

Road Safety Audits (Reviews)

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Locals RSA

Training

Assistance

Implementation

Evaluation

- Team Organization
- Peer to Peer
- Tools

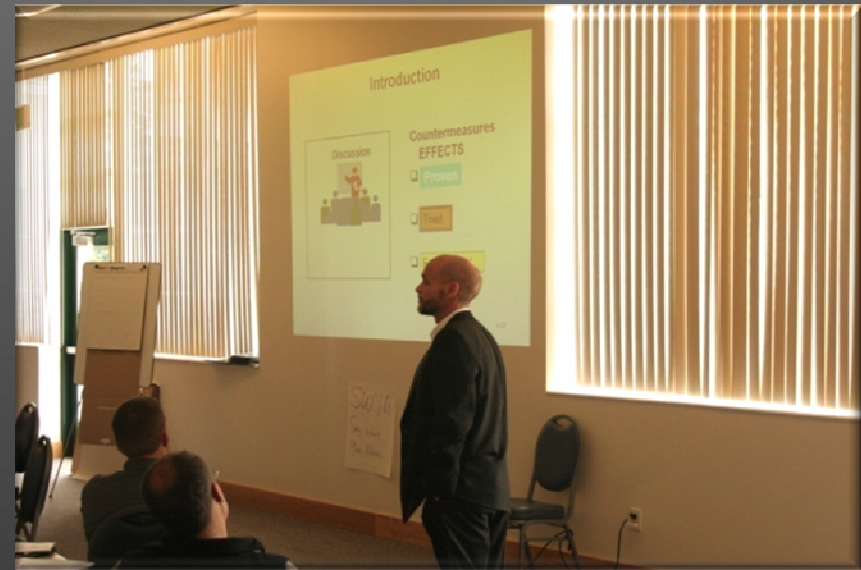
• Case Studies

• Future

Locals RSA Training



Locals RSA Training



Field Review





Exceptions



Pedestrian

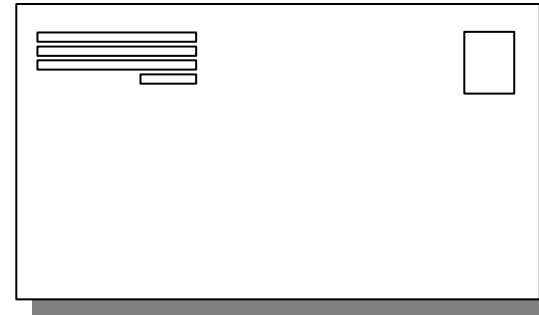


Distracted Drivers



Assistance

Developed
mailing list of
trained RSA
Locals



Facilitate
organization of
teams for locals
requesting audits

- Agency provides preliminary studies and pertinent information
- Agency provides lunch
- FHWA Peer to Peer program used

Tools
Safety Software Suite
Royalty Free

G. Stuart Thompson
Principal Investigator

Jeff Spaulding
Programmer

Funded by FHWA, DPS, UDOT

Modules

Road Safety Audits

Crash Analysis

• Intersections

Sign Management

GPS Tracking

Photo Logging

ADA – Prioritizing Curb Ramps

Notes

Roadside Devices – Evaluation

Location Tool

Getting A Location _ □ ×

[Help](#)

GPS Location

X:

Y:

Road and Mile/Address Location

Road

Mile

Address

Point at Distance Along Route From GPS Location

Distance from a Point

Distance From Intersection

Distance Feet Direction

Zoom To Point

RSA – Project Description

MapWindow GIS - carbonproject2*

File Edit View Plug-ins Road Cuts GIS Tools ADA Crash Tools Intersection Tools Photo Log Viewer RSA Support/Signs Tools Shapefile Editor Shapefile Attribute Correction Converters Help

Create New Road Safety Audit Project

Save Project View Audit Entries Reports Generate Checklist Priority Grid

Legend

- Data Layers
 - rsa
 - carboncrash
 - ada
 - carbon intersection
 - carbonsigns_Reprojected
 - roads_Reprojected
 - SelectPolygon
 - SelectPolygon
 - SelectPolygon

Preview Map

Project Details

Project No: 1 Project Description: High Crash Intersection

Project Name: Carbon County

Client: county

Created By: gst

Start Date: 5/21/2007

End Date: 5/21/2007

Project Comment:

Project Characteristics

Audit Type: Existing Roads

Is a Land Use Development Proposal part of the project?

Which Units of Measure will be used for the project? US

What is the Adjacent Land Use? Other

What is the Design Speed? 35 MPH

Is the roadway divided or undivided? Undivided

What is the service function? Local

Please characterize the surrounding terrain? Flat

What are the climatic conditions with respect to temperature? Mild Winter(no freezing, icing)

What are the climatic conditions with respect to snow? Snowless in Winter

Which of the following best describes the roadway scheme? Road section including interchange(s) only

What type of project is this? Rehabilitation, existing alignment(at least on the part of the project)

X: 1825053.61 Y: 7027455.202 Feet

RSA – Checklist

Tools Screen 1-2 of 45 View Options X Close

Thumbnails X

1

2

3

4

Checklist: (Detailed)

ROAD FUNCTION, CLASSIFICATION, ENVIRONMENT	Yes / No	Comment
<p>General road function, classification, environment</p> <p>Is the road function and classification the same as it was when the road was designed and constructed?</p> <p>Is the road environment the same as it was when the road was designed and constructed (no new developments, no new pedestrian/bicyclists activities, special events, scenic vistas etc)</p>		

ROAD ALIGNMENT AND CROSS SECTION	Yes / No	Comment
<p>Visibility, sight distance</p> <p>Is sight distance adequate for the speed of traffic using the route?</p> <p>Is adequate sight distance provided for intersections and crossings? (e.g.,</p>		

Is adequate sight distance provided for intersections and crossings? (e.g., pedestrian, bicyclist, cattle, rail crossings)

Is adequate sight distance provided at all private driveways and property entrances?

