

# Sign Inventory



## User's Guide

Iowa Department of Transportation Sign Management Task Force

August 2010



Iowa Department  
of Transportation

# Sign Inventory Users Guide

August 2010

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# Introduction

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This User's Guide serves as a reference for field personnel using the sign inventory data collection software tool. This tool was developed to simplify and standardize the collection and updating of sign inventory information.

The software and collection methodology was developed by the Iowa DOT Sign Management Task Force and the Center for Transportation Research and Education at Iowa State University.

**Required Equipment** - The data collection process requires both a portable computer and a global positioning system (GPS) device (connected via USB cable). Since computer battery performance varies, a DC power converter is recommended.

A check-in/out process has also been established which allows updates to sign information from the central database.

A photograph showing a worker in an orange safety vest on a lift bucket. The worker is positioned next to a tall, grey signpost. The lift bucket is extended from a large orange vehicle. The background is a hazy, overcast sky and a field. The text "Setting up the GPS" is overlaid on the image.

# Setting up the GPS

# Setting up the GPS

## 1. How to connect the GPS:

Plug the GPS unit into a USB port on the field computer.



## 2. Determining the GPS COM Port number:

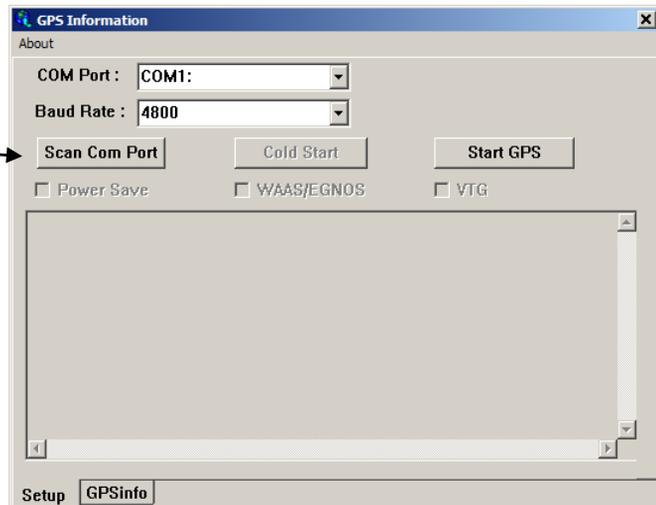
The Sign Inventory software will need to know where to find the GPS device on your computer. The goal is to identify the computers COM Port number which is assigned to the GPS device. The example below guides you through this process through using an additional software tool called the GPS Info tool (a similar tool as offered with most consumer grade GPS equipment). These steps are noted below:

A. Click on the GPS Info icon as shown here.



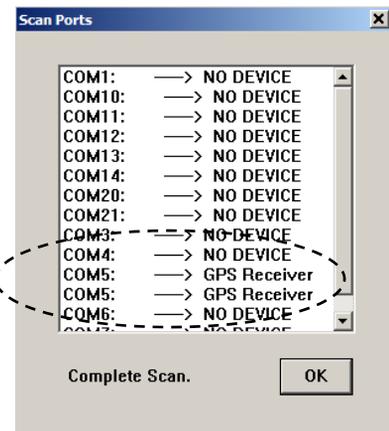
Gpsinfo.Ink

B. Select the “**Scan Com Port**” button and the software will identify the correct COM port for you.



C. A separate window will open which shows the results of your computers scan of Com Ports.

D. Note the number of the COM Port which says “GPS Receiver”. In this example this would be COM 5 (you would note “5”).



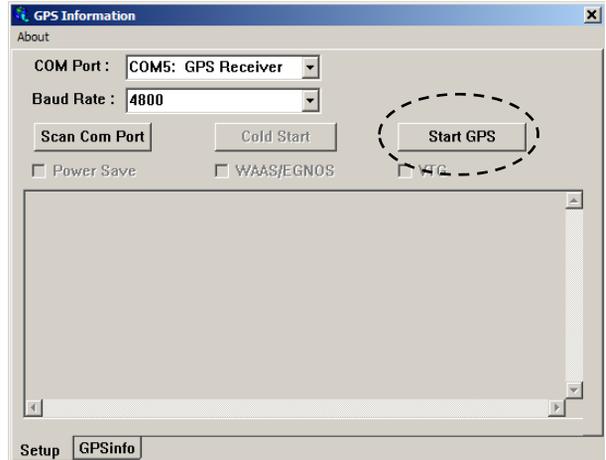
E. Click “**OK**” to exit.

# Setting up the GPS

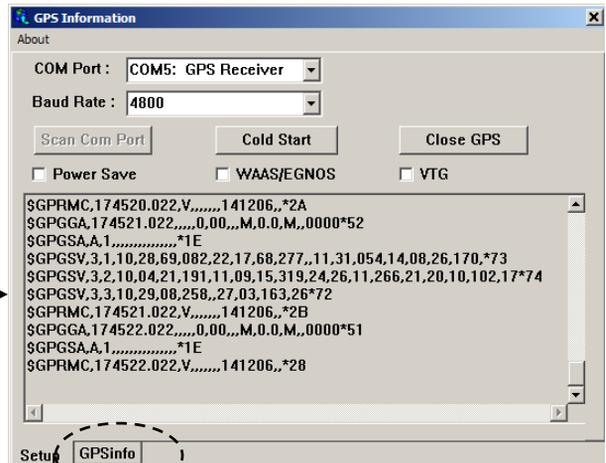
## 3. Verifying that the GPS is working properly :

Using the GPS Info software, or equal, you can verifying that the GPS device is working properly prior to beginning your sign inventory. To do this follow steps below:

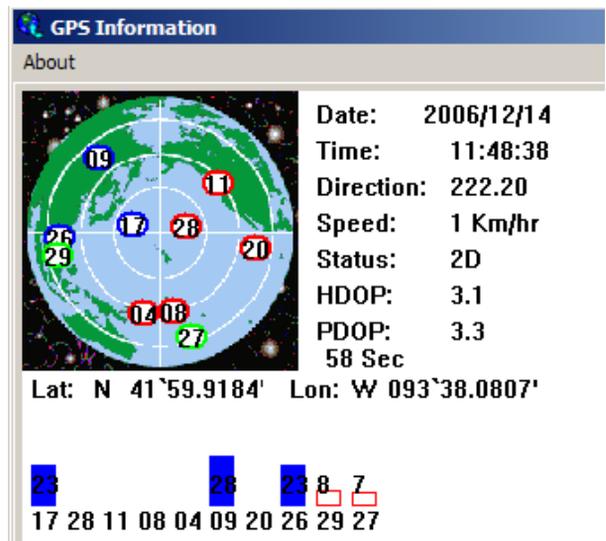
A. Click the “**Start GPS**” button.



B. If the GPS is connected properly and receiving satellite information, you will see scrolling text as shown here. →



C. Select the “**GPSInfo**” button to see satellite status and GPS fix. This shows the satellites are being received and their signal strength.



D. After this, you **must** close the GPS Info program. The Sign Inventory Software will not work properly if the GPS Info software is running at the same time.



# Sign Inventory Software

# Sign Inventory Software

## 1. Starting the Sign Inventory Software Tool:

Click on the Sign Management Icon to begin the inventory tool software.



Sign Management.Ink

## 2. Entering Inspector Name:

Inspector name by default is your login name. This can be changed by simply typing in the window. The inspector name is tracked for each sign entry and is a required input.

## 3. Start-up Screen:

The main menu bar [File, Tools, and Help] allows the user to select a new route, to save information, and to configure the GPS equipment.

These function buttons toggle between different input screens as described on the following pages.

The bottom bar displays the current location information as well as the inspector, and the current date,/time.

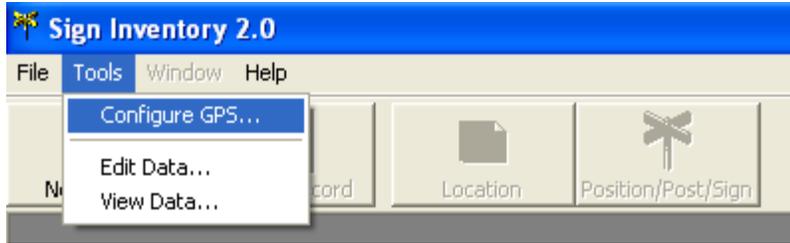
DISTRICT:	GARAGE:	ROUTE:	INSPECTOR: J.Doe	CAPS	NUM	4/1/2010	11:04 AM
-----------	---------	--------	------------------	------	-----	----------	----------

# Sign Inventory Software

## 4. Configuring the GPS to the Sign Inventory Software:

If you are using GPS, you will need to configure the port where the unit is connected. As demonstrated below:

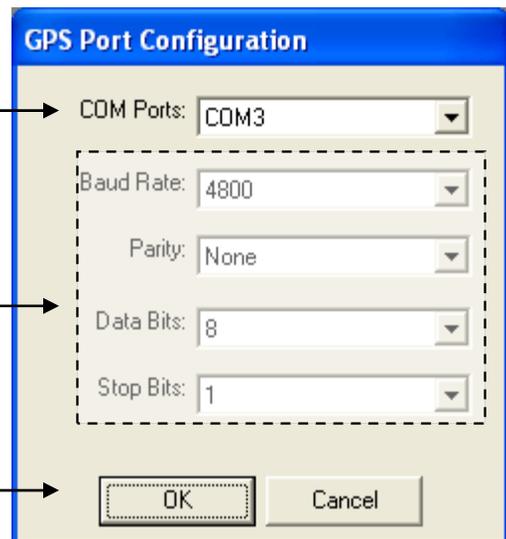
### A. Click on “Tools” then “Configure GPS”



### B. Select the appropriate COM Port from the list. (Page 4 of this report explains how to get the COM number).

### C. The remaining information should not be modified.

### D. Click the “OK” button to finish this step.



# Sign Inventory Software

## 5. Beginning a New Route:

Clicking on the “**New Route**” button begins the sign input process. This can also be done through the main menu by selecting “File” then “New Route” (both are shown below).



Clicking “**New Route**” brings up the “**Location**” screen (shown below). Each field with a **red** heading indicates that this is a required field (required in order to proceed to the next step). The color will change to **black** after information is entered. The inventory process begins with identifying your location in terms of (Maintenance District, Garage, System Class, and Route).

The screenshot shows the 'Location' screen in the Sign Inventory 2.0 software. The window title is 'Sign Inventory 2.0 - [Location]'. The menu bar includes 'File', 'Tools', 'Window', and 'Help'. The toolbar contains buttons for 'New Route', 'Commit Record', 'Location', and 'Position/Post/Sign'. The main area is titled 'Location' and contains the following fields:

- District:** A dropdown menu with a red heading.
- Garage:** A dropdown menu with a red heading.
- Is On or Near Ramp
- System Class:** A dropdown menu with a red heading.
- Route:** A dropdown menu with a red heading.

At the bottom of the window, there is a status bar with the following information: DISTRICT: GARAGE: ROUTE: INSPECTOR: J.Doe CAPS NUM 4/1/2010 11:14 AM

# Sign Inventory Software

## 6. Location Input:

Use the drop down arrows to identify the location of the survey. The choices are progressively reduced (e.g. by entering a maintenance district you then have only certain available garage numbers, by choosing a garage number you only have certain available system classes, and finally a chosen system class only has certain available route numbers.

Note: If the sign is on or leading to a ramp, follow instructions provided elsewhere within this report.

Once all required items are completed (none of the headings are red) you can proceed by clicking on the **“Position/Post/Sign”** button.

# Sign Inventory Software

## 7. Sign Input:

This is where we identify the exact location of the sign along the route and also add information for the sign support or post, and detailed information for each sign on the post, and give an assessment of signs condition. The following pages describe input information specific to **Position**, **Post**, **Sign**, and **Sign Condition** as highlighted below.

The screenshot displays the 'Sign Inventory 2.0 - [Position/Post/Sign]' application window. The interface includes a menu bar (File, Tools, Window, Help) and a toolbar with icons for 'New Route', 'Consult Record', 'Location', and 'Position/Post/Sign'. The main form is organized into several sections:

- Position:** Includes radio buttons for 'Milepost' and 'GPS', and 'Both' and 'N/A'. It features input fields for 'Milepost' and 'Milepost Offset' (0. miles), and a checkbox for 'Milepost Not Listed'. Below this is a 'Direction of Travel' dropdown, 'Side of Road' and 'Lateral Offset' (feet) fields, and a 'Comment' text area.
- Post:** Contains 'Post Type' and 'Post Size' dropdowns, and 'Number of Posts' and 'Length of Posts' input fields.
- Sign:** Features a 'Choose Sign...' button, a 'Date in Service' dropdown (set to 'Unknown'), and a 'Direction Sign Faces' dropdown.
- Sign Condition:** Includes radio buttons for 'Day' and 'Night', a 'Date' dropdown (4/1/2010), a 'Rating' dropdown, and 'Ownership' options (Iowa DOT, Other). It also has a 'Sign Number (if type b sign)' field, 'Retroreflectivity' and 'Flag/Beacon/Etc.' dropdowns, and a 'Comment' text area.

At the bottom of the window, a status bar displays the following information: DISTRICT: 3, GARAGE: 553608, ROUTE: Iowa 175, INSPECTOR: J.Doe, CAPS, NUM, 4/1/2010, 11:20 AM. A dashed circle highlights the status bar area.

This area confirms the location information already entered including the garage, route, and inspector. The current computer date and time is also shown (this should be verified at the beginning of each survey).

# Sign Inventory Software

## 7. Sign Input Continued

### 7.1 Entering Sign Post Position Information:

“Position” establishes the location of the sign along the route. The actual position reference of the sign is defined by the post or sign support. There are three options available to establish the sign post location. The input information and method varies for each as shown below:

#### Milepost:

Click the drop down arrow for Milepost and select from the available list. The available list is generated based upon the route previously entered. Enter the sign offset from the milepost in terms of fraction of a mile (e.g. 0.4 miles).

If the field milepost was not included within the drop down list, a check box is provided for manual entry of the milepost/offset.

The screenshot shows the 'Position' form with the 'Milepost' radio button selected. It features a dropdown menu for 'Milepost' and a text input field for 'Milepost Offset' with a '0.' and 'miles' label. A checkbox labeled 'Milepost Not Listed' is present and unchecked.

This screenshot is identical to the previous one, but the 'Milepost Not Listed' checkbox is now checked.

