

SIGN MANGEMENT

A Discussion on Inventory

IHEEP
San Antonio, TX





Motivation



Safety

- All Users
- Guidance
- Driver Expectation





FHWA

-National Standard
Minimum Maintained Retro with
Assessment or Management Methods

MUTCD Assessment or Management Methods

- ✓ Visual Assessment
- ✓ Measured Retroreflectivity
- ✓ Expected Sign Life
- ✓ Blanket Replacement
- ✓ Control Signs
- ✓ Future Methods
- ✓ Combination of Methods

MUTCD Assessment or Management Methods

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• *Inventory*

- Location
- Attributes
- Condition
- Collection
- Updates
- Equipment
- Cost/Training

- LOCATION
- LOCATION
- LOCATION



- *Inventory - LOCATION*

By Reference Post



By GPS Coordinates



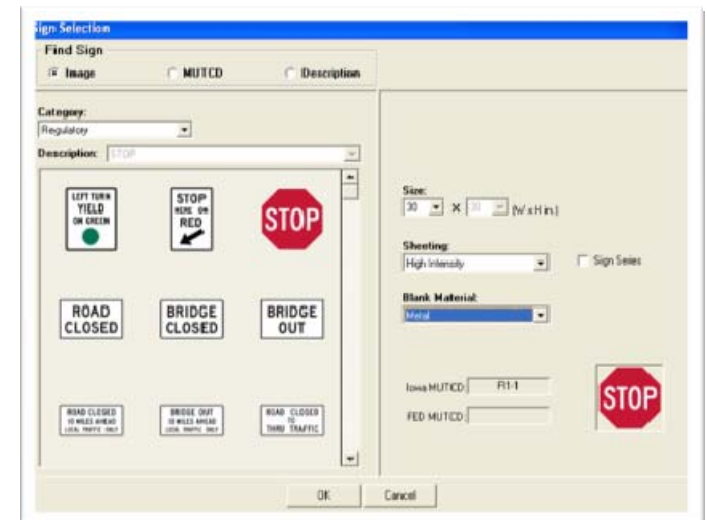
DMI combined with GPS



From www.jamar.com

• *Inventory - ATTRIBUTES*

Physical Features (Sign and Post)



• Inventory - ATTRIBUTES

Physical Features (Sign and Post)

Sign Inventory Report

Zoom 100%

Sign Inventory Report

ID	Garage	Route	Ramp (From Route)	Milepost	Milepost Offset	Insp. Date (Day)	Condition (Day)	Insp. Date (Hight)	Condition (Hight)	Dir. of Travel	Side of Road	Sign Face	Sign Description	Stock Number
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Pages: 1

POSTS:

Post Size / Type: (post lengths are optional)

Wood Posts

4" x 4" (lengths 10, 12, and 14 feet)

4" x 6" (lengths 16, 18, 20, 22, and 24 feet)

Square Steel Tubing (all 12 feet long)

1.5" x 1.5" x 1/8"

1" x 1" x 1/8"

2" x 2" x 1/8"

U-Shaped Delineator Posts

Type 1 (2 lbs/ft - Galvanized): lengths 8.5, 10, 12, and 14 feet

Type 2 (1.12 lbs/ft - Galvanized): lengths 6.5 and 8.5 feet

Type 3 (1.12 lbs/ft - Painted): length 6.5 feet

I-beam Steel Breakaway Posts (from Std RD-21A-variable lengths)

W6x9, W6x12, W6x15, and W8x18 (all have a stub post length of 2.5 ft.)

W8x21, W10x22, W10x26, and W12x26 (all have a stub post length of 3 ft.)

Other

Utility Pole

Truss / Cantilever

Comment

Number of Posts:

choose number

Length of Posts:

specify length

feet only

SIGNS:

Date Installed:

date

Sign Direction:

choose orientation...

