ATD NORTHWEST INC.