#### GPS:

Click on “Get GPS Position” and the GPS receiver will automatically obtain and record the sign post coordinates.

The screenshot shows the 'Position' form with the 'GPS' radio button selected. It includes input fields for 'Latitude' and 'Longitude', and a 'Get GPS Position' button.

#### Both:

Click on “Both” and enter both Milepost and GPS information as noted above.

#### N/A:

Used when the above two methods are not an option. The sign position must be noted and adequately referenced at a later date.

The screenshot shows the 'Position' form with the 'Both' radio button selected. It includes the 'Milepost' dropdown and 'Milepost Offset' field, as well as the 'Latitude' and 'Longitude' fields and the 'Get GPS Position' button.

# Sign Inventory Software

## 7. Sign Input Continued

### 7.1 Entering Sign Post Position Information Cont'd:

“Direction of Travel” and “Side of Road” are used to describe the sign post position relative to the roadway. The two additional required fields are shown below:



<b>Direction of Travel:</b>	
<input type="text"/>	
<b>Side of Road:</b>	<b>Lateral Offset:</b>
<input type="text"/>	<input type="text"/> feet
<b>Comment:</b>	
<input type="text"/>	

#### **Direction of Travel:**

This is simply your travel direction (With Milepost increasing in number), or (Against Milepost - decreasing in number).

#### **Side of Road:**

Where the post is located in terms of the roadway (Left, Right, Median, or Overhead).

#### **Lateral Offset:**

The lateral offset is an optional field and represents the sign post distance from the road (as measured from the edge of the roadway to the nearest post face or edge).

#### **Comment:**

Use this optional field to describe any unusual, unique, or otherwise worthy descriptive feature found for this signs position, post, offset, or other features.

# Sign Inventory Software

## 7. Sign Input Continued

### 7.2 Entering Sign Post Information:

Input section to describe the physical features of the post.



**Post**

**Post Type:**  ▾

**Post Size:**  ▾

**Number of Posts:**  ▾

**Length of Posts:**  ▾ feet

**Number of Signs:**  ▾

#### Post Type:

Click on the down arrow, there are seven common types to select from.

#### Post Size:

Given a selected post type, there will be a variety of post sizes to select from. If you find that a sign has several post sizes, record the dimensions of the larger post .

#### Length of Posts:

This is an optional field which would reflect the height of the sign post in feet.

#### Number of Posts:

Define how many posts support the sign (if the sign is on a Utility/Signal Pole, a Truss/Cantilever, or on a Structure the number of posts is left blank).

#### Number of Signs:

Define the number of signs on the post (each unique sign blade is counted as a sign). In the next step, you will be required to identify each sign and to provide condition and other information.



6 signs



3 signs

# Sign Inventory Software

## 7. Sign Input Continued

### 7.3 Entering Sign Message Information:

“Sign” describes the sign message, the direction it faces, and the sign condition. As before, heading items in red are mandatory (the sign type, the direction the sign faces, and rating).

The first step is to choose the sign type by clicking on the “Choose Sign” button. The following pages step you through this process.

**Sign**

**Choose Sign...**

**Date in Service:**

Unknown

3 /23/2010

**Direction Sign Faces:**

**Sign Condition**

Day  Night

**Date:**

3 /23/2010

**Rating:**

**Retroreflectivity:**

**Comment:**

**Ownership:**

Iowa DOT

Other

Sign Number (if type b sign):

**Flag/Beacon/Etc.:**

Add Delete Edit Cancel

#	Sign ID	Sign	Date Installed	Direction Sig	Insp

# Sign Inventory Software

## 7. Sign Input Continued

### 7.3 Entering Sign Message Information:

#### Choose Sign:

Click the “Choose Sign...” button.

#### Find Sign:

Find Sign - Signs can be selected using 3 methods (Image, MUTCD Code, or by Description). Signs which are not part of the standard catalogue can be entered through checking the “Sign Not Present” box. Examples for each method follows:

# Sign Inventory Software

## 7. Sign Input Continued

### 7.3 Entering Sign Message Information:

#### Choose Sign (by Image):

Click on the down arrow, to identify the sign category or you can also simply type the first letter of the category (e.g. “R” for regulatory). Scroll down to the image. Once selected the “Description” will be automatically filled.

Example below: “Category” choose Regulatory. All of the images in that category will be displayed. Click on the STOP sign and the information within the “Description” field will be auto-filled. Next select the sign size, sheeting, and sign blank material then click “OK”.

Sign Selection

**Find Sign**  
 Image   
  MUTCD   
  Stock Number   
  Description   
  Sign Not Present

**Category:**

**Description:**

**Size:**  
 ×  (W x H in.)

**Sheeting:**  
     Sign Series

**Blank Material:**

Iowa MUTCD:

FED MUTCD:

# Sign Inventory Software

## 7. Sign Input Continued

### 7.3 Entering Sign Message Information:

#### Choose Sign (by MUTCD Code):

Sign type can be selected either by typing the Iowa MUTCD Code number within the “Find MUTCD” window or by clicking on the MUTCD number within the “MUTCD” window. Based upon the sign selected choose the size, sheeting, and sign blank material.

Sign Selection

Find Sign

Image
 MUTCD
 Stock Number
 Description

Find MUTCD:

Description:

Stock Number Index:  Category:

**MUTCD:**

R1-0	R1-3A
R10-12	R1-4
R10-6	R1-4A
R1-1	R1-5
R11-2	R16-3
R11-2A	R16-4
R11-3	R16-5
R11-3A	R16-5B
R11-4	R16-7
R1-1A	R16-8
R1-1B	R16-8A
R1-2	R16-9
R12-1	
R12-2A	
R12-3A	
R12-5A	
R12-5B	
R12-6	
R12-6A	
R12-9	
R1-2A	
R1-2B	
R1-3	

Sign Not Present

Size:  ×  (W x H in.)

Sheeting:   Sign Series

Blank Material:

Iowa MUTCD:

FED MUTCD:



# Sign Inventory Software

## 7. Sign Input Continued

### 7.3 Entering Sign Message Information:

#### Choose Sign (by Description):

To select a sign, click on the down arrow, to identify the sign category or you can also simply type the first letter of the category (e.g. "R" for regulatory). Then scroll down the list of sign descriptions or simply type the first letter of the sign.

Based upon the sign selected choose the size, sheeting, and sign blank material.

**Sign Selection**

**Find Sign**

Image
  MUTCD
  Stock Number
  Description

Sign Not Present

**Category:**  
Regulatory

**Subcategory:**

**Description:**  
 PARALLEL PARKING LEFT ARROW  
 SPEED LIMIT 65  
 SPEED LIMIT 70  
 SPEED ZONE AHEAD  
**STOP**  
 STOP HERE ON RED WITH ARROW  
 TRUCKS MAINTAIN 300 FOOT INTERVAL  
 UNLAWFUL TO PASS STOPPED SCHOOL BUS  
 UNLAWFUL TO PASS STOPPED SCHOOL BUS EITHER DIREC

**Size:**  
 ×  (W x H in.)

**Sheeting:**  
  Sign Series

**Blank Material:**

Iowa MUTCD:

FED MUTCD:

# Sign Inventory Software

## 7. Sign Input Continued

### 7.3 Entering Sign Message Information:

#### Choose Sign (Stock Number):

Sign type can be selected either by typing the Iowa Stock Number within the “Find Stock Number” window or by clicking on the Stock Number within the “Stock Numbers” window. Based upon the sign selected choose the size, sheeting, and sign blank material.

Sign Selection

**Find Sign**
 Sign Not Present

Image
 MUTCD
 Stock Number
 Description

**Find Stock Number:**

**Description:**

**Stock Number Index:**  **Category:**

**Stock Numbers:**

- 812 600100
- 812 600105
- 812 600110
- 812 600115
- 812 600117
- 812 600120
- 812 600124
- 812 600125
- 812 600128
- 812 600130
- 812 600135
- 812 600150
- 812 600155
- 812 600160
- 812 600165
- 812 600170
- 812 600175
- 812 600180
- 812 600185
- 812 600190
- 812 600195

**Size:**  
 ×  (W x H in.)

**Sheeting:**  
  Sign Series

**Blank Material:**

Iowa MUTCD:

FED MUTCD:



# Sign Inventory Software

## 7. Sign Input Continued

### 7.3 Entering Sign Message Information:

#### Choose Sign (by Sign Not Present):

Signs which are not part of the standard catalogue can be entered through checking the “Sign Not Present” box. To select a sign, click on the down arrow, to identify the sign category or you can also simply type the first letter of the category (e.g. “R” for regulatory). Then choose the Subcategory.

Based upon the sign selected provide a description of the sign message, size, sheeting, and sign blank material.

**Sign Selection**

**Find Sign**

Image
  MUTCD
  Stock Number
  Description

Sign Not Present

**Category:**  
Warning

**Subcategory:**  
Overhead Low Clearance

**Description:**  
Overhead Low Clearance

**Message:**  
Low Clearance  
14' - 6"

**Size:**  
96 × 36 (W x H in.)

**Color:**  
Yellow

**Sheeting:**  
Prismatic High Intensity  Sign Series

**Blank Material:**  
Extruded Aluminum

Iowa MUTCD:

FED MUTCD:

Image Not Available

OK Cancel

# Sign Inventory Software

## 7. Sign Input Continued

### 7.3 Entering Sign Message Information:

#### Special option for signs which are in a series:

Signs which are part of a sign series can be grouped together as an input into the sign inventory. The “Number of Signs” represents the total number of signs in the series regardless of the direction the signs are facing. The first sign post in the series will be used for the reference location for the entire series. Clicking on “Sign Series” modifies the input screen as shown below:

The screenshot shows the 'Sign Selection' software interface. The 'Find Sign' section has radio buttons for 'Image', 'MUTCD', 'Stock Number', and 'Description', with 'Stock Number' selected. The 'Category' dropdown is set to 'Warning' and the 'Description' dropdown is set to 'DIRECTIONAL GUIDE CHEVRON'. A grid of sign icons is displayed, including diamond-shaped warning signs for curves, rectangular directional signs for straight, double, and right turns, and diamond-shaped signs for a crossroad and a T-junction. On the right side, the 'Sign Not Present' checkbox is unchecked. The 'Size' is set to 30 x 36 inches. The 'Sheeting' dropdown is set to 'Prismatic High Intensity', and the 'Sign Series' checkbox is checked and circled with a dashed line. The 'Blank Material' dropdown is set to 'Metal'. The 'Number of Signs' is set to 5. Below these settings, the 'Iowa MUTCD' is 'W1-8B' and the 'FED MUTCD' is 'W1-8'. A preview of a right-turn chevron sign is shown on the right. At the bottom are 'OK' and 'Cancel' buttons.



Two examples where the “Sign Series” option could be used are at Bridge Object Markers and Chevron’s.

# Sign Inventory Software

## 7. Sign Input Continued

### 7.3 Entering Sign Message Information:

#### Additional Sign Information :

The next step is to complete the Date Installed and Direction Sign Faces entries as shown below:

#### Date Installed:

Choices are "Unknown" or by date (you can type in the date or click on the down arrow for a calendar).

#### Direction Sign

#### Faces:

Click the drop down arrow and select.

Sign

CENTER LANE ONLY WITH ARROWS

Choose Sign...

Date in Service:

Unknown

4 / 1 / 2010

Direction Sign Faces:

N

April 2010

Sun	Mon	Tue	Wed	Thu	Fri	Sat
28	29	30	31	1	2	3
4	5	6	7	8	9	10
11	12	13	14	15	16	17
18	19	20	21	22	23	24
25	26	27	28	29	30	1
2	3	4	5	6	7	8

Today: 4/1/2010

Iowa Department of Transportation

**WARNING**

Any person convicted of defacing, destroying, or removing this sign may be fined up to \$1500 and/or imprisoned for up to 1 year and/or both.

**DATE OF INSTALLATION**

MONTH

J F M A M J J A S O D

YEAR

98 99 00 02 03 04 05 06 07 08

# Sign Inventory Software

## 7. Sign Input Continued

### 7.4 Entering Sign Condition Information:

The sign condition input screen has a number of entries as shown below:

#### Day/Night and

**Date:** Identify when you are conducting the rating. The current date will be automatically filled in for you.

**Rating:** Choices are described below:

“Excellent” – Signs which have been in service for less than 2 years (and which have no apparent damage either to the sign blade or sheeting material.

“Poor” - Damaged signs requiring replacement.

“Good” - Signs which do not meet the Excellent or Poor condition criteria.

#### Retroreflectivity:

If measured should be entered in units of candela/lux/m2.

#### Comment:

Any item not captured by the provided fields can be entered as a comment for each individual sign.

#### Ownership:

Identify whether Iowa DOT or Other and if the sign is a Type B sign, identify the sign number.

#### Flag/Beacon/Etc.:

Use the drop down arrow to choose both, no, or yes.

#	Sign ID	Sign	Date Installed	Direction	Sig	Insp

# Sign Inventory Software

## 7. Sign Input Continued

### 7.5 Adding the Sign Record:

You are now ready to add the sign information to the database as shown below:

#### Add:

Once the sign information is complete you must click on the “Add” button at the bottom of the screen. Clicking this button commits the record to the database and displays the information in the lower window as shown below.

#### Delete or Edit:

The data view area shows the signs added at the current post. To modify a sign, you must highlight the sign then click on either “Delete” or “Edit”.

The sign information is in a single row (not all information is shown).

**Sign**

CENTER LANE ONLY WITH ARROWS

**Choose Sign...**

**Date in Service:**  
 Unknown  
 4 / 1 /2010

**Direction Sign Faces:**  
 N

**Sign Condition**

Day  Night

**Date:**  
 4 / 1 /2010

**Rating:**  
 Good

**Retroreflectivity:**

**Comment:**

**Ownership:**  
 Iowa DOT  
 Other  
 Sign Number (if type b sign):

**Flag/Beacon/Etc.:**

**Add** **Delete** **Edit** **Cancel**

#	Sign ID	Sign	Date Installed	Direction	Sig	Insp

**Add** **Delete** **Edit** **Cancel**

#	Sign ID	Sign	Date Installed	Direction	Sig	Insp
1	1	CENTER LANE ON	04/01/2010	N		

# Sign Inventory Software

## 7. Sign Input Continued

### 7.6 Committing the Sign Record:

The final step is to commit the sign information to the database as shown below:

#### Commit Record:

Once you click “Add” the “Commit Record” button will be available as shown. Click this button to finalize adding the sign to the inventory database. If successful, a “Record saved successfully” message will appear as shown and you will then be taken back to the New Route screen.

