TRUCK AND BUS SIGNAGE INVENTORY

DRAFT FINAL REPORT

September 2, 2010

Submitted to:

Mr. Eulios Cleckley
Manager, Motor Carrier Division
Policy, Planning and Sustainability Administration

d. _____
DISTRICT DEPARTMENT OF TRANSPORTATION

Prepared by:

Dr. Stephen Arhin, P.E., PTOE
Dr. Errol C. Noel, P.E.

HOWARD
UNIVERSITY

Transportation Research Center
2366 6th Street, NW Room 130
Washington, DC 20059

1.0 BACKGROUND

The District Department of Transportation (DDOT), like many transportation agencies in the United States, needs a comprehensive system for inventory purposes and maintaining records of traffic signs, especially for trucks and buses. To address this need, state highway departments around the country have, or are beginning to develop truck or bus restriction/limitation sign inventory systems that allow their personnel to count, locate, and monitor the maintenance and condition of their sign inventories. The database can also be used by construction, maintenance, and engineering personnel to monitor sign condition, track performance changes over time, determine locations where additional signs may be needed, monitor field maintenance and replacement programs, and locate unwarranted or "exception" signs while helping in making necessary planning decisions. The database may also be integrated into existing geographic information systems (GIS) to form more robust asset management systems that can include statistics on a variety of highway features such as signs, guardrails, traffic signals, pavements, bridges, survey markers, etc.

This project is primarily focused on developing a comprehensive database or list of truck and bus restrictions or limitations signage in the District of Columbia.

2.0 DATA EXTRACTION METHODOLOGY

DDOT provided HUTRC with access to their 2008 RoadCare ImageView database and video navigation software which was used to conduct the inventory of truck and bus signage by the research team. Snapshots of the RoadCare ImageView database and video navigation software are presented in Figures 1 and 2. The research team developed a comprehensive truck and bus signage database by reviewing existing District of Columbia street view photographic footages for the purpose of extracting relevant truck and bus signs located along designated routes. The DC RoadCare ImageView database used in this study consists of over 5,000 individual video files, each containing snapshots of many still photographs. Each of the still photographs depicts images of existing street views, and can also be played back as a video footage utilizing the Image View navigation software. The RoadCare ImageView software has
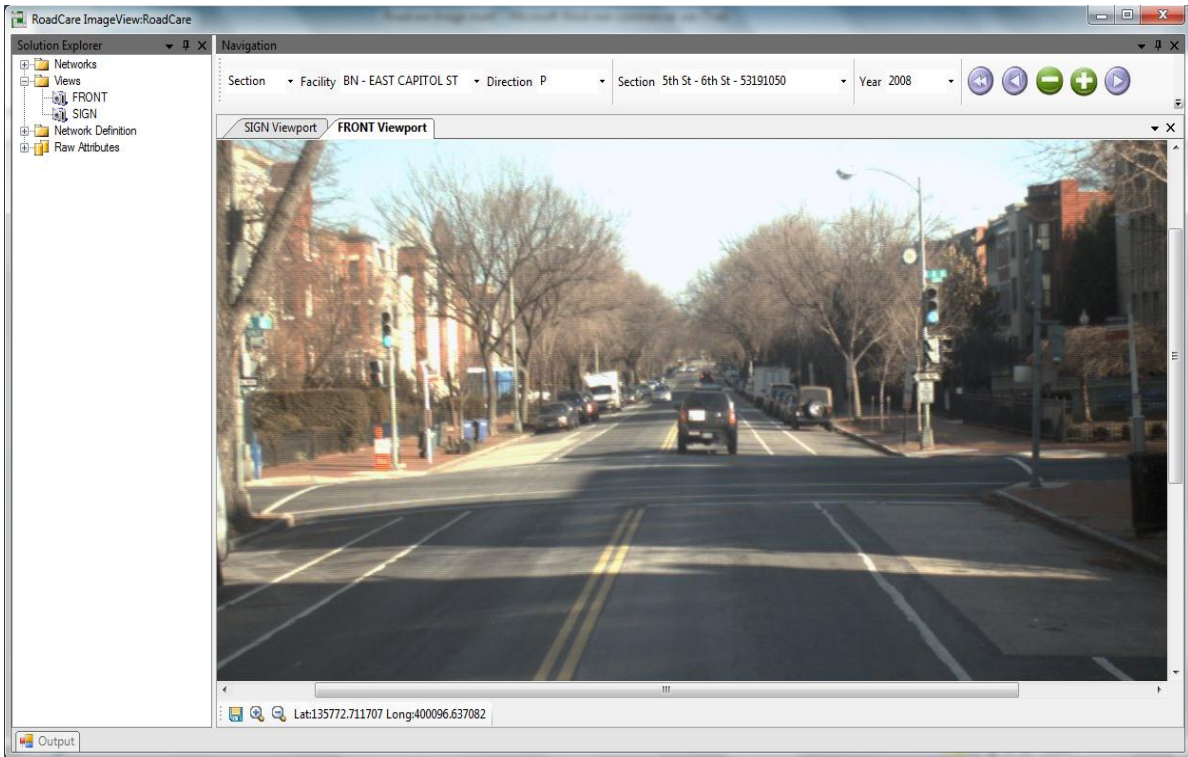
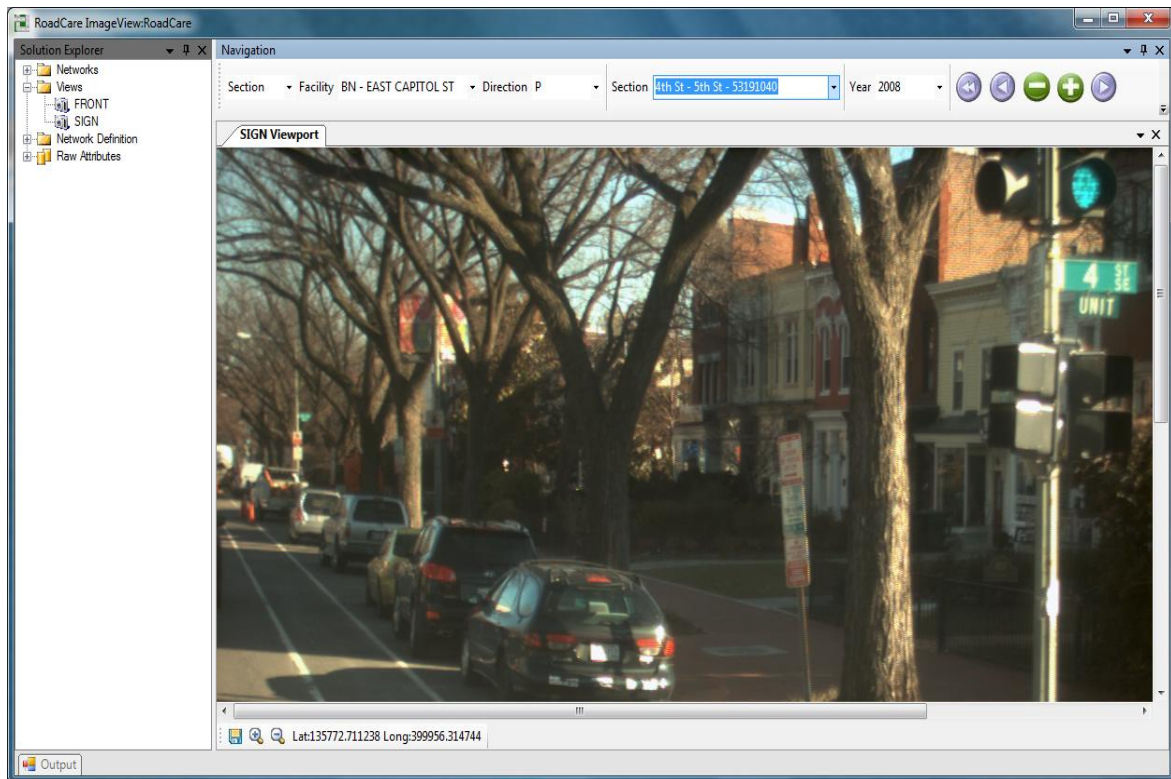**Figure 1***: RoadCare ImageView* **Software Front View Display**