Design speed

Is the horizontal and vertical alignment suitable for the (85th percentile) traffic speed?

If not: are warning signs installed?

Are advisory speed signs installed?

Are the posted advisory speeds appropriate?

Speed limit/speed zoning

Is the speed limit compatible with the road function, road geometry, land use and sight distance?

- .

Issues

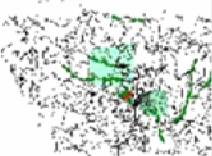
MapWindow GIS - carbon

File Edit View Plug-in

Legend

- Data Layers
 - rsa
 - carboncrash
 - ada
 - carbon intersection
 - carbonsigns_Reproj
 - roads_Reprojected
 - Select Polygon
 - Select Polygon
 - Select Polygon

Preview Map



X: 1825075.257 Y: 7027423.14

Auditor Entry

Auditor
Select the Auditor from the drop down box. If the auditor is not in the drop down box then type him/her in

Checklist

- ROAD FUNCTION, CLASSIFICATION, ENVIRONMENT
 - General road function, classification, env
 - Is the road function and classification the same as it was when the road was designed
 - Is the road environment the same as it was when the road was designed**
- ROAD ALIGNMENT AND CROSS SECTION
- AUXILIARY LANES
- INTERSECTIONS
- INTERCHANGES
- SIGNS AND LIGHTING
- MARKING AND DELINEATION
- BARRIERS AND CLEAR ZONES

Is the road environment the same as it was when the road was designed and constructed (no new developments, no new pedestrian/bicyclists activities, special events, scenic vistas etc)

Location

Select a location. or New Location Description

Discussion

Issue (1 of 1)

sight distance

Recommendation

cut scrubs

This Issue Was Corrected on

Safety Evaluation

Exposure:

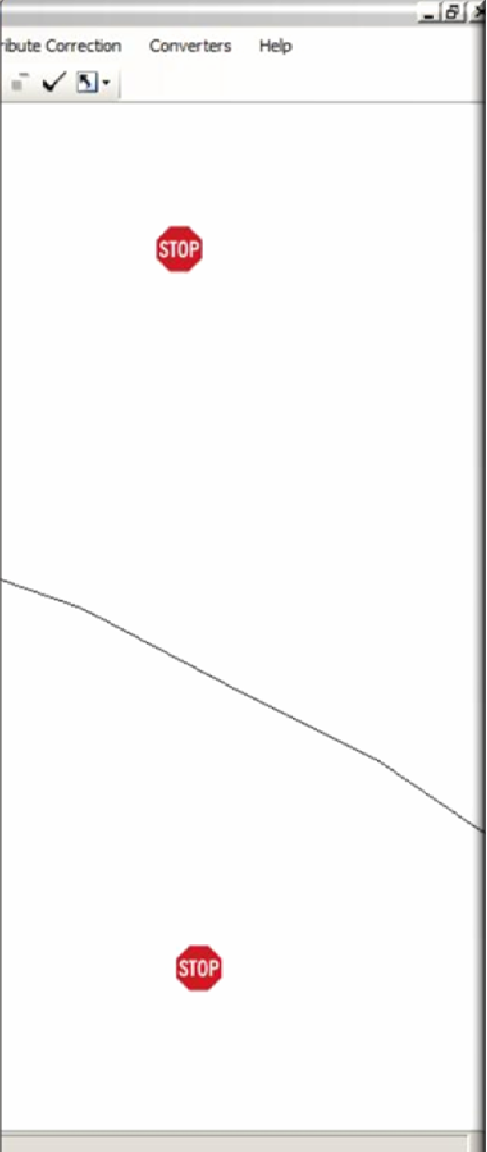
Probability:

Consequence:

Safety Risk:

Implementation Period:

Attribute Correction Converters Help



Report

save

Report

INDIVIDUAL LOCATION AUDIT SUMMARY: east leg

5/21/2007

Project Title: Carbon County

Date: 5/21/2007

Auditors: ,

ROAD FUNCTION, CLASSIFICATION, ENVIRONMENT

General road function, classification, environment

Location: east leg (1825075, 7027423) 1550 W 1.07856350178555

Description of Safety Issue: sight distance

Exposure: Low, Probability: Very Low, Consequence: Medium, Safety Risk: Medium

Recommendation: cut scrubs

Pictures of project location(s):