The screenshot shows the 'Sign Inventory 2.0' application window. The title bar reads 'Sign Inventory 2.0 - [Position/Post/Sign]'. The menu bar includes 'File', 'Tools', 'Window', and 'Help'. The toolbar contains icons for 'New Route', 'Commit Record', 'Location', and 'Position/Post/Sign'. The 'Commit Record' icon is circled in red. The main window is divided into several sections:

- Position:** Radio buttons for Milepost, GPS, Both, and N/A. A dropdown for 'Direction of Travel' is set to 'With Milepost (increasing in number)'. 'Side of Road' is set to 'Right' and 'Lateral Offset' is 0 feet. A 'Comment' text area is present.
- Post:** 'Post Type' is 'Wood Posts' and 'Post Size' is '4" x 6"'. 'Number of Posts' and 'Length of Posts' are set to 1 and 0 feet respectively. 'Number of Signs' is set to 1.
- Sign:** A dropdown shows 'CENTER LANE ONLY WITH ARROWS'. A 'Choose Sign...' button is next to a sign image icon. 'Date in Service' is '4 / 1 / 2010'. 'Direction Sign Faces' is a dropdown. 'Sign Condition' has 'Day' selected. 'Ownership' is 'Iowa DOT'. 'Date' is '4 / 1 / 2010'. 'Rating' is a dropdown. 'Retroreflectivity' and 'Flag/Beacon/Etc.' are dropdowns. A 'Comment' text area is at the bottom.
- Buttons:** 'Add', 'Delete', 'Edit', and 'Cancel' buttons are located below the sign details.
- Table:** A table with columns: #, Sign ID, Sign, Date Installed, Direction, Sig, Insp. Row 1: 1, 1, CENTER LANE ON, 04/01/2010, N.
- Footer:** DISTRICT: 3, GARAGE: 553608, ROUTE: Iowa 175, INSPECTOR: J.Doe, CAPS, NUM, 4/1/2010, 12:13 PM.



A photograph showing a worker in an orange safety vest on a lift bucket, positioned next to a tall signpost. The worker is working on the signpost. The background is a blurred outdoor setting with a road and some vegetation. The text "Additional Guidance" is overlaid on the image.

# Additional Guidance

# Additional Guidance

---

## Special Cases and Unique Situations:

A variety of special cases are shown on the following pages. These include the following:

1. Referencing for signs in series



2. Reference Signs which are "On or Near Ramps"



3. Dealing with Missing Milepost



4. DOT Signs which are on Local Roads



5. What to do when you have No Fix on the GPS receiver



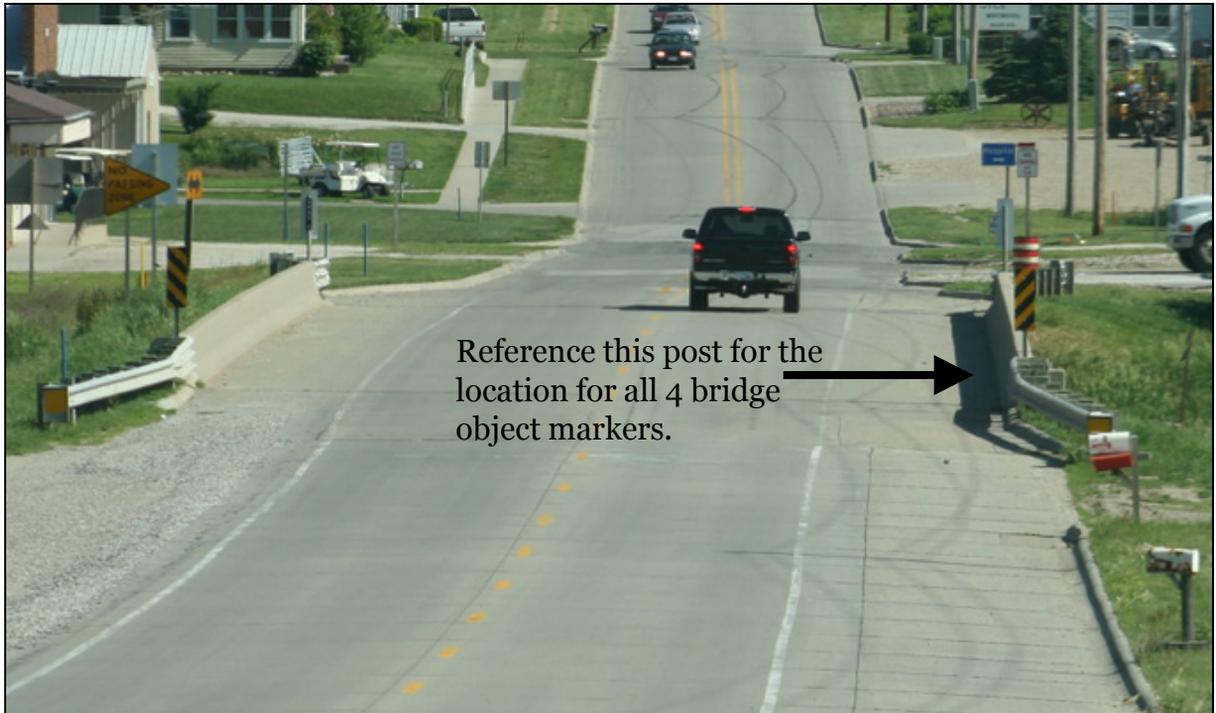
6. Dealing with intersections having right turn lanes with islands



# Additional Guidance

## 1. Referencing for signs which are in series:

The first sign post in the series will be used for the reference location for the entire series. Ideally, this post would be the first sign encountered as traveling in the cardinal direction (south to north, and west to east).



# Additional Guidance

## 2. Signs which are On or Near Ramps :

If you are not using GPS, the information below explains how to reference signs which are on or near a ramp (signs on local roads leading to state highways).



Location

Normal Location Screen

Maintance District: 1

Garage: 551604

Is On or Near Ramp

System Class:

Route:

With "Is On or Near Ramp" option box checked

See next page for details.

Location

Maintance District: 1

Garage: 551604

Is On or Near Ramp

Ramp (From Road)

System Class: Route:

Direction of Travel:

Ramp (To Road)

System Class: Route:

Direction of Travel:

# Additional Guidance

## 2. Signs which are On or Near Ramps :

Checking the “Is On or Near Ramp” box opens up a new set of required fields. These are explained on the following page. Providing this information removes the need to enter milepost or offset (within the Position screen).

**Sign Inventory 2.0 - [Location]**

File Tools Window Help

New Route Commit Record Location Position/Post/Sign

**Location**

District: 1

Garage: 551604

Is On or Near Ramp

Ramp (From Road)

System Class: Route:

Direction of Travel:

Ramp (To Road)

System Class: Route:

Direction of Travel:

Position/Post/Sign -->

DISTRICT: 1 GARAGE: 551604 ROUTE: Iowa 14 INSPECTOR: J.Doe CAPS NUM

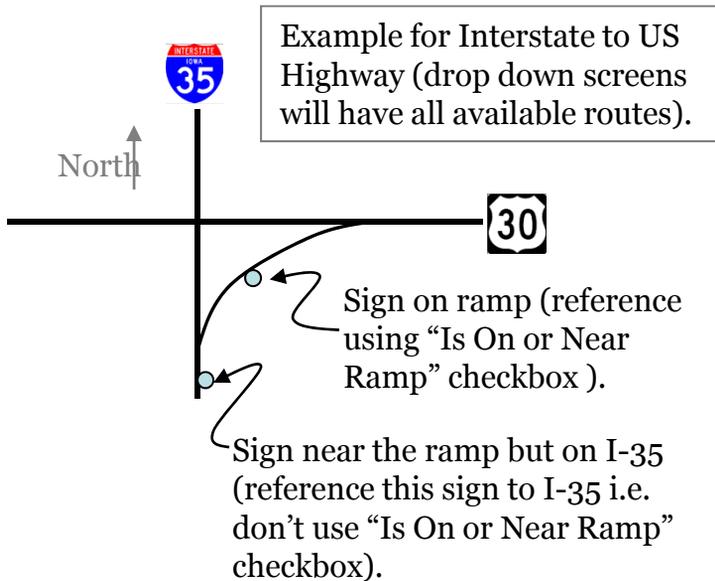
# Additional Guidance

## 2. Signs which are On or Near Ramps :

Checking the “Is On or Near Ramp” box opens up a new set of required fields. These are explained on the following page. Providing this information removes the need to enter milepost or offset (within the Position screen).

### Case 1:

State Highway to State Highway (Interstate, US, Iowa):



Is On or Near Ramp

Ramp (From Road)

**System Class:** Interstate **Route:** 35

**Direction of Travel:** North

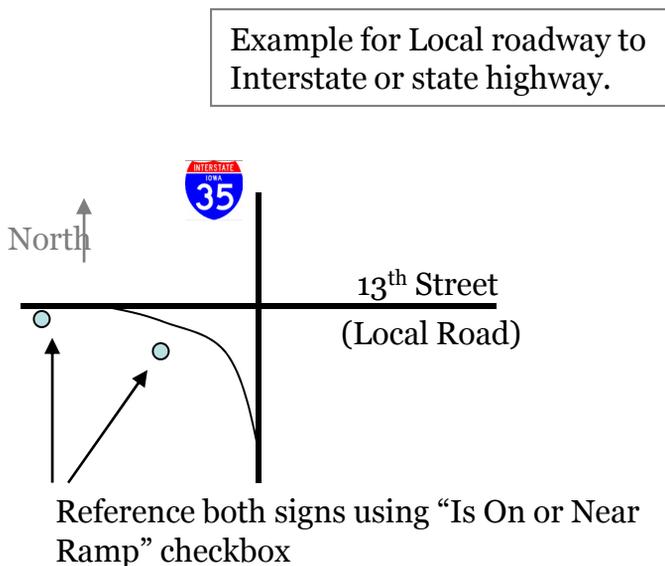
Ramp (To Road)

**System Class:** US **Route:** 30

**Direction of Travel:** East

### Case 2:

Local road to State Highway (Interstate, US, Iowa):



Is On or Near Ramp

Ramp (From Road)

**System Class:** Local **Route:** 13th

**Direction of Travel:** East

Ramp (To Road)

**System Class:** Interstate **Route:** 35

**Direction of Travel:** South

# Additional Guidance

## 3. Dealing with Missing Milepost:

North ↑

Measured 1.3 miles

MP 145      MP 146            MP 147

Milepost which is missing in the field.

Sign to be inventoried.

**Position**

Milepost       GPS  
 Both  
 N/A

**Milepost:** 145

**Milepost Offset:** 1.3 miles

Milepost Not Listed

## 4. Referencing for DOT Signs which are on Local Roads :

North ↑

US 69

NE 118<sup>th</sup> Ave



District: 1

Garage: 551602

Is On or Near Ramp

System Class: US

Route: 69

This stop sign would be referenced as if it were on US 69 (either using milepost/offset or GPS). Make sure the “Direction Sign Faces” is entered correctly.

# Additional Guidance

## 5. What to do when you have No Fix on the GPS Receiver:

While using the GPS receiver, there will be times that the GPS does not find the satellites due to tree cover, terrain, buildings, etc.

In the “Position” screen, once you click on “Get GPS Position” you will see the “Average Coordinate Calculator” window as shown below

After 60 readings (1 second per reading) the “No GPS Reading” message will appear.

To reference the sign post location, drive back to the nearest milepost and reference the sign using milepost and offset.

# Additional Guidance

---

## 6. Right Turn Lanes with Islands :

The picture below is a typical intersection with signs on both sides of a right turn lane. In these cases, it is preferred to be as close to each sign when capturing the location using GPS. This may require driving up to the Yield sign first, then backing up and pulling up to the Stop sign.





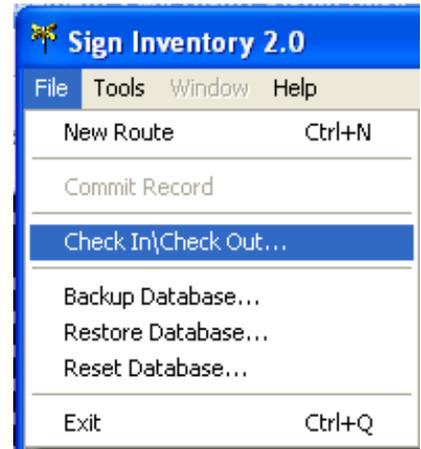
# Checking Sign Data In\Out

# Checking Sign Data In\Out

## Checking Sign Information In or Out:

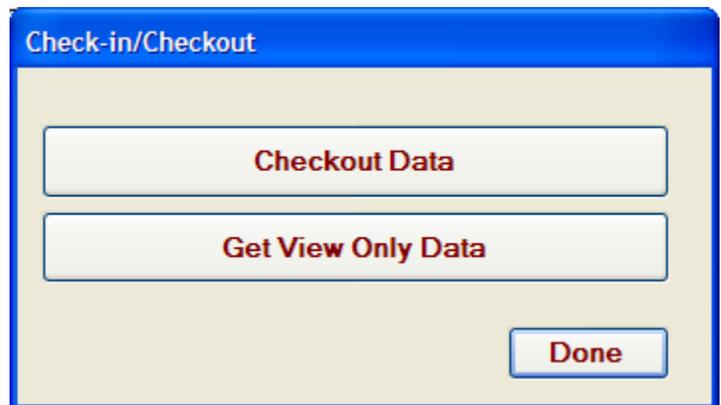
A check-in/out process has been established to allow the transfer of inventory information from the inventory software to the central database and vice versa. A connection to the DOT network is required prior to checking data in or out.

- Checking data “in” means that you have information on your local computer (PC) that you want to submit or check into the central database.
- Checking data “out” means that you want to retrieve or check out sign data from the central database. The central database resides on the servers in Ames.



