Sign Inventory Users Guide

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Introduction

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.
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.

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
1. **Starting the Sign Inventory Software Tool:**
   Click on the Sign Management Icon to begin the inventory tool software.

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.
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.
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).
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.
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).
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.

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

**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.
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:

**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 sign's position, post, offset, or other features.
7. Sign Input Continued

7.2 Entering Sign Post Information:
Input section to describe the physical features of the post.

**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.
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.
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:
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 Interface](image-url)
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.
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.
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.
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.
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:

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

With “Is On or Near Ramp” option box checked

See next page for details.
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).
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):

- Example for Interstate to US Highway (drop down screens will have all available routes).
- Sign on ramp (reference using “Is On or Near Ramp” checkbox).
- Sign near the ramp but on I-35 (reference this sign to I-35 i.e. don’t use “Is On or Near Ramp” checkbox).

**Case 2:**
Local road to State Highway (Interstate, US, Iowa):

- Example for Local roadway to Interstate or state highway.
- Reference both signs using “Is On or Near Ramp” checkbox.
3. Dealing with Missing Milepost:

- MP 145
- MP 146
- MP 147

Milepost which is missing in the field.

Sign to be inventoried.

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

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.
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:

![Checkout Data 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:

![Check-in/Checkout Screen]

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

![Check-in/Checkout Screen]

- 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
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.
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.
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.
1. Viewing Data

1.3 Hide/Show Fields

The Hide/Show Fields button allows the user to choose which data fields they would like to see (from either the sign or location tables) in the Edit Data window. This will become the default view until changed.
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:
Once you build the query you must click on "Check Syntax".

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

- District = 2

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

- DayRating = Excellent

Once you build the query you must click on "Check Syntax".
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 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. This example list only the Yield signs which have either a Good or Poor rating.
Sign Report and Editing

Each saved query is displayed here. Click on the query. The Critical Signs query is a default query and cannot be deleted.

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

The query used is shown here.
### 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).
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.

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.
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.
2. Editing Sign Information

2.2 Edit

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

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

Select Post/Sign Edit Actions

<table>
<thead>
<tr>
<th>Post</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Move</td>
<td></td>
</tr>
<tr>
<td>Replace</td>
<td></td>
</tr>
</tbody>
</table>

Sign(s)

- Edit

OK  | Cancel
2.2.3 Edit Sign Record Continued

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

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.
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.

   ![Backup Database Window](image)

   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!
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.
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’.
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)


- 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...
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’.
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

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

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

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

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

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

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

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

- **Double Arrow**
  - Prismatic High Intensity
  - 12”x24”

- **Single Arrow**
  - Prismatic High Intensity
  - 12”x24”

- **To**
  - Prismatic High Intensity
  - 12”x24”

- **South**
  - Prismatic High Intensity
  - 15”x30”

- **End**
  - Prismatic High Intensity
  - 12”x24”

- **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”

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

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

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

- **Only**
  Prismatic High Intensity
  30”x36”

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

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

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

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

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

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

- **Unlawful to Pass Bus**
  Prismatic High Intensity
  36”x48”

- **Business District**
  Prismatic High Intensity
  36”x48”

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

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

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

- **Roadside Park**
  Prismatic High Intensity
  36”x42” with wood backing

- **Low Clearance**
  Diamond Grade - Fluorescent Yellow 24”x144”
### 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

<table>
<thead>
<tr>
<th>ASTM Type</th>
<th>Manufacturer</th>
<th>Brand Name</th>
<th>Grade</th>
<th>Series Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>I</td>
<td>Avery Dennison®</td>
<td>Super Engineer Grade</td>
<td>High Intensity</td>
<td>150000 170000 18000</td>
</tr>
<tr>
<td>II</td>
<td>Nippon Carbide</td>
<td>Super Engineer Grade</td>
<td>High Intensity</td>
<td>2800 3800</td>
</tr>
<tr>
<td>III</td>
<td>3M™</td>
<td>High Intensity</td>
<td>High Intensity</td>
<td>T-5500 22000</td>
</tr>
<tr>
<td>III</td>
<td>ATSM, Inc.</td>
<td>High Intensity</td>
<td>High Intensity</td>
<td>LH8000 LH8100 N500 N800</td>
</tr>
<tr>
<td>III</td>
<td>Avery Dennison®</td>
<td>High Intensity</td>
<td>High Intensity</td>
<td>Nippon Carbide</td>
</tr>
<tr>
<td>III</td>
<td>Kiwalite®</td>
<td>High Intensity</td>
<td>High Intensity</td>
<td>Nippon Carbide</td>
</tr>
<tr>
<td>III</td>
<td>LG Lite</td>
<td>High Intensity</td>
<td>High Intensity</td>
<td>Nippon Carbide</td>
</tr>
<tr>
<td>III</td>
<td>Nippon Carbide</td>
<td>High Intensity</td>
<td>High Intensity</td>
<td>Nippon Carbide</td>
</tr>
</tbody>
</table>

**NOTES:**

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.