east leg



Crash Analysis

Crash analysis

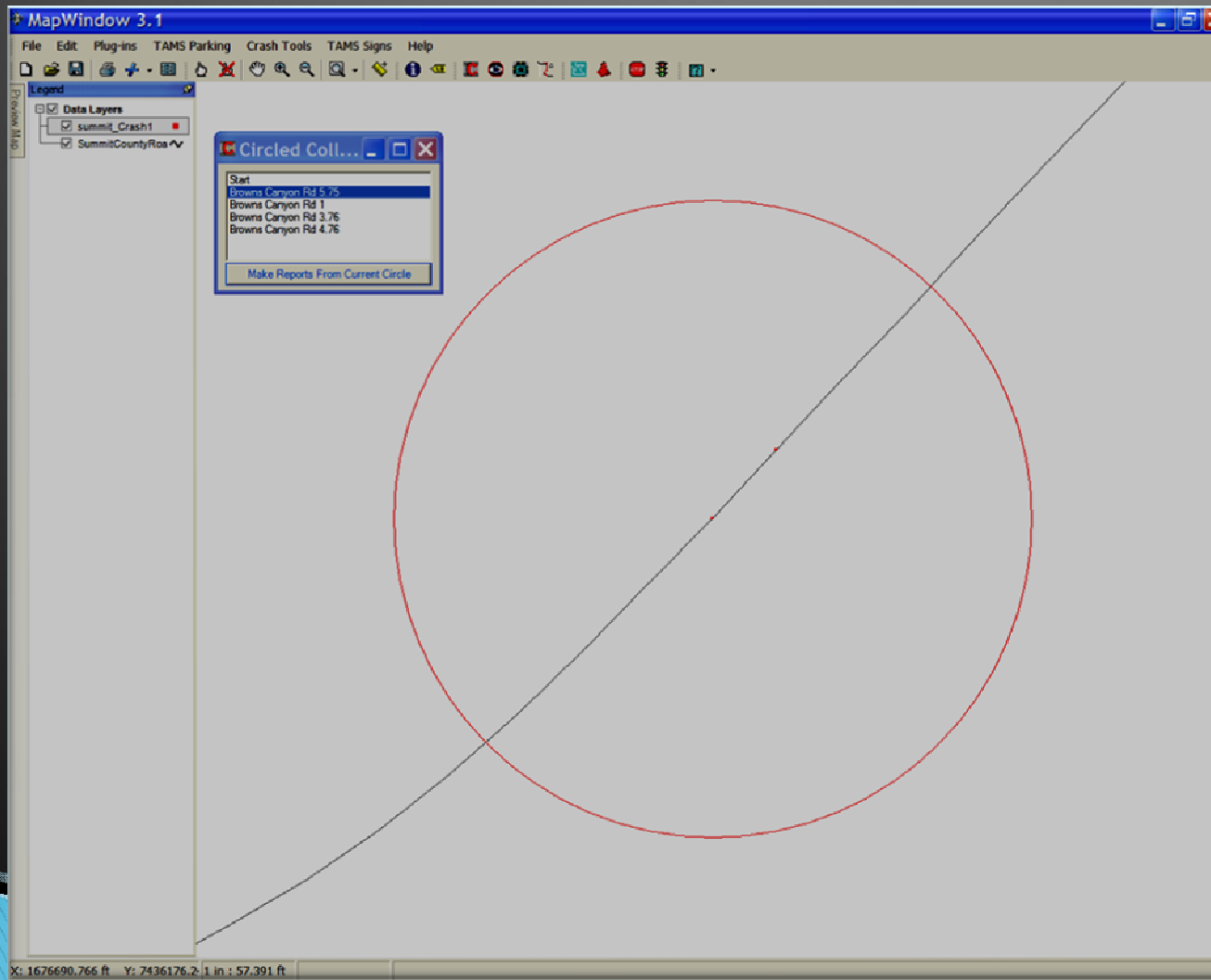
- Collision Density
- High crash location along route
 - Spot & Strip
- Intersection analysis

Reporting

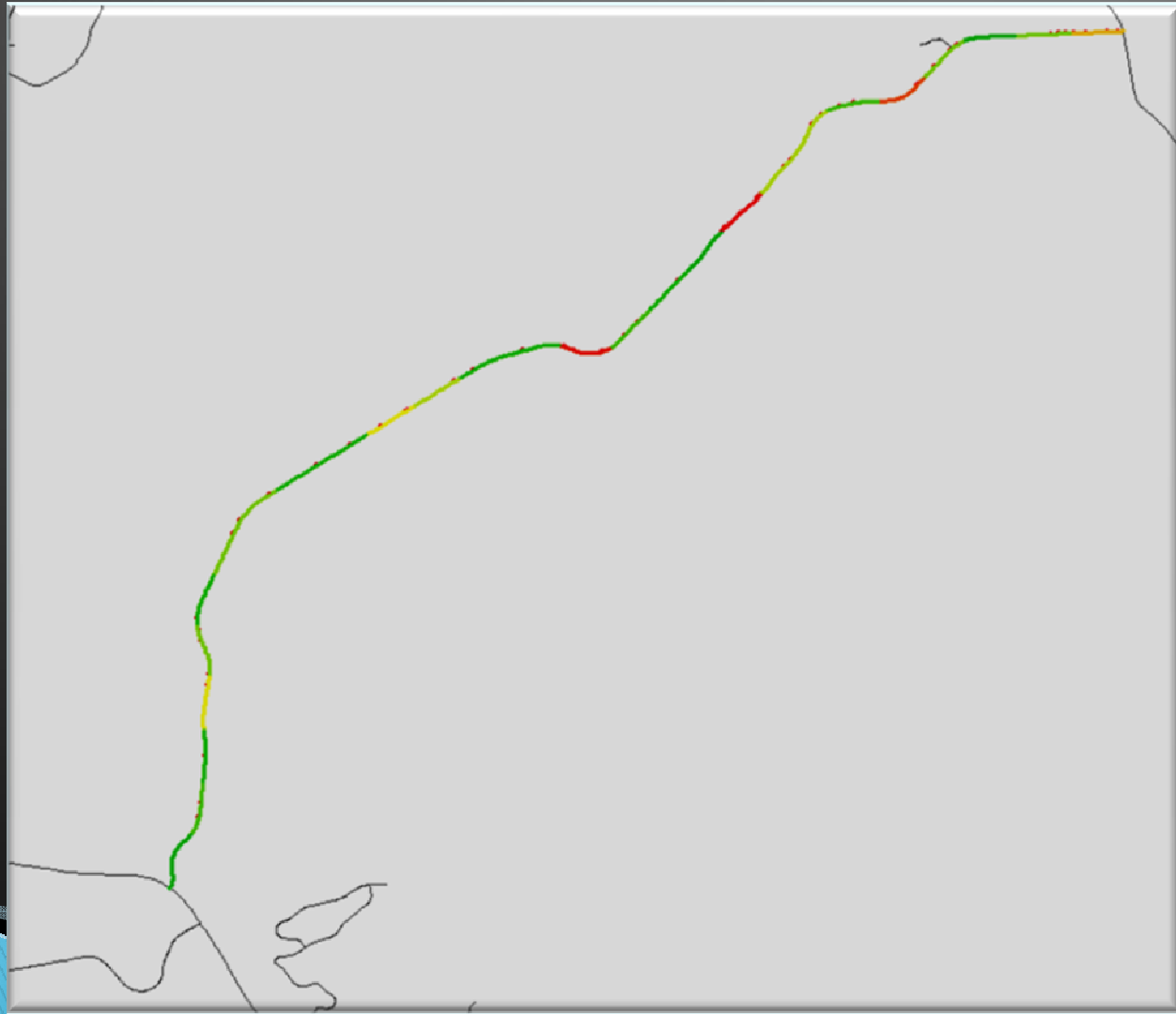
- Query based on attributes
- Export in text
- Generation of graphs