Figure 2: *RoadCare ImageView* **Software Sign View Display**

the capability to display video footages in either front view or sign view windows, which also allows for toggling between windows to view either a full directional approach or adjacent street signs, depending on the reviewer's objective. As the name indicates, the front view mode provides a view of the roadway ahead in a particular travel direction or in the opposite direction. The sign view also provides a directional close-up view of roadway signs on curbsides or on the corners of an intersection.

It is noteworthy to mention that the DC RoadCare ImageView database is linked to DDOT's Street Inventory System Identification (SISID) database, which contains a comprehensive street identification database that consist of a list a numerical identifications related to individual streets within the District of Columbia. The SISID database also details "Street Names", related "Quadrant" and "Ward", as well as the termini of a specific roadway segment related to a particular SISID. DDOT's SISID database consists of over 10,000 street segments.

For reference purposes, each of the RoadCare ImageView database files is originally referenced to a specific SISID. In this case, the referencing format of the video database with related SISID, created the basis for a robust data extraction approach that minimized opportunities for erroneously selecting a roadway segment which corresponds with a specific study corridor, a designated direction of travel, an associated SISID and the related Cross Street, etc. This approach limited the potential for data extraction errors as multiple variables had to be matched before a video footage could be played. Another step adopted to ensure minimal occurrence of errors, include utilizing "Google Maps" and its "Street View" tool to verify and validate surrounding scenes when reviewing a study corridor anew. Hardcopies of the District's map were also used to identify either any upstream or downstream cross street that could be considered as a marker adjacent to the limits of a study segment.

The corridors were distributed among a seven-member data collection team. Each of the members conducted the data extraction using the following procedure:

- identified and extracted only SISIDs that are related to their site specific corridors, from the SISID reference resource
- downloaded video files from the RoadCare ImageView database that corresponds with selected SISID data

- thoroughly reviewed individual video footages associated with study corridors, utilizing the RoadCare ImageView software. NOTE: review of video footages were typically conducted in the sign view mode while maintaining a particular travel direction for the entire length of the study segment
- repeated the review process for the opposite travel direction, where applicable
- extracted and documented the frequency of specific truck/bus related signs while reviewing the video images for a specific SISID
- documented the sign description
- created a snap shot of the physical sign that captures the sign type or symbol
- recorded all parameters including SISID, direction of travel, adjacent cross street or block where sign is located, assigned study corridor, and limits of roadway segment under review.

As discussed previously, reviewers supported their data collection efforts with "Google Maps" and its "Street View" tools since some of the existing images displayed by the RoadCare ImageView program were less visible. Additionally, the initial effort of identifying SISIDs and downloading specific video files related to the corresponding corridor minimized errors in the data extraction.

3.0   SUMMARY OF TRUCK AND BUS INVENTORY

The summary of trucks and bus restriction signage extracted from the RoadCare ImageView program are presented in Tables 1 and 2. Table 1 presents the signage on the truck restricted routes while Table 2 presents the

Presented in the Appendix is the detailed inventory of all the truck or bus signs extracted from the software program for each roadway segment or corridor. The data was reviewed for discrepancies and omissions before compilation.

SUMMARY OF TRUCK AND BUS INVENTORY