Sign Condition:

rating system to be developed

Daytime Check:

date

reflectivity (if taken)

Nighttime Check:

date

reflectivity (if taken)

Ownership:

dot along with DOT sign number

other

Inspector:

initials or name

Flag/Beacon/Etc.:

yes, no or both

MANUFACTURING:

Sign Information:

stock number (this entry can populate items below)

sheeting

message

size

blank material

warranty information

Option:

implement bar code for all new signs

other field signs collected manually

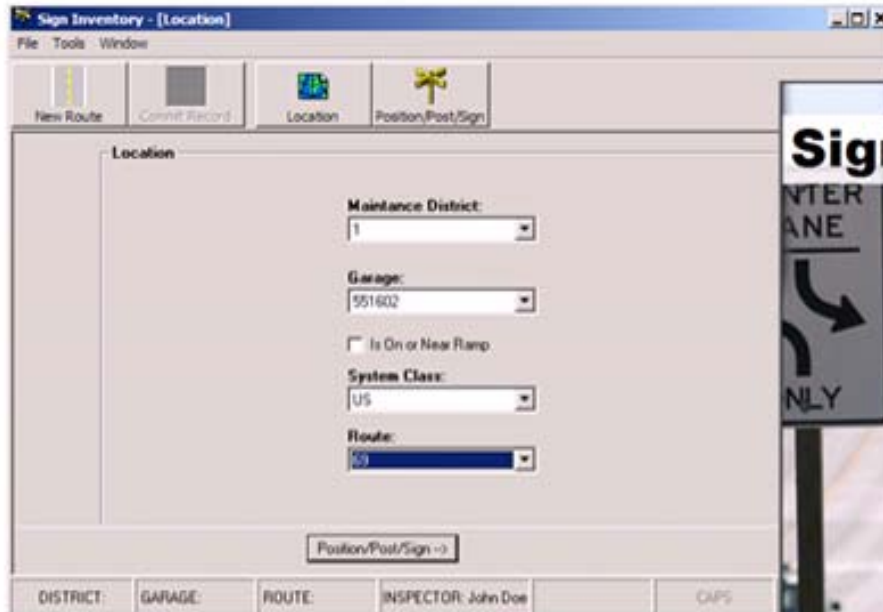
- Inventory - CONDITION*

Rated Condition for Sign(s) and Post



• *Inventory – COLLECTION*

Getting information from field to database



- *Inventory – UPDATES*

Updating the inventory by:

- Adding a sign
- Moving a sign/post
- Maintaining a sign
 - Inspect sign
 - change rating/condition
- Replacing a sign/post
- Removing a sign/post

- *Inventory – EQUIPMENT*

Important Equipment:

- Retro device
- Laptop/Handheld
- GPS unit
- Digital camera



Model 922 www.roadvista.com



- *Inventory – COSTS/TRAINING*

Important Considerations:

- Initial inventory cost (time)
- Training of staff on new tools
- Support
- Keeping everything up-to-date

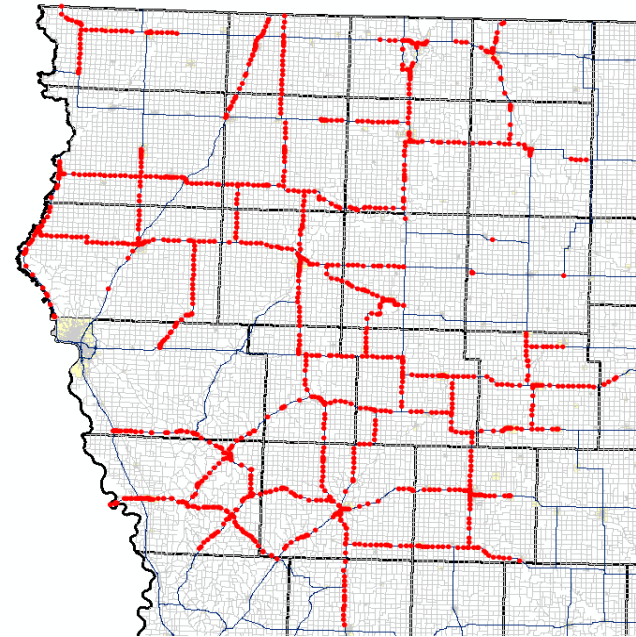
- *GIS / SOFTWARE*

Important Considerations:

- ...GIS ALONG WITH OTHER SOFTWARE OUT THERE



Location of stop signs



Location of signs

Management Functions

Signs Inventory



At all Levels (Field/Garage/District/Central Office):

- a. History of the sign
- b. Queries by location, post, and sign feature

Field/Garage Operations Capabilities:

- a. Collect inventory data
- b. Update existing sign inventory data: (on an existing post)
 - i. Add a sign
 - ii. Modify a sign
 - iii. Remove a sign
 - iv. Update sign condition (day or night)
 - v. Other sign maintenance actions
- c. Update post inventory data:
 - i. Add a post (requires adding signs)
 - ii. Modify post information (requires location confirmation)
 - iii. Remove a post (also eliminates signs)
 - iv. Other post maintenance actions
- d. Locate a post in the field (using GIS, GPS, or paper print-out)

District / Central Office Capabilities:

- a. Report showing query results in graphical or tabular format:
 - i. Example – Sign condition by type/route/etc.
 - ii. Example – Number of signs by type
- b. Cost and Needs Estimates

Software Requirements

- User driven
- Easily customizable
- Linkages to current AM systems
- Location Referencing
- No proprietary software
- Be wary of the bells and whistles

Iowa DOT Sign Inventory Tool

Sign Selection

Find Sign

Image MUTCD Description

Category:

Construction
Guide
Regulatory
Rest Area
School
Warning

Category...

OK

Select method to find sign

Sign Selection

Find Sign

Image MUTCD Description

Find MUTCD:

Description:
STOP

Stock Number Index: **Category:**

MUTCD:

OC7-1AL	R11-4	R1-5	R2-1I	R3-1B
OC7-1AR	R1-1A	R16-3	R2-1J	R3-2
OC7-1BL	R1-1B	R16-4	R2-1K	R3-2B
OC7-1BR	R1-2	R16-5	R2-1L	R3-4
OC7-1C	R12-1	R16-5B	R2-1M	R3-4E
OM-1	R12-2A	R16-7	R2-1S	R3-5
OM-1A	R12-3A	R16-8	R2-1T	R3-5A
OM-2	R12-5A	R16-8A	R2-1U	R3-6
OM-3L	R12-5B	R16-9	R2-1V	R3-6A
OM-3R	R12-6	R2-1	R2-1W	R3-7
R1-0	R12-6A	R2-1A	R2-1X	R3-7A
R10-12	R12-9	R2-1B	R2-1Y	R3-8
R10-6	R1-2A	R2-1C	R2-1Z	R3-9B
R11-1	R1-2B	R2-1D	R2-4A	R4-1
R11-2	R1-3	R2-1E	R2-5C	R4-1A
R11-2A	R1-3A	R2-1F	R2-5D	R4-2
R11-3	R1-4	R2-1G	R2-5E	R4-3A
R11-3A	R1-4A	R2-1H	R3-1	R4-3B


Size: × (W x H in.)

Sheeting: Sign Series

Blank Material:

Iowa MUTCD:

FED MUTCD:



OK Cancel

Category

Construction

Sign Selection

Find Sign

Image MUTCD Description

Category: Construction

Description:

Size: [] x [] (W x H in.)

Sheeting: [] Sign Series

Blank Material: []

Iowa MUTCD: []

FED MUTCD: []

OK Cancel

Guide

Sign Selection

Find Sign

Image MUTCD Description

Category: Guide

Description:

Size: [] x [] (W x H in.)

Sheeting: [] Sign Series

Blank Material: []

Iowa MUTCD: []

FED MUTCD: []

OK Cancel

Regulatory

Sign Selection

Find Sign

Image MUTCD Description

Category: Regulatory

Description:

Size: [] x [] (W x H in.)