If your PC does not have checked out data, you will see the following screen:

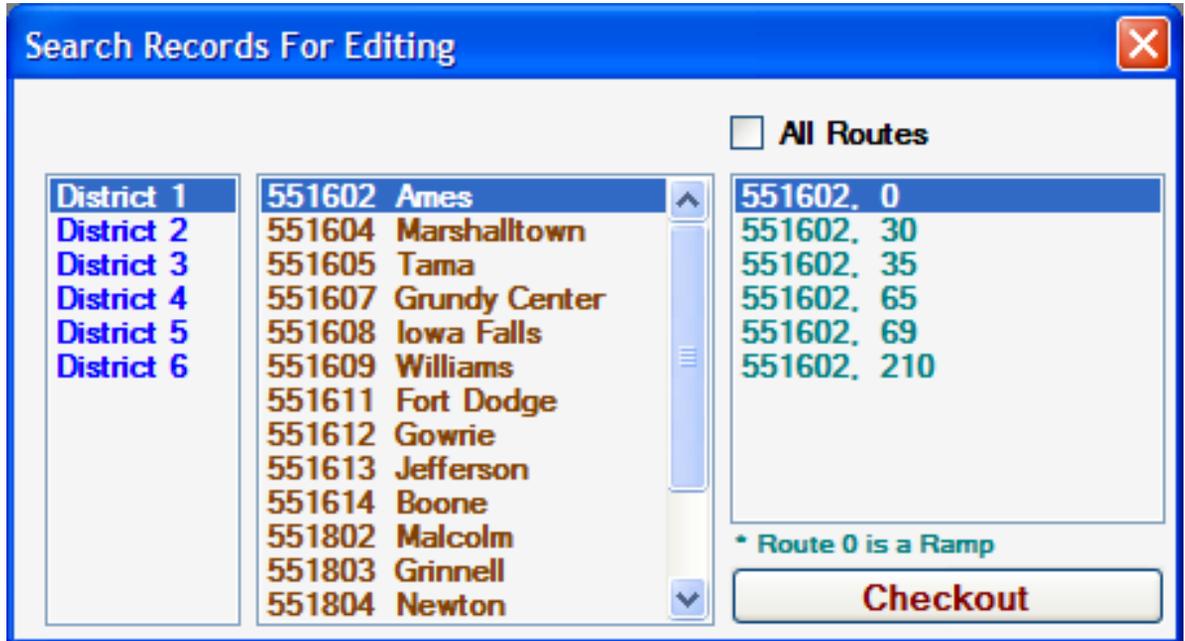
- “Checkout Data” is used to get data from the central database for editing purposes. This action locks data from being accessed or checked out by other users.
- “Get View Only Data” is used to get data from the central database for viewing purposes only. This action does not lock allow you to edit the data.



# Checking Sign Data In\Out

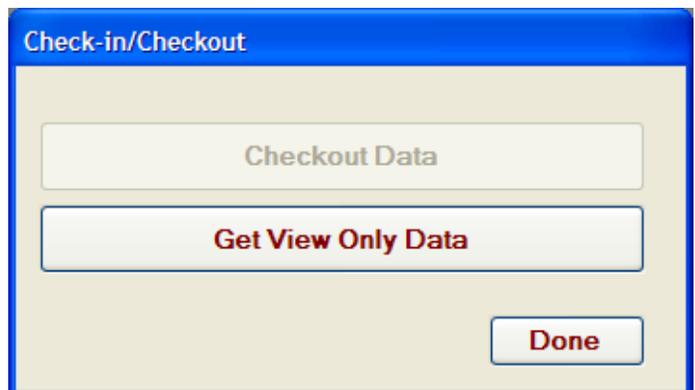
## Checking Sign Information In or Out:

- If you choose “Checkout Data” you will see this screen:

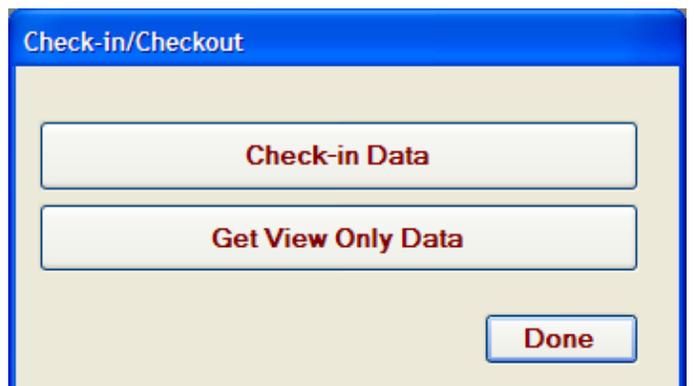


- The user can select signs to be checked out by District/Garage/Route(s). Once selected choose “Checkout”. You will then see the following screen:

- Choose to either “Get View Only Data” or “Done” to go back to the sign tool.



- If your PC has checked out data, you will see the following screen. Select “Check-in Data” to transfer data from your PC to the central database (new and edited data).





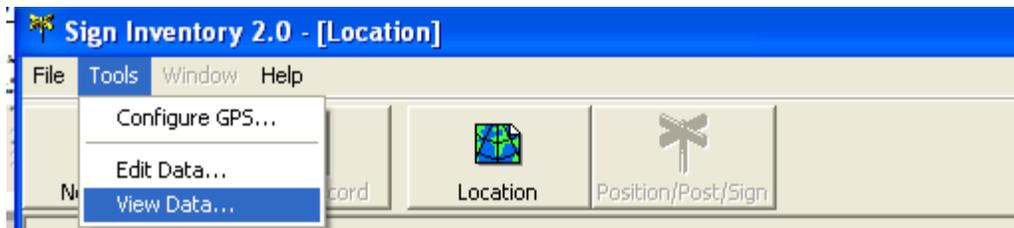
# Sign Report and Editing

# Sign Report and Editing

## 1. Viewing Data

In a read only mode, the software tool includes the ability to view, sort, query, report, and export the data as shown below:

From the main menu click on “Tools” then “View Data...”:



The View Data screen will appear. There are a number of function buttons available to let you view the data in a variety of ways as explained on the following pages.

View_SignLocPost.ID	Inspector	CreateDate	View_SignLocPost.EditDate	View_SignLocPost.EditBy	District	Garage
46032D8FB0A646E4B0	ia6331	6/28/2007			6	5566
A3AAF5F25D7D4BB79	ia6331	6/28/2007			6	5566
776E349B3ED3497282	cd	6/28/2007			6	5566
776E349B3ED3497282	cd	6/28/2007			6	5566
1B8CF65D9CA547B3A	rlp	6/28/2007			6	5566
056A9EDA0799427A9	rlp	6/28/2007			6	5566
051AF7322327453E83	ia6331	6/28/2007			6	5566
051AF7322327453E83	ia6331	6/28/2007			6	5566
AAB8A10AD6FB44B9B	dm	7/2/2007			6	5568
BD31B04E3AB84D929	rlp	7/2/2007			6	5566
BD31B04E3AB84D929	rlp	7/2/2007			6	5566
3129BD8033A344EF9F	dm	7/2/2007			6	5568
29E8A48188604F6F9C	rlp	7/2/2007			6	5566
A6AB2724EE72467281	dm	7/2/2007			6	5568
A6AB2724EE72467281	dm	7/2/2007			6	5568
A6AB2724EE72467281	dm	7/2/2007			6	5568
6F6BD6068CF24C4EB8	rlp	7/2/2007			6	5566
6F6BD6068CF24C4EB8	rlp	7/2/2007			6	5566
8791AF59770244B4A7	dm	7/2/2007			6	5568
B2C25ED177AB4B799	rlp	7/2/2007			6	5566
6B4F55E722AF44489D	dm	7/2/2007			6	5568

1 of 64210

Data As Of: 8/5/2010

Close

Current Query: Locations & Posts: None      Signs: None

# Sign Report and Editing

## 1. Viewing Data

### 1.1 Simple Sort



Click on the column heading to be sorted then choose either the A to Z (ascending) or Z to A (descending) buttons.

The screenshot shows a window titled 'View Data (Read-Only)' with a toolbar and a data table. The toolbar includes 'Sort A to Z', 'Sort Z to A', 'Custom Sort', 'Hide/Show Fields', 'Query Builder', 'Reset Table', 'Show Report', and 'Export (Excel)'. The data table is titled 'Sign & Location Data:' and has the following columns: View\_SignLocPost.ID, Inspector, CreateDate, District, Garage, OnNearRamp, SystemClass, Route, and Ramp. The table contains 10 rows of data, with the first row highlighted. The status bar at the bottom shows '1 of 85804' records, 'Data As Of: N/A', and a 'Close' button.

View_SignLocPost.ID	Inspector	CreateDate	District	Garage	OnNearRamp	SystemClass	Route	Ramp
137C5BD0113B4689B4	roxanne	3/30/2009	2	552698	-1		0	Interst
85CFFC2FEE2B4C52A1	roxanne	3/30/2009	2	552698	-1		0	Interst
2B54D40AE51045B6A0	roxanne	3/27/2009	2	552698	-1		0	Interst
2B45B332C0D54C4E8F	roxanne	3/27/2009	2	552698	0	Interstate	35	
2B36994C19484ECEB2	roxanne	3/27/2009	2	552698	0	Interstate	35	
251E4A3F705F4D5D9E	roxanne	3/27/2009	2	552698	0	Interstate	35	
247F8506680B4AE99F	roxanne	3/27/2009	2	552698	0	Interstate	35	
1AA0450E9934497785	roxanne	3/27/2009	2	552698	-1		0	Interst
1A0450E9934497785	roxanne	3/27/2009	2	552698	-1		0	Interst

# Sign Report and Editing

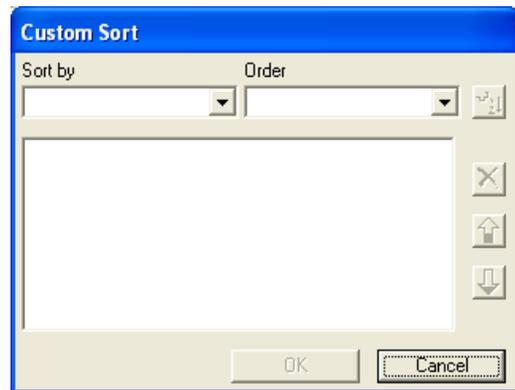
## 1. Viewing Data

### 1.2 Custom Sort on Multiple Fields

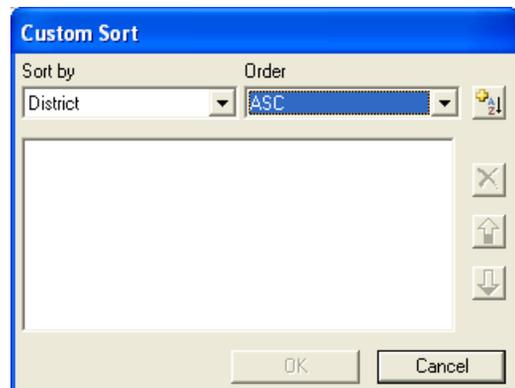
A Custom Sort allows you to sort on multiple features within the sign database. For example, say you wanted to view all signs by district and then by garage number. An example follows:



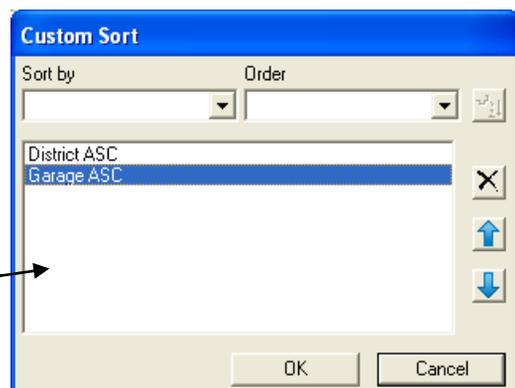
1. Click on arrow next to “Sort by” and choose the desired field. In this case “District”.



2. Click on the arrow next to “Order” and choose the order you would like the information displayed “ascending”.



3. Click on the “Add Sort” button which is to the right of the “Order” down arrow and the sort will be added to the list. You are now ready to repeat the process sorting by “Garage”.



A list of sort criteria are then displayed in this window area.



# Sign Report and Editing

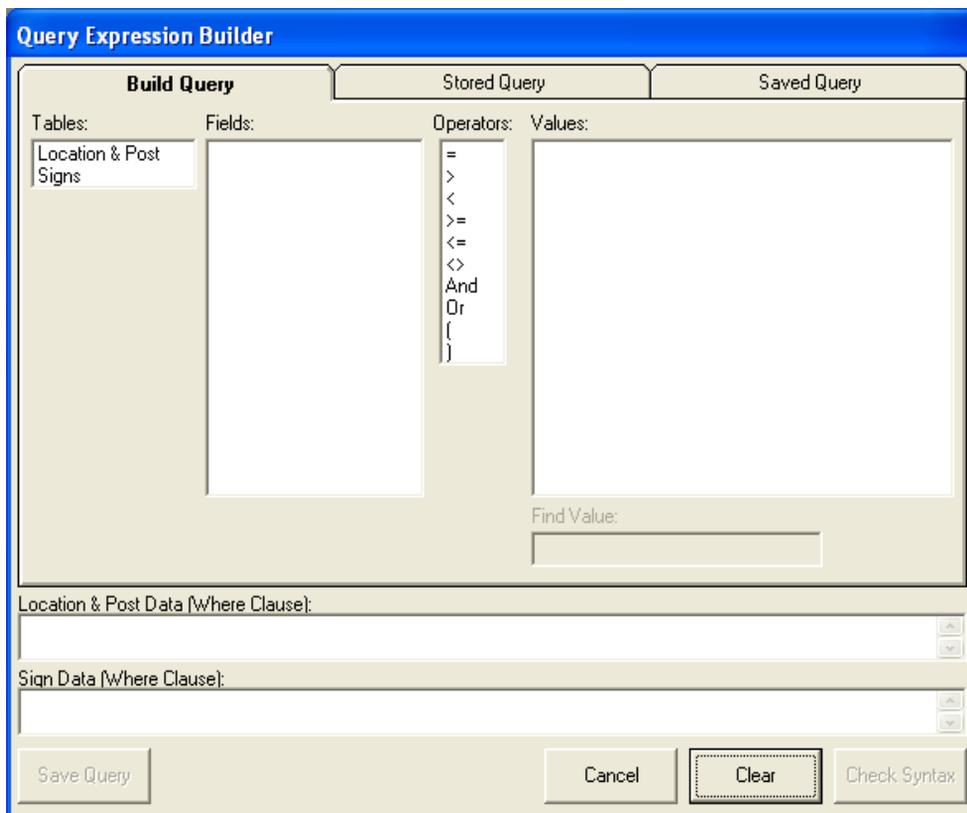
## 1. Viewing Data

### 1.4 Using the Query Builder

A “Query” is a request for information from the database. The user “tells” the database what is needed by entering parameters that narrow the search. The Query Builder is a powerful tool which allows you to request information across any field or by any feature.