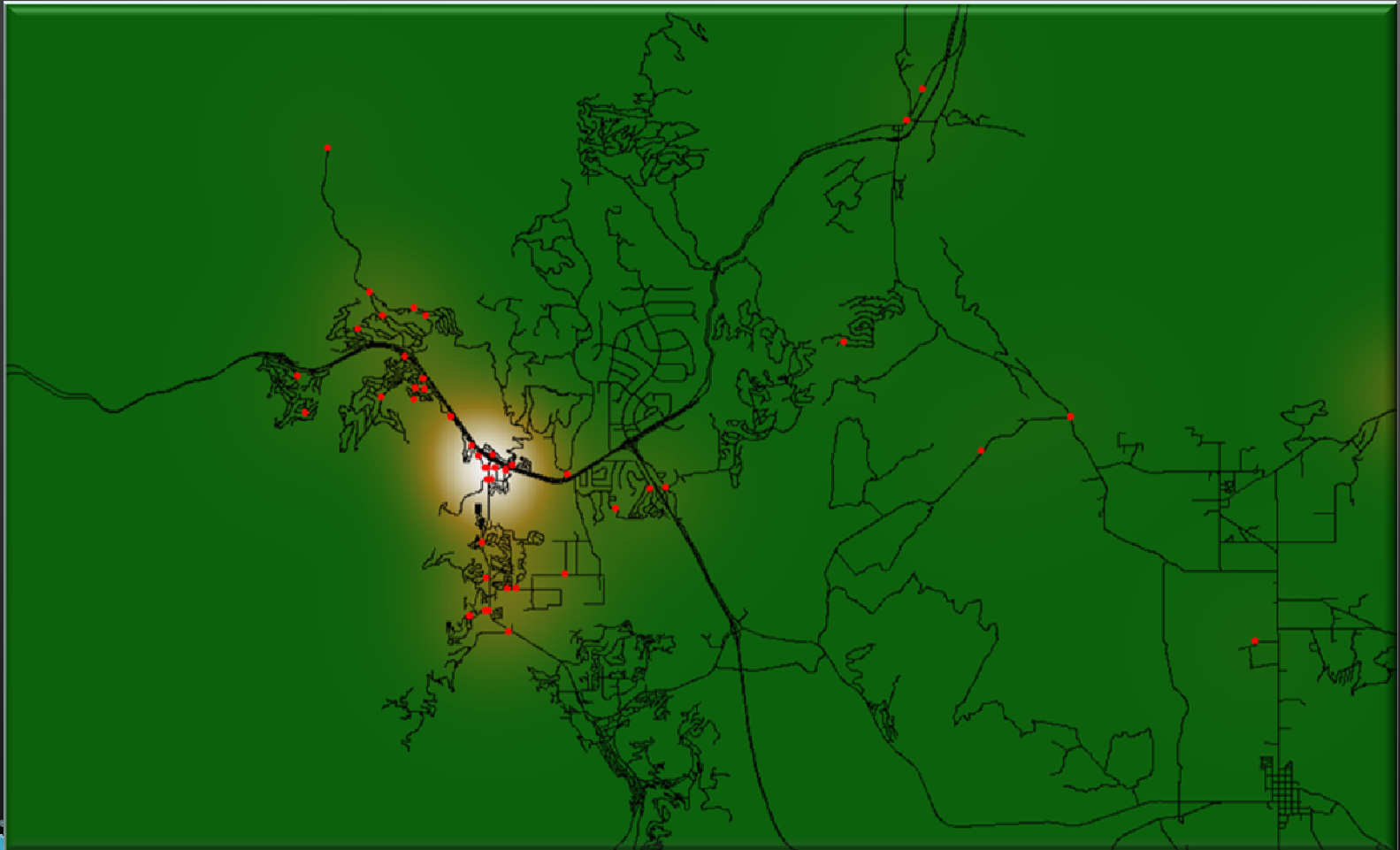
Circle Regions



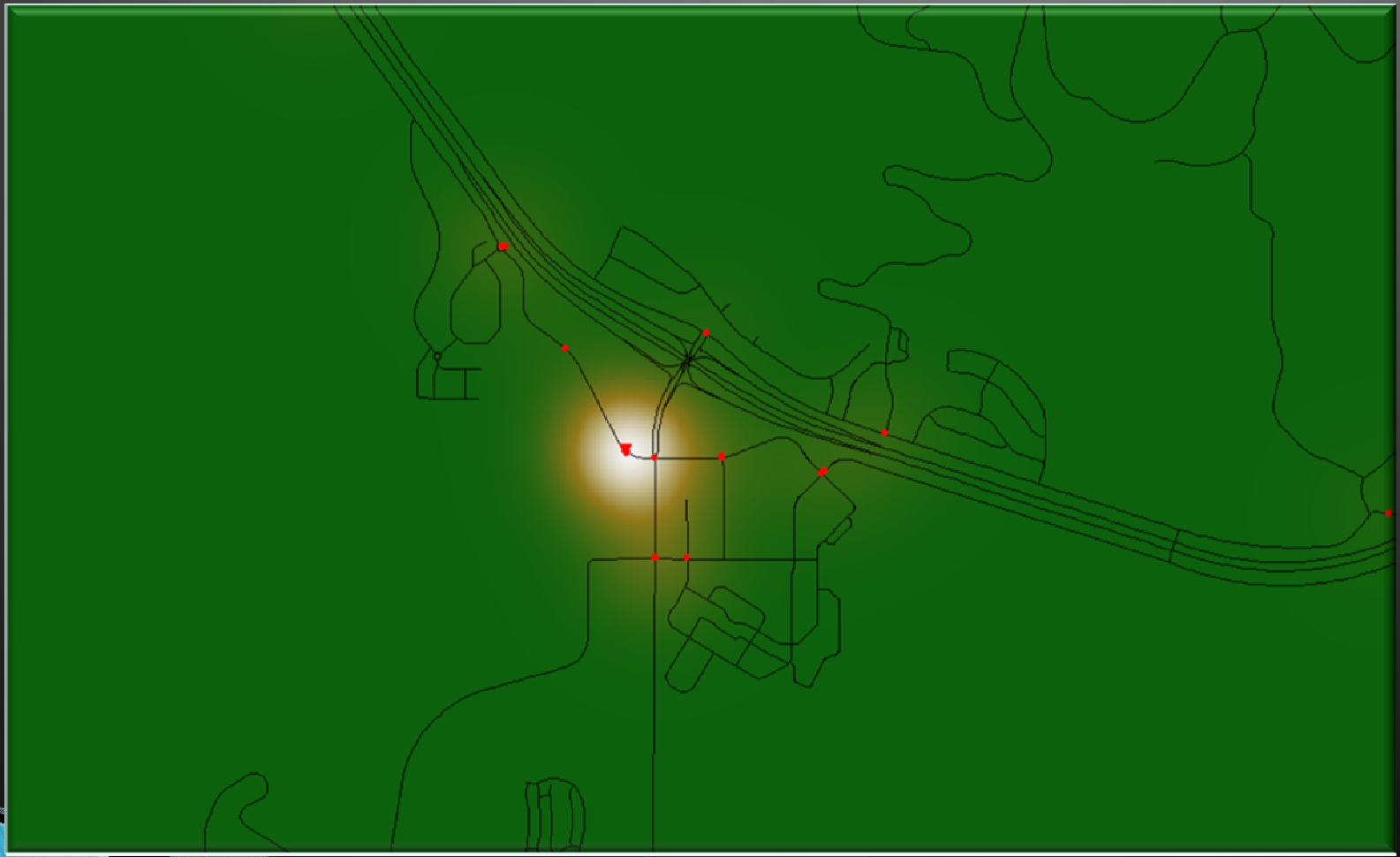
Strip Analysis



Density



Density



Sign Management

View SUPPORTS and SIGNS

ID: Support: Sign:

Support Co-ordinates: X Co-ordinate: Y Co-ordinate:

Support Address: Road Name: Mile Post:

Support | **Sign**

Inspector Initials
Inspector(s):

Road Description
Functional Class:

Support Characteristics
Position:
Post Type:
Post Size:
Post Material:
Post Base:

Important Dates
Date Installed:
Date Inspected:

Support Evaluation
Support Rating:
Breakaway:

Travel Direction

NW N NE
W ← E
SW S SE

Select a Breakaway Image

Direction of travel

wood post
Styrofoam

Sign Attributes

View SUPPORTS and SIGNS

ID
Support:
Sign:

Support Co-ordinates
X Co-ordinate:
Y Co-ordinate:

Support Address
Road Name:
Mile Post:

Support | **Sign**

Inspector Initials
Inspector(s):

Road Description
Functional Class:

Support Characteristics
Position:
Post Type:
Post Size:
Post Material:
Post Base:

Important Dates
Date Installed:
Date Inspected:

Support Evaluation
Support Rating:
Breakaway:

Travel Direction

NW N NE
W ← E
SW S SE

Select a Breakaway Image
Breakaway Image1

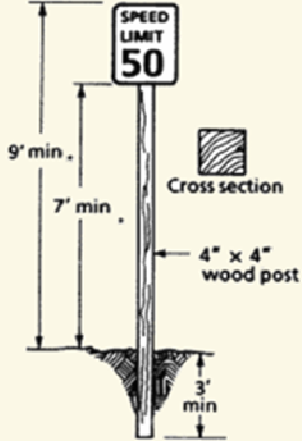


Diagram showing a speed limit sign (SPEED LIMIT 50) mounted on a 4" x 4" wood post. The sign is 9' min. high from the base, and the post is 7' min. high to the top of the sign. The base is 3' min. high.