Sheeting: [] Sign Series

Blank Material: []

Iowa MUTCD: []

FED MUTCD: []

OK Cancel

Rest Area

Sign Selection

Find Sign

Image MUTCD Description

Category: Rest Area

Description:

Size: [] x [] (W x H in.)

Sheeting: [] Sign Series

Blank Material: []

Iowa MUTCD: []

FED MUTCD: []

OK Cancel

School

Sign Selection

Find Sign
 Image MUTCD Description

Category: School

Description:

Size: [] x [] (W x H in.)

Sheeting: [] Sign Series

Blank Material: []

Iowa MUTCD: []
FED MUTCD: []

OK Cancel

Category

Warning

Sign Selection

Find Sign
 Image MUTCD Description

Category: Warning

Description:

Message:

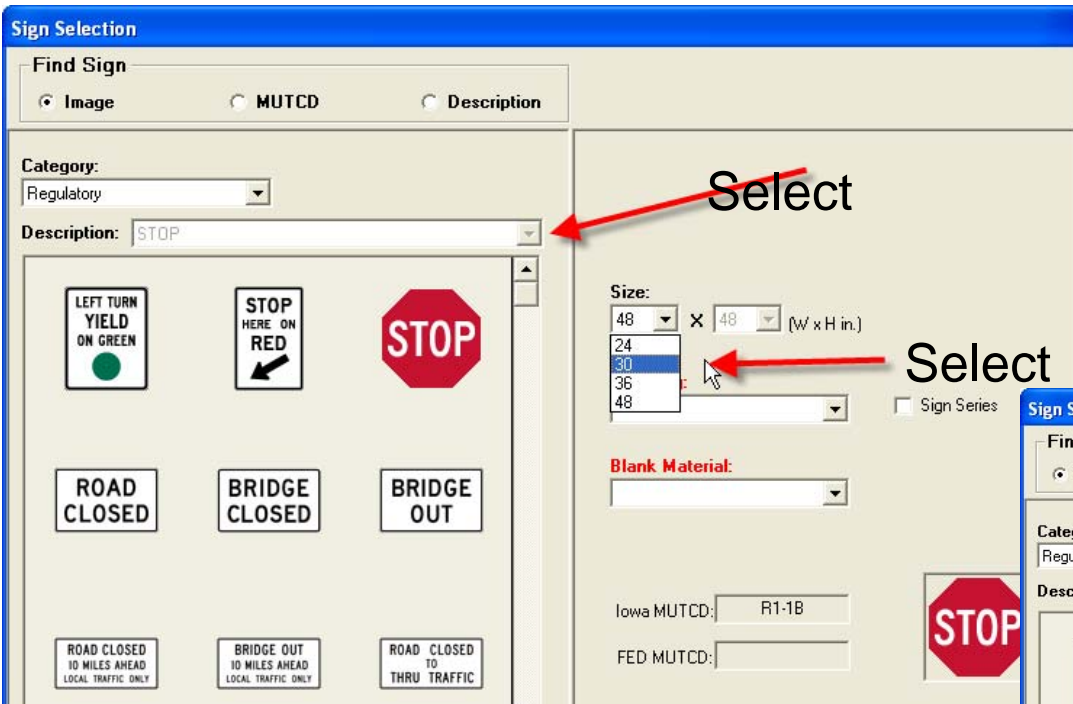
Size: 42 x 42 (W x H in.)