# 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:

## Retroreflective Sheeting Materials for Non-Signing Applications

<table>
<thead>
<tr>
<th>ASTM Type</th>
<th>Manufacturer</th>
<th>Brand Name</th>
<th>Series Number</th>
<th>Typical Use</th>
<th>Sheeting (Shown to scale)</th>
</tr>
</thead>
<tbody>
<tr>
<td>III</td>
<td>Avery Dennison®</td>
<td>High Intensity Prismatic Work Zone</td>
<td>WR-6100</td>
<td>Reboundable Device</td>
<td><img src="image1" alt="Sheeting Material" /></td>
</tr>
<tr>
<td>III</td>
<td>Reflexite</td>
<td>High Impact Channelizer Tape</td>
<td>n/a</td>
<td>Reboundable Device</td>
<td><img src="image2" alt="Sheeting Material" /></td>
</tr>
<tr>
<td>V</td>
<td>Reflexite</td>
<td>Barrier Delineator</td>
<td>AR1000</td>
<td>Rigid Non-Signing Surface</td>
<td><img src="image3" alt="Sheeting Material" /></td>
</tr>
<tr>
<td>V</td>
<td>Reflexite</td>
<td>Barrier Delineator</td>
<td>AP1000</td>
<td>Rigid Non-Signing Surface</td>
<td><img src="image4" alt="Sheeting Material" /></td>
</tr>
<tr>
<td>III</td>
<td>3M™</td>
<td>High Intensity Flexible</td>
<td>3840</td>
<td>Reboundable Device</td>
<td><img src="image5" alt="Sheeting Material" /></td>
</tr>
<tr>
<td>VI</td>
<td>Reflexite</td>
<td>Traffic Cone Collar</td>
<td>n/a</td>
<td>Traffic Cone</td>
<td><img src="image6" alt="Sheeting Material" /></td>
</tr>
</tbody>
</table>

## Retroreflective Sheeting Materials for Flexible Signs

<table>
<thead>
<tr>
<th>ASTM Type</th>
<th>Manufacturer</th>
<th>Brand Name</th>
<th>Series Number</th>
<th>Typical Use</th>
<th>Sheeting (Shown to scale)</th>
</tr>
</thead>
<tbody>
<tr>
<td>VI</td>
<td>3M™</td>
<td>Diamond Grade™ Roll-Up Sign</td>
<td>RS20</td>
<td>Roll-Up Sign</td>
<td><img src="image7" alt="Sheeting Material" /></td>
</tr>
<tr>
<td>VI</td>
<td>3M™</td>
<td>Vinyl Roll-Up Sign</td>
<td>RS30</td>
<td>Roll-Up Sign</td>
<td><img src="image8" alt="Sheeting Material" /></td>
</tr>
<tr>
<td>VI</td>
<td>Avery Dennison®</td>
<td>Flexible Roll-Up Sign</td>
<td>WJ-6014</td>
<td>Roll-Up Sign</td>
<td><img src="image9" alt="Sheeting Material" /></td>
</tr>
<tr>
<td>VI</td>
<td>Reflexite</td>
<td>Flagging Material</td>
<td>n/a</td>
<td>Roll-Up Sign</td>
<td><img src="image10" alt="Sheeting Material" /></td>
</tr>
<tr>
<td>VI</td>
<td>Reflexite</td>
<td>High Performance Marathon</td>
<td>n/a</td>
<td>Roll-Up Sign</td>
<td><img src="image11" alt="Sheeting Material" /></td>
</tr>
<tr>
<td>VI</td>
<td>Reflexite</td>
<td>Super Bright Fluorescent</td>
<td>n/a</td>
<td>Roll-Up Sign</td>
<td><img src="image12" alt="Sheeting Material" /></td>
</tr>
</tbody>
</table>

## Contact Information

- 3M - [www.3m.com/tcm](http://www.3m.com/tcm)
- Kivlite - [www.kivlite.com](http://www.kivlite.com)
- Reflexite - [www.reflexite.com](http://www.reflexite.com)
- ATSM, Inc. - [www.atsmindc.com](http://www.atsmindc.com)
- LG Lite - [www.lngchem.com](http://www.lngchem.com)
- Nippon Carbide - [www.nikkalite.com](http://www.nikkalite.com)
- Avery Dennison - [www.reflectives.averydennison.com](http://www.reflectives.averydennison.com)
- FHWA - [www.fhwa.dot.gov/retro](http://www.fhwa.dot.gov/retro)