There are 3 types of queries available (Build, Stored, and Saved). Please note that there are two tables to make your query from. Click “Location & Post” to retrieve information specific to the post location or it’s condition. Click “Signs” to retrieve information specific to the signs on a post. Once you click on a Table the available Fields will be displayed.



An example on how to Build a query, and use either a Stored or Saved query follows:

# Sign Report and Editing

**Query Expression Builder**

**Build Query** | Stored Query | Saved Query

Tables: Location & Post, Signs

Fields: CHECK\_IN\_OUT, Comments, CreateDate, DirTravel, District, EditBy, EditDate, Garage, GPSFixQuality, GPSReading, HDOP, ID, Inspector, LateralOffset, Latitude, Longitude

Operators: =, >, <, >=, <=, <>, And, Or, (, )

Values: 2, 4, 6

**Example:** Give me all of the signs within District 2. You must double click the following:

District  
=  
2

Location & Post Data (Where Clause):  
District = 2

Sign Data (Where Clause):

Save Query | Cancel | Clear | Check Syntax

**Query Expression Builder**

**Build Query** | Stored Query | Saved Query

Tables: Location & Post, Signs

Fields: BlankMaterial, Comments, DateInstalled, DayConditionDate, DayRating, DayRetroreflectivity, Description, EditBy, EditDate, FlagBeaconEtc, ID, Message, MUTCD\_Fed, MUTCD\_Lowa, NightConditionDate, NightRating

Operators: =, >, <, >=, <=, <>, And, Or, (, )

Values: Excellent, Good, Poor

**Example Cont'd:** and only show the signs rated "Excellent". You must double click the following:

DayRating  
=  
Excellent

Location & Post Data (Where Clause):  
District = 2

Sign Data (Where Clause):  
DayRating = 'Excellent'

Once you build the query you must click on "Check Syntax"

Save Query | Cancel | Clear | Check Syntax

# Sign Report and Editing

**Query Expression Builder**

Build Query      Stored Query      Saved Query

Tables: Location & Post  
Signs

Fields: BlankMaterial  
Comments  
DateInstalled  
DayConditionDate  
DayRating  
DayRetroreflectivity  
Description  
EditBy  
EditDate  
FlagBeaconEtc  
ID  
Message  
MUTCD\_Fed  
MUTCD\_Iowa  
NightConditionDate  
NightRating

Operators: =  
>  
<  
>=  
<=  
<>  
And  
Or  
{  
}

Values: Excellent  
Good  
Poor

Find Value:

Location & Post Data (Where Clause):  
District = 2

Sign Data (Where Clause):  
DayRating = 'Excellent'

Save Query      Cancel      Clear      Run Query

**Example Cont'd:**  
If the syntax is OK, then the "Run Query" button is activated. Click this to proceed.

Click on the "Save Query" button to save this for future use.

After you click on "Run Query" you can generate a report, as shown below, by clicking the "Show Report" button. This example list only the signs within District 2 which have an Excellent day rating.

**Sign Inventory Report**  
(District = 2) AND (DayRating = 'Excellent')  
Data As Of: N/A

ID	Garage	Route	Ramp (From Route)	Milepost	Milepost Offset	Insp. Date (Day)	Condition (Day)	Insp. Date (light)	Condition (light)	Dir. of Travel	Side of Road	Sign Face	Sign Description	Stock Number
2F796B10C28247B	552634	14		0	0	6/14/2007	Excellent			With Milepost	Left	E	BICYCLE	812 701232
2F796B10C28247B	552634	14		0	0	6/14/2007	Excellent			With Milepost	Left	E	CROSSING DIAGONAL LEFT	812 702060
B5457D69EF41415	552634	14		0	0	5/29/2007	Excellent			With Milepost	Right	S	ADOPT A HIGHWAY	812 505800
C8D118B0B42C423	552634	14		0	0	5/30/2007	Excellent			With Milepost	Left	N	ADOPT A HIGHWAY	812 505800
B7E1E5289FD54D5	552634	14		0	0	5/31/2007	Excellent			With Milepost	Left	N	DEER CROSSING SYMBOL	812 701396
C8D118B0B42C423	552634	14		0	0	5/30/2007	Excellent			With Milepost	Left	N	ADOPT A HIGHWAY	812 505800
B5457D69EF41415	552634	14		0	0	5/29/2007	Excellent			With Milepost	Right	S	ADOPT A HIGHWAY	812 505800

Pages: 1/1

# Sign Report and Editing

**Query Expression Builder**

Build Query      **Stored Query**      Saved Query

Query: Sign Description and Sign Condition (Day) Click arrow to see all the available stored queries .

Sign Description: yellow black border, yellow on blue arrow, Yellow River state Forest 15, yellow square, Yellow With Black Letters, yellow with black letters, two yell, **YIELD**, YMCA Camp, ZONE Choose the sign(s) that you are interest in.

Route: Choose the Condition(s) you want to see. Then click "Generate Query"

Condition: Excellent, **Good**, **Poor**

Find Sign Description:  Find Route:

**Generate Query**

Location & Post Data (Where Clause):

Sign Data (Where Clause):

Save Query      Cancel      Clear      Check Syntax

After you click on "Check Syntax" and "Run Query" you can generate a report, as shown below, by clicking the "Show Report" button. This example list only the Yield signs which have either a Good or Poor rating.

**Sign Inventory Report**

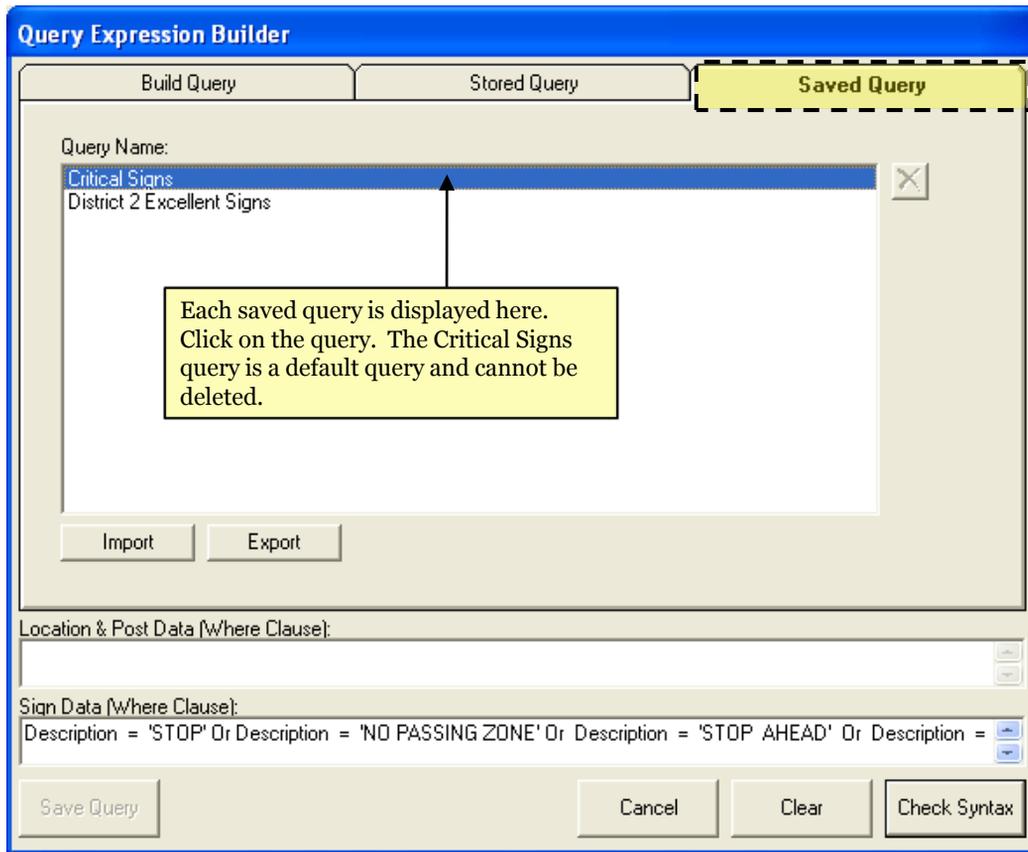
Zoom 100%

**Sign Inventory Report**  
 ((Description = 'YIELD') AND (DayRating = 'Good' OR DayRating = 'Poor'))  
 Data As Of: N/A

ID	Garage	Route	Ramp (From Route)	Milepost	Milepost Offset	Insp. Date (Day)	Condition (Day)	Insp. Date (Night)	Condition (Night)	Dir. of Travel	Side of Road	Sign Face	Sign Description	Stock Number
C075A915B0AE4C0	552634	14			0	6/15/2007	Good			With Milepost	Median	S	YIELD	812 600117
D0A.A046542CA49F	556606	0	80		0	7/6/2007	Good				Right		YIELD	812 600115
44847BC8A96A430	556606	0	V52		0	7/10/2007	Good				Right		YIELD	812 600115
49833A2AE0B4C2	556812	130			0	7/11/2007	Good			Against	Right		YIELD	812 600115
4B43984BCCAD4F7	556607	6			0	7/12/2007	Good			With Milepost	Right	N	YIELD	812 600117
65A9723001AD4CA	556606	0	V66		0	7/12/2007	Good				Right		YIELD	812 600115
39782E0C44514D1	556606	0	149		0	7/13/2007	Good				Right		YIELD	812 600115
C7771B9E85D7413	556607	1			0	7/16/2007	Good			With Milepost	Median	S	YIELD	812 600115
08A53F55E1C4434	556606	0	151		0	7/16/2007	Good				Right		YIELD	812 600115
FA24BE100569453	556606	0	W38		0	7/17/2007	Good				Right		YIELD	812 600115
7E515F2C662B4B5	556606	0	W38		0	7/17/2007	Good				Right		YIELD	812 600115
26FFBF2D44D394BD	556606	0	151		0	7/18/2007	Good				Right		YIELD	812 600115
138C73A17D3B4D6	552634	18			0	7/18/2007	Good			Against	Median	E	YIELD	812 600117
2F96D1FE057142E	552634	18			0	7/18/2007	Good			Against	Median	W	YIELD	812 600117
00FF700778764421	556606	0	149		0	7/19/2007	Good				Right		YIELD	812 600115

Pages: 11

# Sign Report and Editing



After you click on “Check Syntax” and “Run Query” you can generate a report, as shown below, by clicking the “Show Report” button.

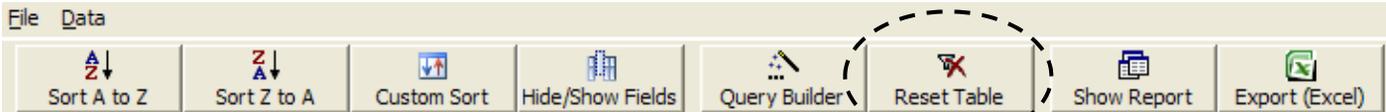
ID	Garage	Route	Ramp (From Route)	Milepost	Milepost Offset	Insp. Date (Day)	Condition (Day)	Insp. Date (light)	Condition (light)	Dir. of Travel	Side of Road	Sign Face	Sign Description	Stock Number
DC24E5170EFE48	552634	14			0	5/31/2007	Good			With Milepost	Left	W	STOP	812 600100
DA503666BCC34A	552634	14			0	6/13/2007	Good			With Milepost	Right	S	STOP	812 600105
DF443096AE414A5	552634	14			0	5/25/2007	Good			With Milepost	Right	E	STOP	812 600100
DA503666BCC34A	552634	14			0	6/13/2007	Good			With Milepost	Right	N	DO NOT ENTER-SYMBOL	812 600820
D7131BE70AB7461	552634	14			0	6/18/2007	Good			With Milepost	Right	S	STOP	812 600100
D6E1AFA4FF7D41	552634	14			0	6/15/2007	Good			With Milepost	Right	S	STOP	812 600100
D2A012BB430A4C	552634	14			0	6/4/2007	Good			With Milepost	Left	W	NO PASSING ZONE	812 702030
DCD434D28D31495	552634	14			0	6/13/2007	Good			With Milepost	Right	S	STOP	812 600105

# Sign Report and Editing

## 1. Viewing Data

### 1.5 Reset Table

Click this button to reset the query table. For example, if you ran a query to show all stop signs in District 1 and then decided you wanted to see all the yield signs the table will need to be reset.



The screenshot shows the 'View Data (Read-Only)' window. The toolbar at the top includes the 'Reset Table' button. Below the toolbar, the window title is 'View Data (Read-Only)'. The main area displays a table titled 'Sign & Location Data:' with the following columns: View\_SignDetail.ID, Sign\_ID, DateInstalled, View\_SignDetail.EditDate, View\_SignDetail.EditBy, SignFaceDirection, DayConditionDate, DayRating, and DayRetroreflectivity. The table contains several rows of data, including entries for signs with IDs like 2F796B10C28247B9811 and B5457D69EF41415CAE1. At the bottom, the 'Current Queries' line shows 'Locations & Posts: (District = 2)' and 'Signs: (DayRating = 'Excellent')'. The status bar at the bottom indicates 'Data As Of: N/A' and '3 of 2128' records.

The "Current Queries" line shows the active query information. Use "Reset Table" to clear this information which can be verified when you see "None" as shown below.