Sheeting: [] Sign Series

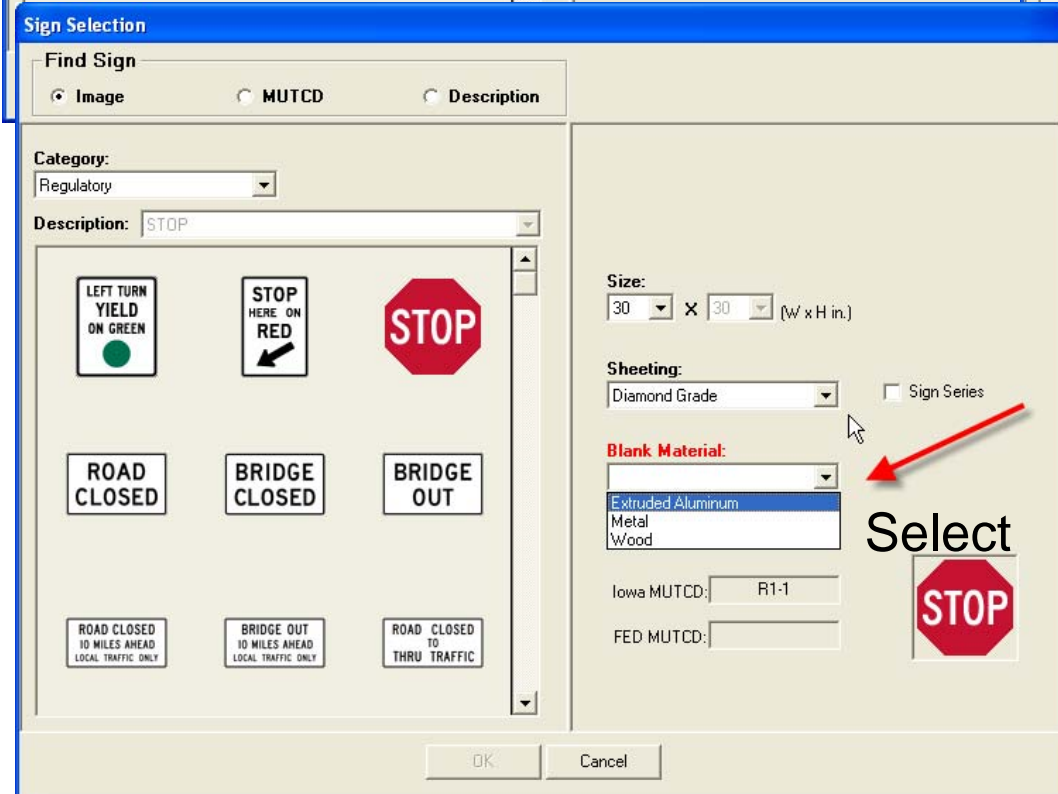
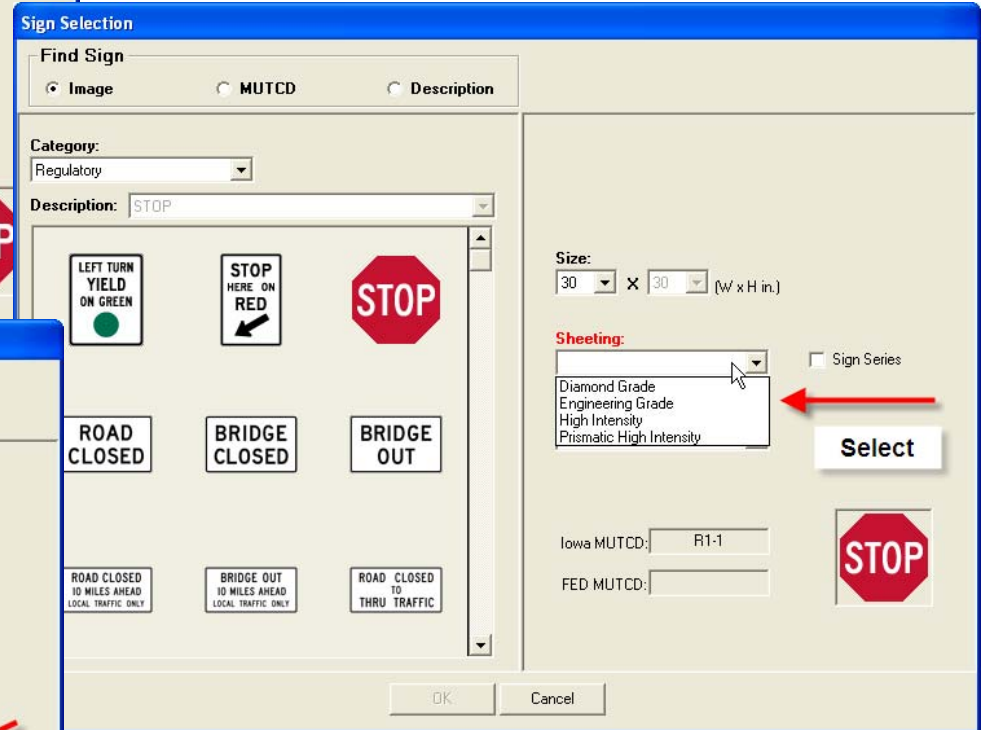
Blank Material: []