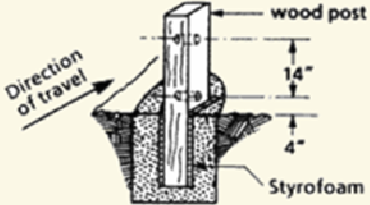


Diagram showing a cross-section of the sign post base. The wood post is 14" high, and the styrofoam base is 4" high. The direction of travel is indicated by an arrow.

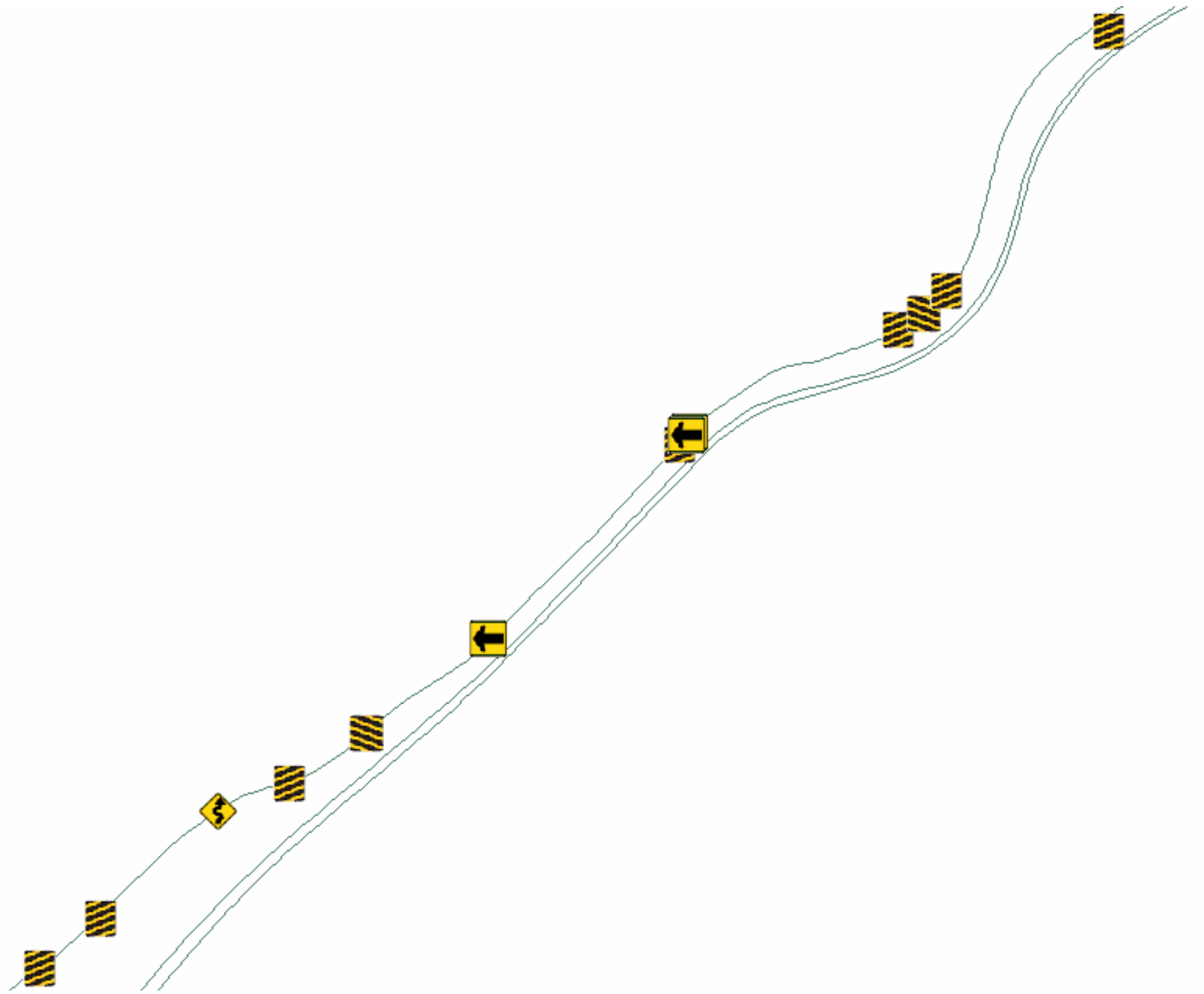
Signs

The screenshot displays a software interface for managing signs, divided into two main sections: a detailed data entry form on the left and a map on the right.