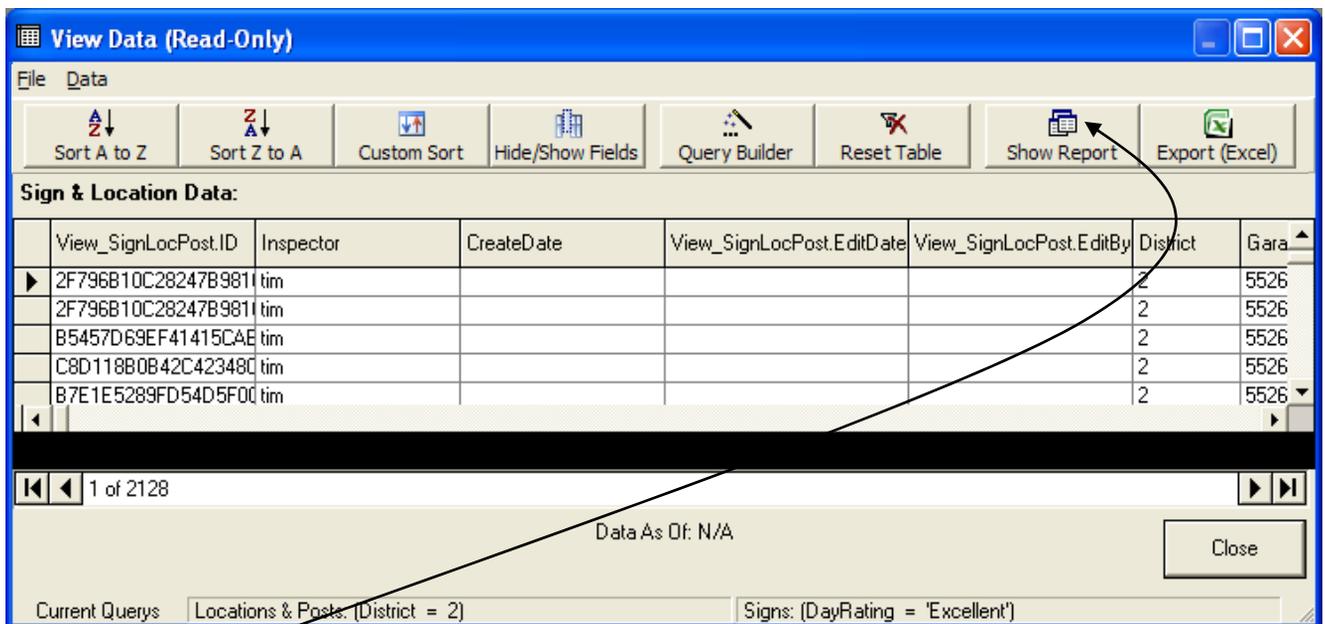
The screenshot shows the 'View Data (Read-Only)' window after the 'Reset Table' button has been clicked. The toolbar at the top still includes the 'Reset Table' button. The table title is 'Sign & Location Data:' and the columns are: View\_SignLocPost.ID, Inspector, CreateDate, View\_SignLocPost.EditDate, View\_SignLocPost.EditBy, District, Garage, OnNearRamp, SystemClass, and Route. The table contains several rows of data, including entries for signs with IDs like 2AE9DFA505C04E4398 and 290223E77D98453BAF. At the bottom, the 'Current Queries' line now shows 'Locations & Posts: None' and 'Signs: None'. The status bar at the bottom indicates 'Data As Of: N/A' and '1 of 85804' records.

# Sign Report and Editing

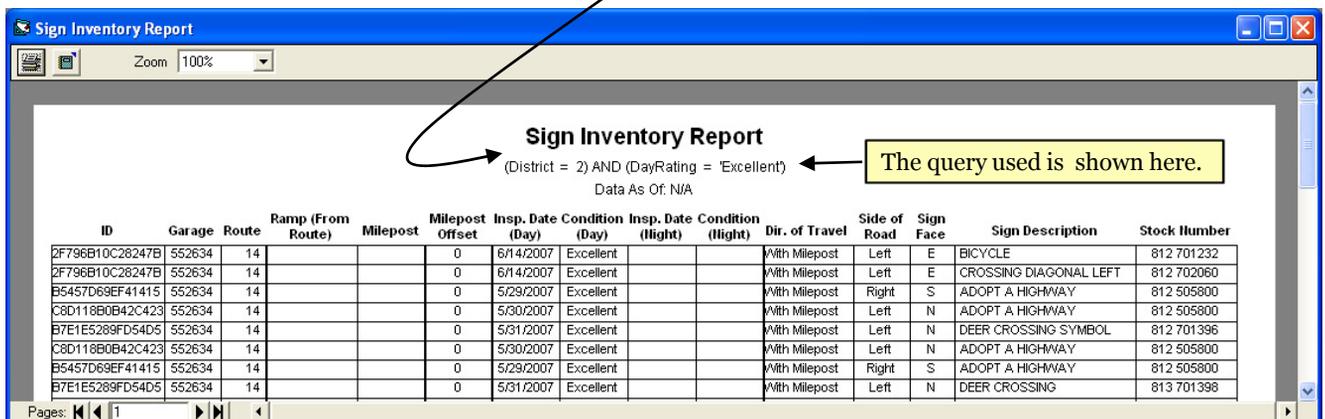
## 1. Viewing Data

### 1.6 Show Report

After running a query the results are displayed in a tabular format as shown below.



Use the "Show Report" button to generate a formatted report which can be printed as shown below.

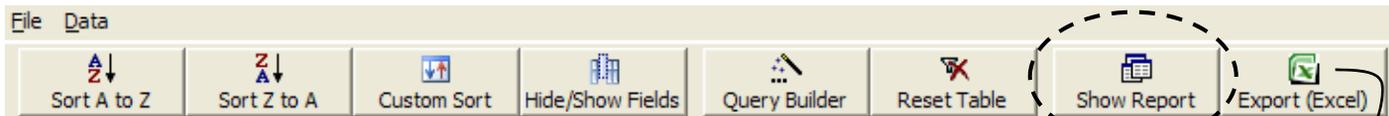


# Sign Report and Editing

## 1. Viewing Data

### 1.7 Exporting Information to Excel

Clicking this button will save a copy of the view data table to an excel spreadsheet (limited to 65,000 records if not using Excel 2007 version or later).



Book1

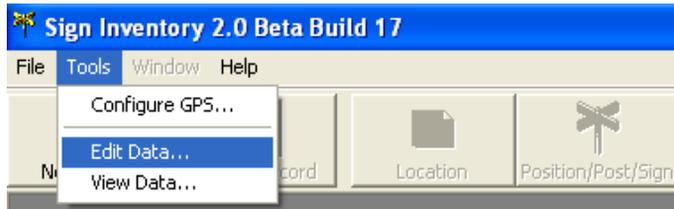
	A	B	F	G	I	J	AT	AU
1	View_SignLocPost.ID	Inspector	District	Garage	SystemClass	Route	DayConditionDate	DayRatin
2	2F796B10C28247B9816928F12709C0D5	tim	2	552634	Iowa	14	6/14/2007	Excellent
3	2F796B10C28247B9816928F12709C0D5	tim	2	552634	Iowa	14	6/14/2007	Excellent
4	B5457D69EF41415CABC52FAA1DC76778	tim	2	552634	Iowa	14	5/29/2007	Excellent
5	C8D118B0B42C4234806C0047569F2474	tim	2	552634	Iowa	14	5/30/2007	Excellent
6	B7E1E5289FD54D5F0055E88C2927CEBD	tim	2	552634	Iowa	14	5/31/2007	Excellent
7	C8D118B0B42C4234806C0047569F2474	tim	2	552634	Iowa	14	5/30/2007	Excellent
8	B5457D69EF41415CABC52FAA1DC76778	tim	2	552634	Iowa	14	5/29/2007	Excellent
9	B7E1E5289FD54D5F0055E88C2927CEBD	tim	2	552634	Iowa	14	5/31/2007	Excellent
10	F549F311D5DB4C859419628D082900C1	tim	2	552634	Iowa	14	6/14/2007	Excellent
11	FD6087951D8543E5A13944D59553A636	tim	2	552634	Iowa	14	5/29/2007	Excellent
12	D0C3F9349607455BB846200066DA39FE	tim	2	552634	Iowa	14	6/14/2007	Excellent
13	D0C3F9349607455BB846200066DA39FE	tim	2	552634	Iowa	14	6/14/2007	Excellent
14	F549F311D5DB4C859419628D082900C1	tim	2	552634	Iowa	14	6/14/2007	Excellent
15	B5457D69EF41415CABC52FAA1DC76778	tim	2	552634	Iowa	14	5/29/2007	Excellent
16	C8D118B0B42C4234806C0047569F2474	tim	2	552634	Iowa	14	5/30/2007	Excellent
17	7D66E536D57A4517BCADA5F525080098	tim	2	552634	Iowa	14	5/30/2007	Excellent
18	7588F10B7BF2423284586E2BDBA62C02	tim	2	552634	Iowa	14	5/31/2007	Excellent
19	7DBE324D77F840F1B3081172D0EFBFBF	tim	2	552634	Iowa	14	5/30/2007	Excellent
20	7DBE324D77F840F1B3081172D0EFBFBF	tim	2	552634	Iowa	14	5/30/2007	Excellent
21	7D66E536D57A4517BCADA5F525080098	tim	2	552634	Iowa	14	5/30/2007	Excellent
22	7D66E536D57A4517BCADA5F525080098	tim	2	552634	Iowa	14	5/30/2007	Excellent
23	676380B2DCC947FB88D101AD3D94FFCB	tim	2	552634	Iowa	14	6/14/2007	Excellent
24	AB5FADCD7806421AB8A94D408B668FEA	mc0003	2	552635	Iowa	3	7/9/2007	Excellent
25	AB5FADCD7806421AB8A94D408B668FEA	mc0003	2	552635	Iowa	3	7/9/2007	Excellent
26	AB5FADCD7806421AB8A94D408B668FEA	mc0003	2	552635	Iowa	3	7/9/2007	Excellent
27	4D78F597986A4A058E1D69C2F892B99D	mc0003	2	552635	Iowa	3	7/9/2007	Excellent

Sheet1 / Sheet2 / Sheet3

# Sign Report and Editing

## 2. Editing Sign Information (Retire and Edit Signs)

After clicking “Tools” then “Edit Data...” the following “Edit Data” screen appears. The window shows both Sign Location (where the post is located) and Sign Detail (information for each sign on the post) data.



SignLocPost.ID	Inspector	CreateDate	SignLocPost.EditDate	SignLocPost.EditBy	District	Garage
FD8A09524A30427CAE	roger	3/24/2008			1	551608
DAE069D7AFE840F08	roger	3/24/2008			1	551608
BBF818C7E2FB453BB	roger	3/24/2008			1	551608
97F349D537CA4D198	roger	3/24/2008			1	551608
9564497C86E9475786	roger	3/24/2008	3/25/2008	roger	1	551608
968CF68DE7084EE49	roger	3/24/2008			1	551608
89AEE53C35B84D650	roger	3/24/2008			1	551608
A48F37B10422439900	roger	3/24/2008			1	551608
A236147A51034FBB91	roger	3/24/2008			1	551608
CAB0FF49FD404C108	roger	3/24/2008			1	551608
CA7F5116F00145FF98	roger	3/24/2008			1	551608
09C99C13A4FE49C49	roger	3/24/2008			1	551608

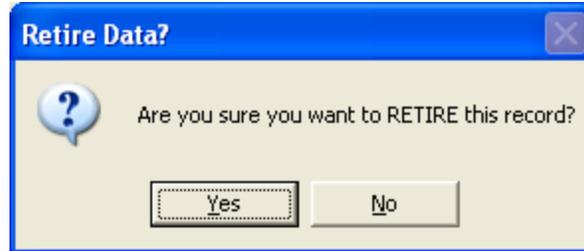
From this screen you can either RETIRE and or EDIT a sign. Retiring a sign means that it has been removed from the roadway and is no longer in service. Retiring a sign removes it from the active database and creates a history record for the sign.

# Sign Report and Editing

## 2. Editing Sign Information

### 2.1 Retire a Sign

To retire a sign click on the “Retire” button. A confirmation window will appear and after clicking Yes, the “Retire” button will change to “Unretire” giving the user a chance to undo this if necessary.



**Edit Data**

File Data

Sort A to Z Sort Z to A Custom Sort Hide/Show Fields Query Builder Reset Table Show Report Export (Excel)

**Sign & Location Data:**

SignLocPost.ID	Inspector	CreateDate	SignLocPost.EditDate	SignLocPost.EditBy	District	Garage
FD8A09524A30427CAE	roger	3/24/2008			1	551608
DAE069D7AFE840F08	roger	3/24/2008			1	551608
BBF818C7E2FB4538B0	roger	3/24/2008			1	551608
97F349D537CA4D1981	roger	3/24/2008			1	551608
9564497C86E9475786	roger	3/24/2008	3/23/2010	J.Doe	1	551608
968CF68DE7084EE498	roger	3/24/2008			1	551608
89AEE53C35B84D6500	roger	3/24/2008			1	551608
A48F37B10422439900	roger	3/24/2008			1	551608
A236147A51034FBB91	roger	3/24/2008			1	551608
CAB0FF49FD404C108F	roger	3/24/2008			1	551608
CA7F5116F00145FF98	roger	3/24/2008			1	551608
09C99C13A4FE49C499	roger	3/24/2008			1	551608

41 of 36356

Unretire Edit Close

Current Queries Locations & Posts: None Signs: None

# Sign Report and Editing

## 2. Editing Sign Information

### 2.2 Edit

To edit a sign highlight the sign record and click the “Edit” button.

The screenshot shows the 'Edit Data' window with a table of sign records. The 'Edit' button is circled in red. The table has the following data:

SignLocPost.ID	Inspector	CreateDate	SignLocPost.EditDate	SignLocPost.EditBy	District	Garage
FD8A09524A30427CAE	roger	3/24/2008			1	551608
DAE069D7AFE840F08	roger	3/24/2008			1	551608
BBF818C7E2FB4538B0	roger	3/24/2008			1	551608
97F349D537CA4D1981	roger	3/24/2008			1	551608
9564497C86E9475786	roger	3/24/2008	3/23/2010	J.Doe	1	551608
968CF68DE7084EE49E	roger	3/24/2008			1	551608
894EE53C35B84D6500	roger	3/24/2008			1	551608
A48F37B10422439900	roger	3/24/2008			1	551608
A236147A51034FBB91	roger	3/24/2008			1	551608
CAB0FF49FD404C108F	roger	3/24/2008			1	551608
CA7F5116F00145FF98	roger	3/24/2008			1	551608
09C99C13A4FE49C499	roger	3/24/2008			1	551608

#### Select Post/Sign Edit Actions:

The user can edit the Post and/or the Sign information. Follow the business rules developed by the Office of Traffic and Safety for guidance on post and sign edits.

The screenshot shows the 'Select Post/Sign Edit Actions' dialog box. It has two sections: 'Post' and 'Sign(s)'. The 'Post' section has two checkboxes: 'Move' and 'Replace'. The 'Sign(s)' section has one checkbox: 'Edit'. There are 'OK' and 'Cancel' buttons at the bottom.

# Sign Report and Editing

## 2. Editing Sign Information

### 2.2 Edit

#### 2.2.1 Move a Post

To change the location of a post begin by checking the “Move” box and click “OK”.

This allows the user to only change the data fields within the “Position” box highlighted below.