Iowa MUTCD: RW5-3A
FED MUTCD: []

OK Cancel

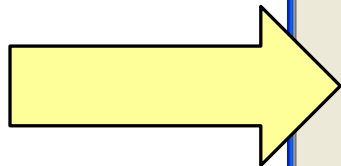


Select Sign
Select Size



Select Sheeting
Select Blank Material
Select Okay after
filling in information

Complete Description & Location



Sign Inventory 2.0 Beta Build 12 - [Position/Post/Sign]

File Tools Window Help

New Route Commit Record Location Position/Post/Sign

Position

Milepost GPS Both N/A

Milepost: [] **Milepost Offset:** [] miles

Milepost Not Listed

Latitude: [0] **Longitude:** [0]

Get GPS Position

Direction of Travel: []

Side of Road: [] **Lateral Offset:** [] feet

Comment: []

Post

Post Type: [] **Post Size:** []

Number of Posts: [0] **Length of Posts:** [0] feet

Number of Signs: [1]

Sign

STOP

Choose Sign...

Date in Service: Unknown 9/24/2009

Direction Sign Faces: []

Sign Condition

Day Night

Ownership: Iowa DOT Other

Date: 9/24/2009

Rating: []

Sign Number (if type b sign): []

Retroreflectivity: [] **Flag/Beacon/Etc.:** []

Comment: []

Add Delete Edit Cancel

#	Sign ID	Sign	Date Installed	Direction Sig	Insp

<- Location

DISTRICT: 1 GARAGE: 551602 ROUTE: Interstate 35 INSPECTOR: dpeperk CAPS NUM 9/24/2009 11:46 AM

Iowa DOT Sign Inventory Tool

View/Edit Data

Find Sign:

Sign Location:

ID	Route	Milepost	MilepostOffset	Inspector	CreateDate
39961.565150463	18	195	0.1	nrh	5/28/2009
39878.5017476852	30	38	0.1	nrh	3/6/2009
39878.501087963	30	44	0.3	nrh	3/6/2009
▶ 39878.4980208333	20	18	0.1	nrh	3/6/2009
39700.4136921296	69	102	0.1	nrh	9/9/2008
39624.5900462963	210	17	0.6	nrh	6/25/2008
39591.4351041667	14	171	0.1	nrh	5/23/2008
39559.5775347222	12	5	0.2	nrh	4/21/2008
39559.5752777778	65	179	0.8	nrh	4/21/2008

Sign Detail:

ID	DateInstalled	SignFaceDirection	DayConditionDate	DayRating	DayRetroreflectivity
▶ 39878.4980208333		N	3/6/2009	Excellent	0
39878.4980208333		E	3/6/2009	Good	0
39878.4980208333		SE	3/6/2009	Good	0
39878.4980208333		E	3/6/2009	Good	0
39878.4980208333		N	3/6/2009	Poor	0
39878.4980208333		N	3/6/2009	Excellent	0