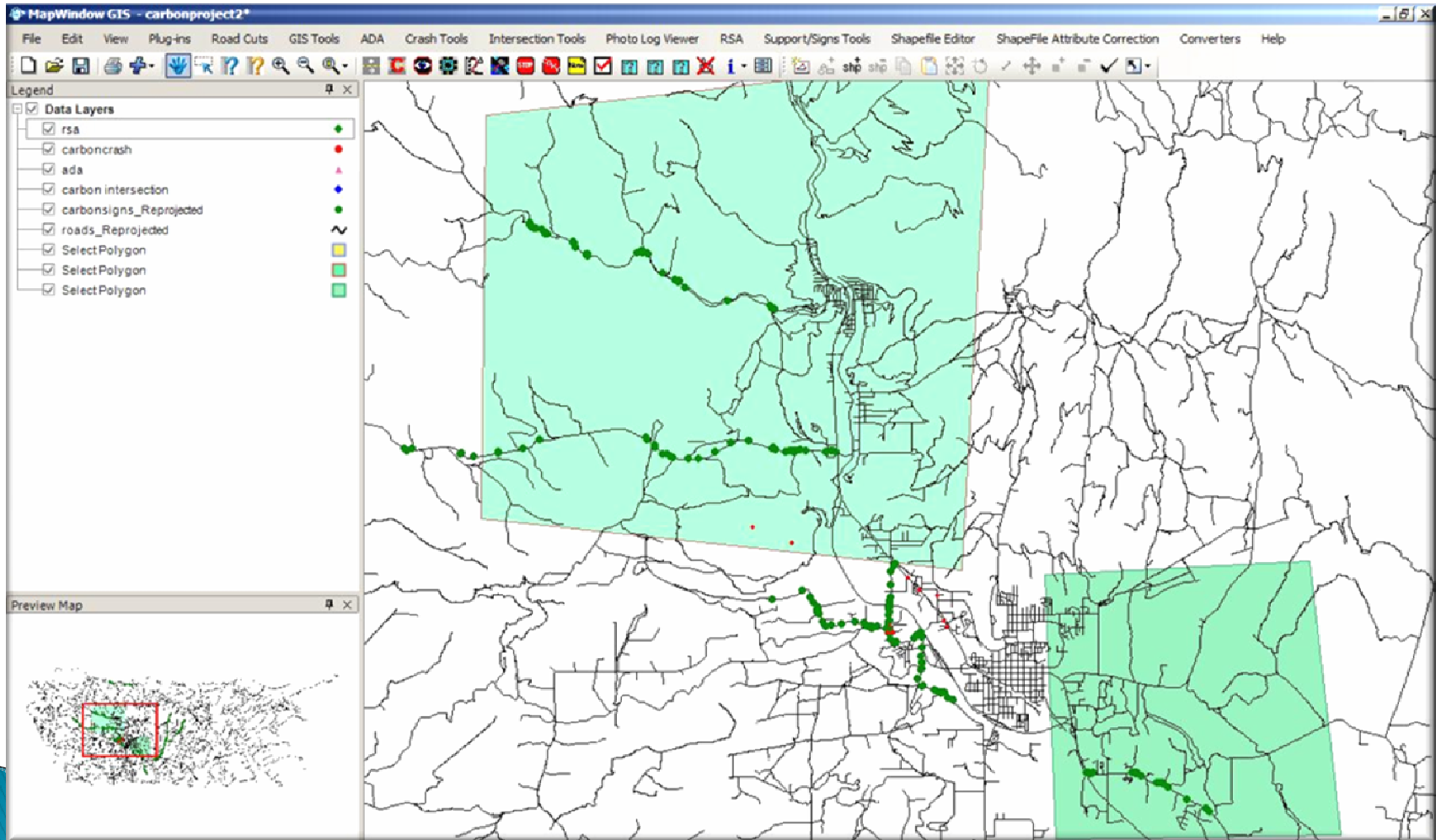
Form Fields:

- ID:** Support: 405, Sign: 549, Center On Support:
- Support Co-ordinates:** X Co-ordinate: 556330.291596171, Y Co-ordinate: 2143460.72659681
- Support Address:** Road Name: 1500 W, Mile Post or Address: 0.14
- Buttons:** New Support, Repeat Assembly, Exit, Print Assembly, Save Assembly To Favorites
- Sign Management:** Add Sign, Save Sign, Update, Comment, History, Picture, Delete Sign, Set Defaults, From Inventory, From Favorites, To Favorites
- Sign Characteristics:** Last Photo: 744, Photo Number: 745, MUTCD: W3-1, Backing: Aluminum, Sheeting: ASTM I, Illumination: None, Delineator: None, Visibility: Clear
- Facing:** A diagram showing cardinal directions (N, NE, E, SE, S, SW, W, NW) with an arrow pointing South.
- Visual Description:** Sign Color (Legend on Background): Black on Yellow (BOLD), Condition: Good, Night Time Visibility: Unknown, Sign Text: n/a
- Text Size:** TextSize (in): 0, Numeric Size (in): 0, Offset (ft): 4, Mounting Height (ft): 6
- Sign Description:** Warning sign
- Sign Dimensions:** Width(in): 30, Height1(in): 30, Height2(in): 0
- Important Dates:** Date Built: 5/21/2007, Date Installed: 5/21/2007, Day Inspected: 5/21/2007, Night Inspected: 5/21/2007
- Retro Reflectivity:** Background Retro Reflectivity: 0, Legend Retro Reflectivity: 0, Retro Reflectivity Ratio: 0, Reflectivity Condition: Not calculated

Map: A map showing a road network with several sign icons placed at various locations. One prominent sign is a yellow diamond with a black arrow pointing up and a red octagon in the center, indicating a 'Stop Ahead' warning. Other signs include a red octagon with a white border and a yellow diamond with a black border.



Polygon Query



Intersection Analysis

Add Intersection - Attribute Intersection

Intersection Attributes

Save

Location

GPS Location: Address 1: 3500 E Intersection Control Type: [Blank]