The image shows two screenshots from a software application. The top screenshot is a dialog box titled "Select Post/Sign Edit Actions". It has two sections: "Post" and "Sign(s)". In the "Post" section, the "Move" checkbox is checked, and the "Replace" checkbox is unchecked. In the "Sign(s)" section, the "Edit" checkbox is unchecked. At the bottom of the dialog are "OK" and "Cancel" buttons.

The bottom screenshot is the main sign editing form. A dashed box highlights the "Position" section. An arrow points from the text above to this section. The "Position" section includes:
 

- Radio buttons for "Milepost", "GPS", "Both", and "N/A". "Both" is selected.
- Fields for "Milepost" (148) and "Milepost Offset" (0.770 miles). A "Milepost Not Listed" checkbox is present.
- Fields for "Latitude" (42.503474222222) and "Longitude" (-93.26248538888).
- A "Get GPS Position" button.
- "Direction of Travel" dropdown set to "Against Milepost (decreasing in number)".
- "Side of Road" dropdown set to "Right" and "Lateral Offset" field set to 0 feet.
- A "Comment" text area.

 Below the "Position" section is the "Post" section with:
 

- "Post Type" dropdown set to "Wood Posts" and "Post Size" dropdown set to "4' x 6'".
- "Number of Posts" spinner set to 1 and "Length of Posts" field set to 0 feet.
- "Number of Signs" spinner set to 1.

 The right side of the form is the "Sign" section, which includes:
 

- "Choose Sign..." button.
- "Date in Service" dropdown set to "Unknown" and a date field set to 3/23/2010.
- "Direction Sign Faces" dropdown.
- "Sign Condition" section with "Day" selected, "Date" set to 3/23/2010, "Rating" dropdown, "Retroreflectivity" field, and "Ownership" dropdown set to "Iowa DOT".
- "Sign Number (if type b sign)" field.
- "Flag/Beacon/Etc." dropdown.
- "Comment" text area.
- "Add", "Delete", "Edit", and "Cancel" buttons.
- A table at the bottom with columns: #, Sign ID, Sign, Date Installs, Direction Sic, Insp. The first row contains: 1, 1, SPEED LIMIT 50, , N, .

# Sign Report and Editing

## 2. Editing Sign Information

### 2.2 Edit

#### 2.2.2 Replace a Post

To replace an existing post begin by checking the “Replace” box and click “OK”.

This allows the user to only change the data fields within the “Post” box highlighted below.

**Select Post/Sign Edit Actions**

**Post**

Move

Replace

**Sign(s)**

Edit

OK
Cancel

**Position**

Milepost  
 GPS  
 Both  
 N/A

Milepost:  Milepost Offset:  miles  
 Milepost Not Listed

Direction of Travel:

Side of Road:  Lateral Offset:  feet

Comment:

**Post**

Post Type:  Post Size:

Number of Posts:  Length of Posts:  feet

Number of Signs:

**Sign**

Date in Service:  
 Unknown

Direction Sign Faces:

**Sign Condition**

Day  Night

Date:

Rating:

Retroreflectivity:

Comment:

#	Sign ID	Sign	Date Installed	Direction Sign	Insp
1	1	SPEED LIMIT 50		N	

# Sign Report and Editing

## 2. Editing Sign Information

### 2.2 Edit

#### 2.2.3 Edit Sign Record

To edit a sign record begin by checking the “Edit” box and click “OK”.

This allows the user to only change data within the fields highlighted below.

The screenshot shows the 'Sign Inventory 2.0' application window. The 'Sign' window is open, displaying details for a sign with the text 'ADOPT A HIGHWAY'. The 'Sign' window is highlighted with a dashed border. The 'Post' section is also highlighted with a dashed border, showing the 'Number of Signs' field set to 3. A separate dialog box titled 'Select Post/Sign Edit Actions' is shown in the top right, with the 'Edit' checkbox checked. The 'Sign' window contains the following information:

- Text: ADOPT A HIGHWAY
- Choose Sign... button
- Date in Service: 3/24/2010
- Direction Sign Faces: E
- Sign Condition: Day
- Ownership: Iowa DOT
- Date: 3/24/2010
- Rating: (empty)
- Retroreflectivity: 0
- Flag/Beacon/Etc.: No
- Comment: (empty)
- Buttons: Add, Retire, Edit, Cancel
- Table:
 

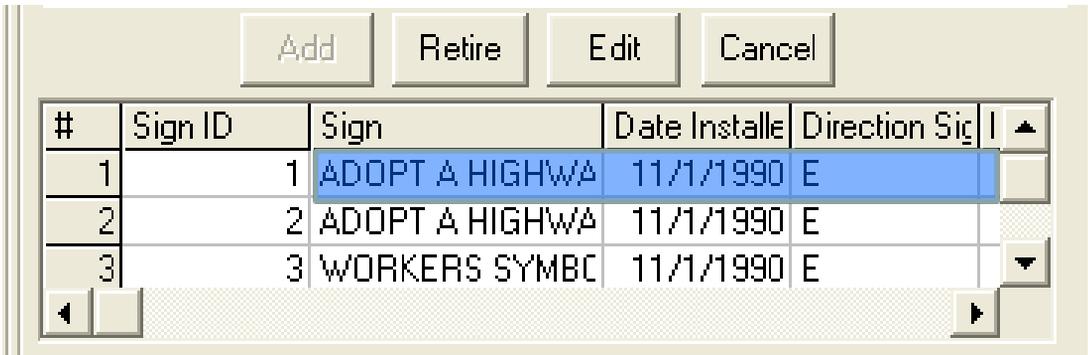
#	Sign ID	Sign	Date Installed	Direction	Sign
1	1	ADOPT A HIGHWA	11/1/1990	E	
2	2	ADOPT A HIGHWA	11/1/1990	E	
3	3	WORKERS SYMBC	11/1/1990	E	

The signs on a specific post are shown in this window. Each sign can be edited by selecting the sign and choosing “Edit”.

# Sign Report and Editing

## 2.2.3 Edit Sign Record Continued

To edit a sign, first select the sign within the following window:



#	Sign ID	Sign	Date Installed	Direction	Sign I
1	1	ADOPT A HIGHWA	11/1/1990	E	
2	2	ADOPT A HIGHWA	11/1/1990	E	
3	3	WORKERS SYMBC	11/1/1990	E	

Choose “Edit” and identify the desired action to be completed among the “Replace”, “Modify/Overlay”, and “Inspect” choices presented.

These options are described in detail within the Business Rules section of this manual.

After completing the desired changes, choose “Update” and “Commit Record” to complete the editing process.



**Select Sign Edit Actions**

**Sign**

Replace

Modify/Overlay

Inspect

OK Cancel

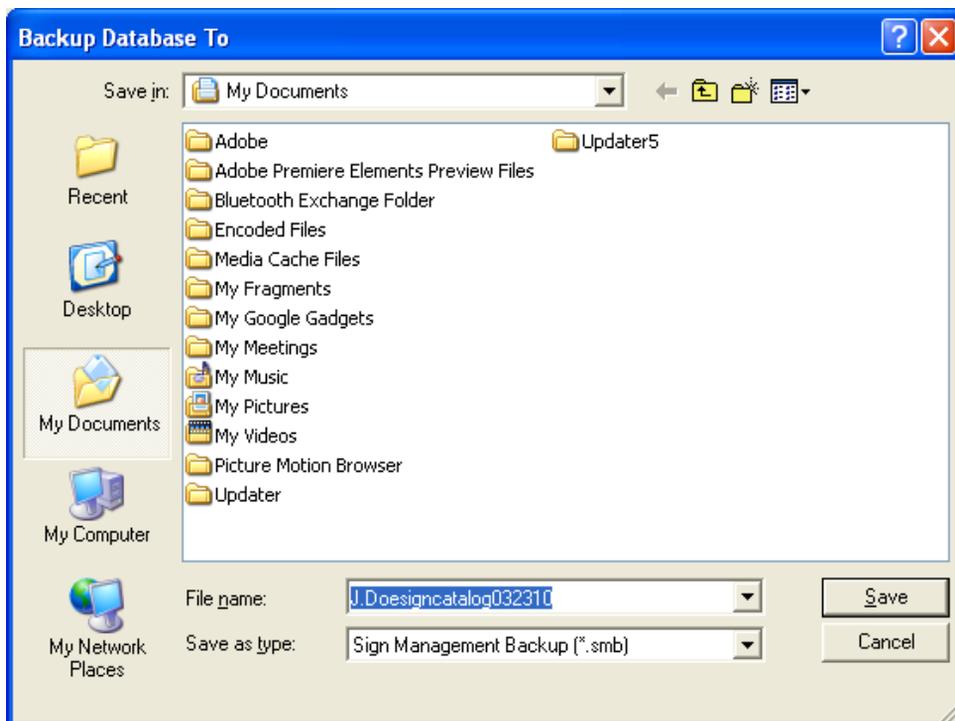
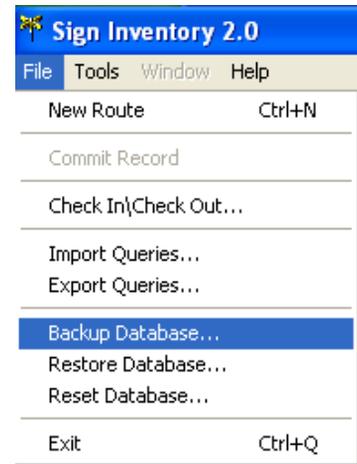
A worker in an orange safety vest is positioned on a lift bucket, working on a tall signpost. The scene is set outdoors with a bright, overcast sky. In the background, there is a fence and some trees. The overall image has a soft, slightly blurred quality.

# Data Management

# Data Management

## 1. Backing-Up Files

At the end of each day, the user should create a back-up file of the sign inventory database file. To do this, choose “File” then “Backup Database...” as shown below.

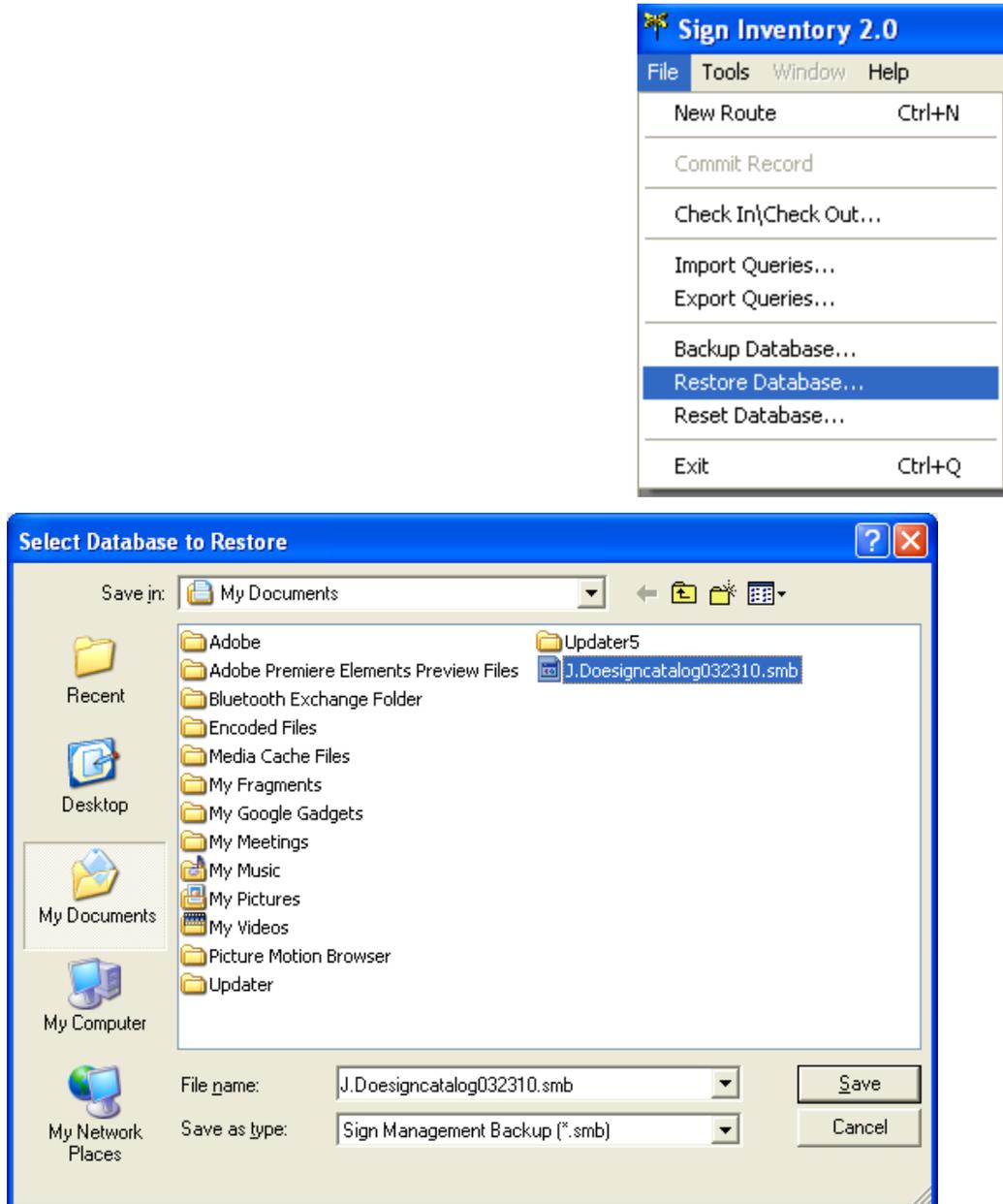


The “Backup Database To” window will appear. Choose where you want the file to reside on the computer (such as on the desktop). The backup file will then be saved to that location on your computer. The default naming convention is: User Name followed by sign catalog followed by the current date with the extension smb (eg. “J.Doesigncatalog032310.smb”).

# Data Management

## 2. Restore Files

The backup file should be treated as an emergency resource required only if the current database within the program is corrupt or was accidentally deleted. If this were the case, then the “File Restore” feature can be used to restore the data. The “Select Database To Restore” window will appear as shown below.