Show Report OK Edit Delete

Iowa DOT Sign Inventory Tool

The screenshot shows a software window titled "Query Expression Builder" with a blue header bar. The window is divided into several sections. At the top, there are two tabs: "Build Query" (which is active) and "Stored Query". Below the tabs, there is a "Query:" label followed by a dropdown menu. The main area is divided into three columns: "Sign Description:", "Route:", and "Condition:". Each column has a large empty text box. Below these text boxes are two smaller text boxes labeled "Find Sign Description:" and "Find Route:". A prominent "Generate Query" button is centered below these fields. At the bottom of the window, there are two more text boxes: "Location & Post Data (Where Clause):" and "Sign Data (Where Clause):", each with a small "Go" button to its right. The bottom-most section contains three buttons: "Cancel", "Clear", and "Check Syntax".

Query and Reports

Iowa DOT Sign Inventory Tool

The screenshot shows the 'Query Expression Builder' window with the 'Build Query' tab selected. The 'Query:' dropdown is set to 'Sign Description'. Below it, a list of sign types is displayed: Sign Description, Sign Description and Route, Sign Description and Sign Condition (Day), Sign Description and Sign Condition (Night), Sign Description, Route, and Sign Condition (Day), Sign Description, Route, and Sign Condition (Night), Route, and Route and Sign Condition (Day). The 'Find Sign Description:' field contains 'STOP'. The 'Generate Query' button is highlighted.