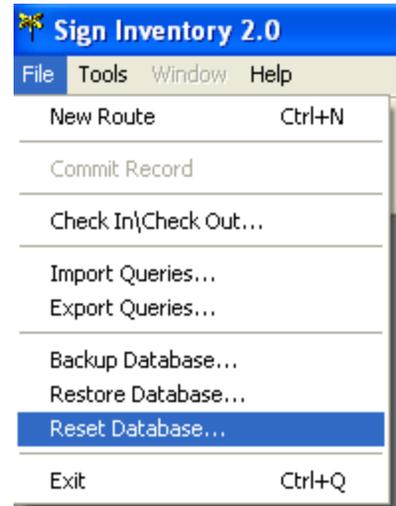
Prior to the file overwriting your default database, you will be cautioned that all data created since the date you created the backup file will be lost. **The Restore feature should only be used in an emergency!**

# Data Management

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## 3. Annual Reset for the Database

Once per year the user should reset the database on the field computer. This action should be completed only in accordance with the district and/or central office procedures. These steps are shown below:



The following screen will appear. **Click YES only if you are sure you want to reset the database.**



A worker in an orange safety vest is positioned on a lift bucket, working on a tall, vertical signpost. The signpost has several rectangular panels. The worker is holding a tool, possibly a wrench, near the top of the signpost. The lift bucket is attached to a long, horizontal boom. In the background, there is a large, orange structure, possibly a building or a piece of equipment, and a field of dry grass. The sky is overcast and grey. The overall scene is a construction or maintenance site.

# Business Rules

# Business Rules

---

## 1. POSTS

The following business rules were developed by the Office of Traffic and Safety for guidance on post edit actions.

### NEW post (Add new post ID to database)

Brand new post installation (no existing post ID in database).

The 'Status' field in the SignLocPost Table will be given a value of '1'.

### REPLACE post (Edit existing post information in database – same post ID)

If an existing post is replaced at the same location.

The 'Status' field in the SignLocPost Table will be given a value of '3'.

### MOVE post (Edit existing post information in database – same post ID)

If an existing post is just moved to a new location. Both the post ID and its corresponding Sign Detail ID(s) will stay the same. **EXAMPLE:** The post that supports a 'CROSSROAD' warning sign is moved 200 feet because it keeps getting hit.

The 'Status' field in the SignLocPost Table will be given a value of '4'.

### RETIRE post (Retire existing post ID in database – cannot be edited)

When an existing post is removed from the field permanently (not moved). Both the post ID and all the signs on that post (corresponding Sign Detail IDs) are retired.

The 'Status' field in the SignLocPost Table will be given a value of '2'.

# Business Rules

---

## 2. SIGNS

The following business rules were developed by the Office of Traffic and Safety for guidance on sign edit actions.

### **ADD SIGN** (Add new Sign Detail ID to database)

- Brand new sign installation (new sign at a new location).  
EXAMPLE: A 'STOP' sign installed at a new intersection.
- If a new sign is added to an existing post ID. EXAMPLE: A 'CROSS TRAFFIC DOES NOT STOP' sign added below an existing 'STOP' sign.
- If an existing sign is moved to another existing post ID. EXAMPLE: A 'BUSINESS DISTRICT' sign is removed from its existing post and combined with an existing 'AIRPORT' sign. The 'BUSINESS DISTRICT' sign is considered a new sign at the existing 'AIRPORT' sign's post ID. (The 'BUSINESS DISTRICT' sign is also considered a retired sign from its existing post ID - see 2nd bullet under 'RETIRED' sign rule).
- The 'Status' field in the SignDetail Table will be given the letter 'A'.

### **REPLACE SIGN** (Edit existing Sign Detail information in database – same Sign Detail ID)

- If an existing sign is replaced by the same type of sign (same message). EXAMPLE: A 'SPEED LIMIT 65' sign is replaced by a 'SPEED LIMIT 65' sign.
- If an existing sign is replaced by the same type of sign (different message). EXAMPLE: A '2-LINE MILEAGE' sign (Nevada 8/Ames 13) is replaced by a '3-LINE MILEAGE' (Nevada 8/Ames 13/Boone 28) sign.
- The 'Status' field in the SignDetail Table will be given the letter 'C'.

Continued on next page...

# Business Rules

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## 2. SIGN's (Continued)

**MODIFY/OVERLAY SIGN** (Edit existing Sign Detail information in database – same Sign Detail ID)

- If an existing sign has an overlay (band-aid) applied to modify the message. The original sign (backing material) is still being used. EXAMPLE: The name of a destination is changed. The 'U of I Oakdale Campus' is renamed 'U of I Research Park'. A 'Research Park' overlay is used to cover 'Oakdale Campus'.
- The 'Status' field in the SignDetail Table will be given the letter 'D'.

**INSPECT SIGN** (Edit existing Sign Detail information in database – same Sign Detail ID)

- If an existing sign is inspected for day or night rating. EXAMPLE: A 'DEER CROSSING' night rating is changed from EXCELLENT to POOR.
- The 'Status' field in the SignDetail Table will be given the letter 'E'.

**RETIRED SIGN** (Retire existing Sign Detail ID in database – cannot be edited)

- When an existing sign is no longer approved for installation and is removed from the field permanently (not relocated). EXAMPLE: The 'HIAWATHA PIONEER TRAIL' sign is removed because it is no longer supported.
- If an existing sign is moved from its existing post ID. EXAMPLE: A 'BUSINESS DISTRICT' sign is moved from its existing post and combined with an existing 'AIRPORT' sign. The 'BUSINESS DISTRICT' sign is considered a retired sign from its existing post ID. (The 'BUSINESS DISTRICT' sign is also considered a new sign at the existing 'AIRPORT' sign's post ID – see 3rd bullet under 'ADD' sign rule).
- The 'Status' field in the SignDetail Table will be given the letter 'B'.

A photograph showing a worker in an orange safety vest and hard hat standing on a lift bucket. The bucket is extended from a long horizontal boom. The worker is positioned next to a tall, vertical signpost. The signpost has several rectangular panels attached to it. The background is a hazy, overcast sky. In the lower left, there is a blurred orange structure, possibly a building or part of the lift. The overall scene is outdoors, likely at a construction or maintenance site.

# Sign Sheeting

# Sign Sheeting

## Sign Sheeting Identification

Currently all new signs from the Iowa DOT sign shop will have either Prismatic High Intensity or Diamond Grade sheeting. There will be signs in the field which still have engineer grade sheeting. The following information identifies common sign attributes for assistance in estimating size/sheeting in the field. This section includes the FHWA Retroreflective Sheeting Identification Guide as a reference.



**Stop**  
Prismatic High Intensity  
48"x48" interstate ramp and  
36"x36" primary to primary,  
30"x30" gravel road



**45 degree Arrow**  
Prismatic High Intensity  
24"x24" interstate, some  
special cases of 36"x36"



**Yield**  
Prismatic High Intensity  
60"x60"x60" interstate,  
48"x48"x48" primary,  
36"x36"x36" city



**Double Arrow**  
Prismatic High Intensity  
12"x24"



**All Way**  
Prismatic High Intensity  
12"x24", 6"x18" city



**Single Arrow**  
Prismatic High Intensity  
12"x24"



**No Passing**  
Diamond Grade - Fluorescent  
Yellow  
48"x60"x60" primary, also  
make 36"x48"x48" for in town



**To**  
Prismatic High Intensity  
12"x24"



**Speed Limit**  
Prismatic High Intensity  
48"x60" interstate, 36"x48"  
primary, 24"x30" city



**South**  
Prismatic High Intensity  
15"x30"



**Merge**  
Diamond Grade - Fluorescent  
Yellow 48"x48" interstate and  
4-lanes, 36"x36" towns and  
some primaries



**End**  
Prismatic High Intensity  
12"x24"



**Arrow**  
Diamond Grade -  
Fluorescent Yellow 24"x48"  
primary at "T" intersections



**Directional Chevron**  
Diamond Grade -  
Fluorescent Yellow 12"x18",  
up to 36"x48"

# Sign Sheeting



**Divided Highway**  
Prismatic High Intensity  
18"x24" two styles depending  
on intersection also have  
oversized 30"x36"



**Object Marker**  
Diamond Grade -  
Fluorescent Yellow 12"x36"  
"R" and "L" in top right corner



**Cluster Button**  
Diamond Grade -  
Fluorescent Yellow 18"x18"



**One Way**  
Prismatic High Intensity  
18"x54" divided 4-ln, with  
12"x36" in cities



**Interstate Shield**  
Prismatic High Intensity  
24"x24", called a guide sign if  
part of large green signs



**Unlawful to Pass Bus**  
Prismatic High Intensity  
36"x48"



**Speed Advisory**  
Diamond Grade -  
Fluorescent Yellow 24"x24"  
primary, 18"x18" on lower  
speed curves



**Business District**  
Prismatic High Intensity  
36"x48"



**Only**  
Prismatic High Intensity  
30"x36"



**Wrong Way**  
Prismatic High Intensity  
28"x40" interstate, hang on  
back side of 48"x48" stop  
sign



**Do Not Enter**  
Prismatic High Intensity  
36"x36" interstate, 30"x30"  
primary



**Cross Traffic**  
Diamond Grade -  
Fluorescent Yellow 18"x36"



**Curve**  
Diamond Grade -  
Fluorescent Yellow 36"x36"  
divided 4-lane, 30"x30"  
primary



**Buckle Up**  
Prismatic High Intensity  
36"x36" primary, 48"x48"  
interstate



**No U-Turn**  
Prismatic High Intensity  
36"x36"



**Roadside Park**  
Prismatic High Intensity  
36"x42" with wood backing



**Crossroad**  
Diamond Grade -  
Fluorescent Yellow 30"x30"  
primary



**Low Clearance**  
Diamond Grade -  
Fluorescent Yellow 24"x144"

# Sign Sheeting

## FHWA Retroreflective Sheeting Identification Guide – September 2005



**Notes:** ASTM Types are shown as stated by the manufacturers using ASTM D4956-04 "type" designations. Agencies should verify that the sheeting they use complies with their specifications or ASTM D4956. FHWA does not endorse or approve any material nor does it determine type category(s) for materials. This side of the Sheeting ID Guide is for rigid surfaces only. The other side is for flexible surfaces and non-signing applications.

### Retroreflective Sheeting Materials for Rigid Sign Surfaces Made with Glass Beads

Example of Sheeting (Shown to scale)							
ASTM Type	I	II	III	III	III	III	III
Manufacturer	See note A	Avery Dennison® Super Engineer Grade	3M™	ATSM, Inc.	Avery Dennison®	Kiwalite®	LG Lite Nippon Carbide
Brand Name	Engineer Grade	Super Engineer Grade	High Intensity	High Intensity	High Intensity	High Intensity	High Intensity
Series Number	Several	T-2000	2800 3800	ASTM HI	T-5500	22000	LH8000 LH8100 N500 N800
NOTES:	A						

### Retroreflective Sheeting Materials for Rigid Sign Surfaces Made with Prisms

Example of Sheeting (Shown to scale)								
ASTM Type	III, IV	III, IV, X	VII, VIII, X	VIII	IX	IX	X	Unassigned
Manufacturer	Avery Dennison® High Intensity Prismatic	3M™	3M™	Avery Dennison®	3M™	Avery Dennison®	Nippon Carbide	3M™
Brand Name	High Intensity Prismatic	High Intensity Prismatic	Diamond Grade™ LDP	MVP Prismatic	Diamond Grade™ VIP	Omni-View™	Crystal Grade	Diamond Grade™ DG3
Series Number	T-6500	3930	3970	T-7500	94000 (IV) 92000 (VIII)	T-9500	93000	4000
NOTES:	B	B	B,D		B,C		C	

A – All the manufacturers listed on the other side of this guide (except Reflexite) provide Engineer Grade sheeting. Engineer Grade sheeting is uniform without any patterns or identifying marks. Visually, it is indistinguishable from lower quality grades (i.e., utility and commercial grades).

B – These materials can be classified as different ASTM Types.

C – These materials are visually indistinguishable from one another.

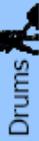
D – The arrow or "water mark" on this product is no longer included with new productions.

# Sign Sheeting

## FHWA Retroreflective Sheeting Identification Guide – September 2005

**Notes:** ASTM Types are shown as stated by the manufacturers using ASTM D4956-04 "type" designations. Agencies should verify that the sheeting they use complies with their specifications or ASTM D4956. FHWA does not endorse or approve any material nor does it determine type category(s) for materials.

This side of the Sheeting ID Guide is for flexible and non-signing applications. The other side is for rigid surfaces. Below are symbols that have been used to indicate special applications for sheeting on this side of the Sheeting ID Guide:



Temporary Tubes



### Retroreflective Sheeting Materials for Non-Signing Applications

Example of Sheeting (Shown to scale)						
ASTM Type	III	III	V	V	III	VI
Manufacturer	Avery Dennison®	Reflexite	Reflexite	Reflexite	3M™	Reflexite
Brand Name	High Intensity Prismatic Work Zone	High Impact Channelizer Tape	Barrier Delineator	Barrier Delineator	High Intensity Flexible	Traffic Cone Collar
Series Number	WR-6100	n/a	AR1000	AP1000	3840	n/a
Typical Use	Reboundable Device	Reboundable Device	Rigid Non-Signing Surface	Rigid Non-Signing Surface	Reboundable Device	Traffic Cone

### Retroreflective Sheeting Materials for Flexible Signs

Example of Sheeting (Shown to scale)					
ASTM Type	VI	VI	VI	VI	VI
Manufacturer	3M™	3M™	Avery Dennison®	Reflexite	Reflexite
Brand Name	Diamond Grade™ Roll-Up Sign	Vinyl Roll-Up Sign	Flexible Roll-Up Sign	Flagging Material	High Performance Marathon
Series Number	RS20	RS30	WU-6014	n/a	n/a
Typical Use	Roll-Up Sign	Roll-Up Sign	Roll-Up Sign	Roll-Up Sign	Roll-Up Sign

### Contact Information

3M - <a href="http://www.3M.com/tcm">www.3M.com/tcm</a>	Kiwalite - <a href="http://www.kiwa-lite.com">www.kiwa-lite.com</a>	Reflexite - <a href="http://www.reflexite.com">www.reflexite.com</a>
ATSM, Inc. - <a href="http://www.atsminc.com">www.atsminc.com</a>	LG Lite - <a href="http://www.lgchem.com">www.lgchem.com</a>	Nippon Carbide - <a href="http://www.nikkalite.com">www.nikkalite.com</a>
Avery Dennison - <a href="http://www.reflectives.averydennison.com">www.reflectives.averydennison.com</a>		FHWA - <a href="http://www.fhwa.dot.gov/retro">www.fhwa.dot.gov/retro</a>



**Iowa Department  
of Transportation**