Query by Sign Type

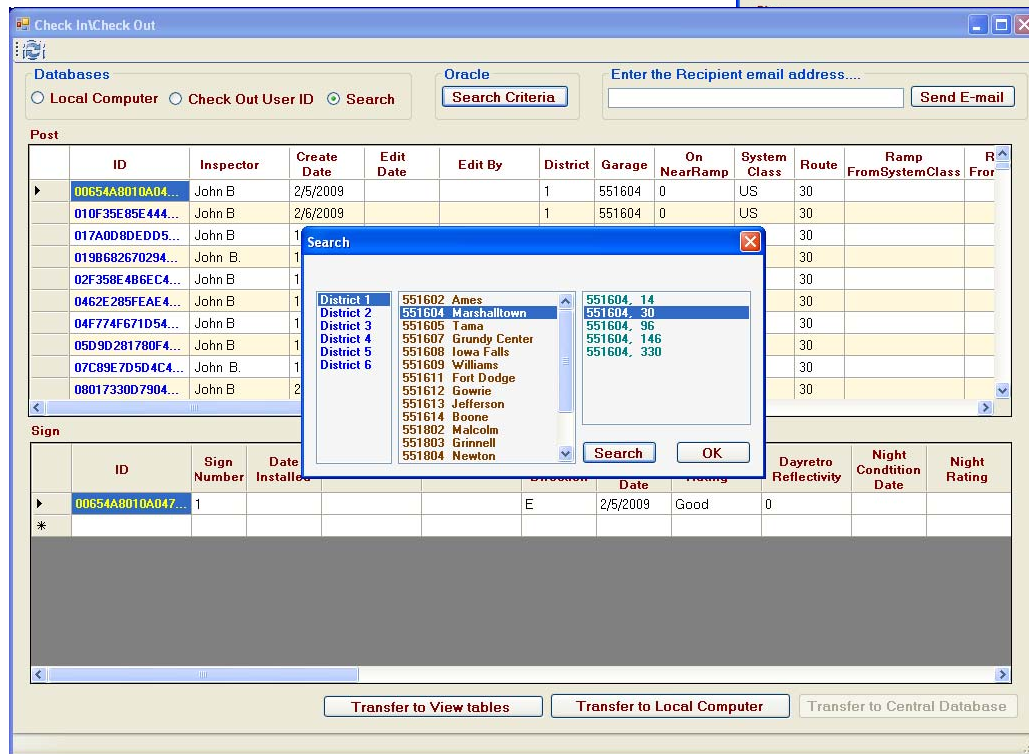
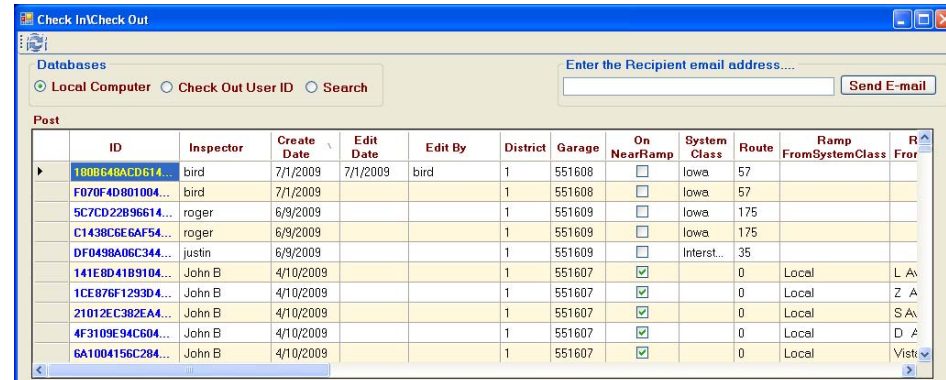
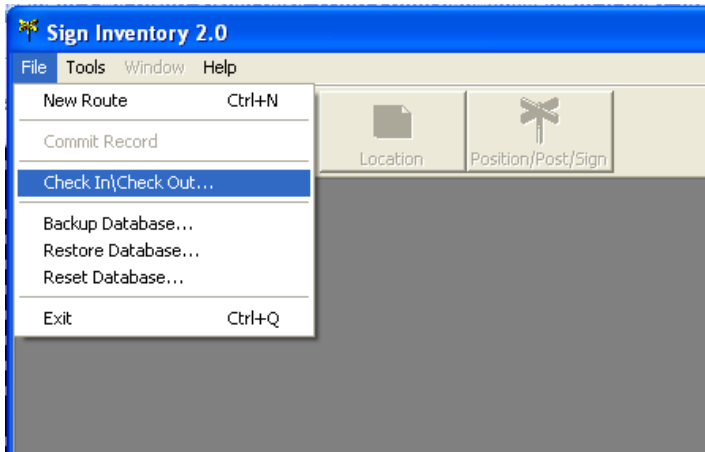
The screenshot shows the 'Query Expression Builder' window with the 'Build Query' tab selected. The 'Query:' dropdown is set to 'Sign Description and Route'. The 'Sign Description:' list includes 'STOP', 'STOP AHEAD', 'Stop Ahead Symbol', and 'STOP HERE ON RED WITH ARRC'. The 'Route:' list includes 14, 17, 20, 21, 25, 28, 30, 35, and 44. The 'Find Sign Description:' field contains 'STOP' and the 'Find Route:' field is empty. The 'Generate Query' button is highlighted.

Query by Sign Type and Route

The screenshot shows the 'Query Expression Builder' window with the 'Build Query' tab selected. The 'Query:' dropdown is set to 'Sign Description and Sign Condition (Day)'. The 'Sign Description:' list includes 'STOP', 'STOP AHEAD', 'Stop Ahead Symbol', and 'STOP HERE ON RED WITH ARRC'. The 'Condition:' list includes 'Excellent', 'Good', and 'Poor'. The 'Find Sign Description:' field contains 'STOP'. The 'Generate Query' button is highlighted.

Query by Sign Type and Condition

Iowa DOT Sign Inventory Tool



Check In/Check Out
Maintenance and Update

Current Status

- Sign Inventory Collection tool completed
- Testing Beta version
- Training to follow
- Add the spatial component

References

- dennis.peperkorn@dot.iowa.gov 515-239-1188
 - Research & Technology Bureau
- tim.crouch@dot.iowa.gov 515-239-1513
 - Office of Traffic & Safety
- david.matulac@dot.iowa.gov 515-239-1545
 - Office of Traffic & Safety
- smadi@iastate.edu, 515-231-0653 (cp)
 - CTRE, Iowa State University