X: 432740 Address 2: 3800 S Signal

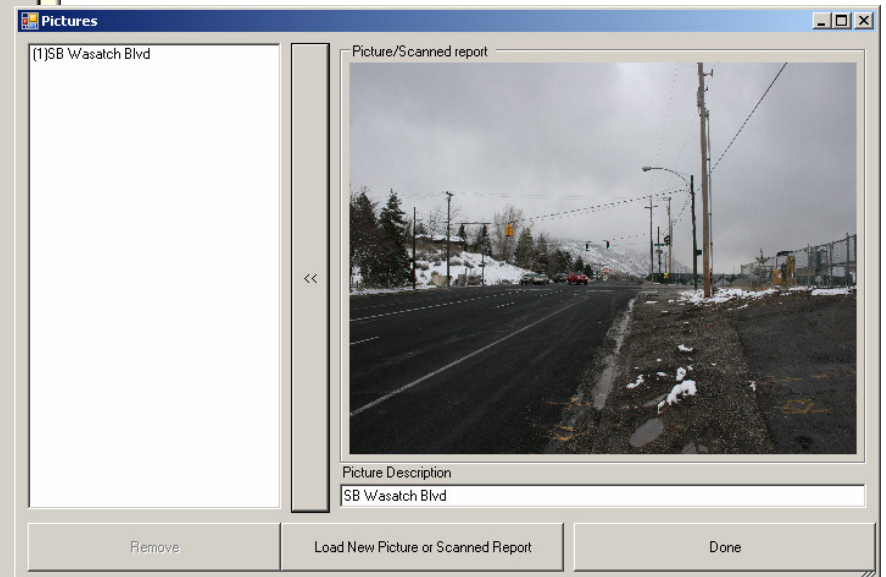
Y: 4504536

Inspector: [Blank] Control Box Location: [Blank]

Inspection Date: 4/13/2006 Pavement Type: [Blank]

Pavement Condition: [Blank]

Click on an intersection leg to edit/view that leg's attributes



Add Intersection – Attribute Approach

Set Approach Attributes [Save] **Approach Attributes**

Pedestrian Crossing Type: [Blank]

Pedestrian Control Type: [Blank] Pedestrian Count: [] per Hour

Approach Shape

Approach Skew: [Slider] Approach Offset: [Slider]

Type Of Street: This leg has no control [Blank]

Direction Of Travel: [Blank]

Speed Limit: [Blank]

Travel Speed 85th Percentile: []

Grade Into Intersection: [Blank]

Drainage Type: [Blank]

Median Type: [Blank]

Lighting: [Blank]

Buttons: Add Lane, Remove Lane

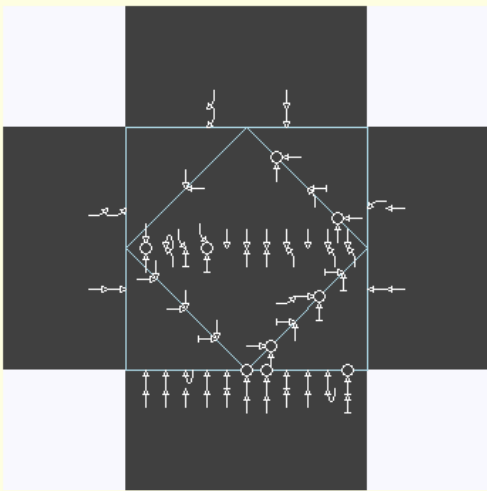
90° 0 ft

Pictures

View Intersection

Intersection of 3500 E AND 3935 S

View Actions



Collision Legend

Collision Injury Severity		
none	○ injury	⊕ fatality

Vehicle Motion

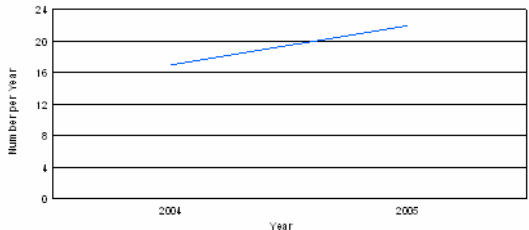
↑ straight	↙ left	↘ right	↻ u-turn
↑ stopped/reverse	↔ lane change	↺ avoid object	

TAMS Report Viewer

Main Report

Collisions Near 3500 E AND 3935 S

Yearly Collision Trends



Generate Your Reports

Report Title: Collisions Near 3500 E AND 3935 S

What Reports are Necessary

- Year Trends
- Month Trends
- Day Of Week Trends
- Time Of Day Trends
- Lighting Condition Trend
- Route Signing Trends
- Manner Of Collision
- Atmospheric Conditions
- Body Type Trends
- Vehicle Deformation Trend
- Driver Violations Charged
- Driver Related Factors
- Restraint System
- Alcohol Involvement
- Injury Severity

Set Conditions

Coll ID ▼

= Not =

16 ▼

Add Condition

Remove Condition

Clear Conditions

and

or

not

Create Cateder Report CREATE REPORTS

Intersection Sight Distance Calculator

Intersection Sight Distance Calculator

West Leg | North Leg | South Leg | East Leg

Grade Into Intersection: 0

Speed Limit: 35

Control Type: Stop Control

Type Of Street: Two-Way Minor

Design Vehicle: Passenger Car

Left Distance a1: 32 feet	Through Distance a1: 32 feet	Right Distance a: 32 feet
Left Distance a2: 68 feet	Through Distance a2: 104 feet	Right Distance b: 441 feet
Left Distance b: 500 feet	Through Distance b: 441 feet	

Note:
A minor leg of a stop controlled intersection

Warrant Study

Which Type of Warrant Study

Yield Control

Stop Control

All - Way Stop Control

Signal control

Page4 | Page5 | Warrant Study Analysis

ed of major road traffic is greater than 70km/h (40mph)

is in a built-up area of isolated community of less than 10,000 pop

vehicular volume _____

m Vehicular volume. _____

Minimum Requirements (80% Shown in brackets)				
Approach Lanes:	1		2 or more	
Volume Level:	100%	70%	100%	70%
Both approaches Major Road	500 (400)	350 (280)	600 (480)	420 (336)
Highest Approach Minor Road	150 (120)	105 (84)	200 (160)	140 (112)

Satisfied for Eight hours of the day
 80% Satisfied for eight hours of the day

Satisfied for Eight hours of the day
 80% Satisfied for eight hours of the day

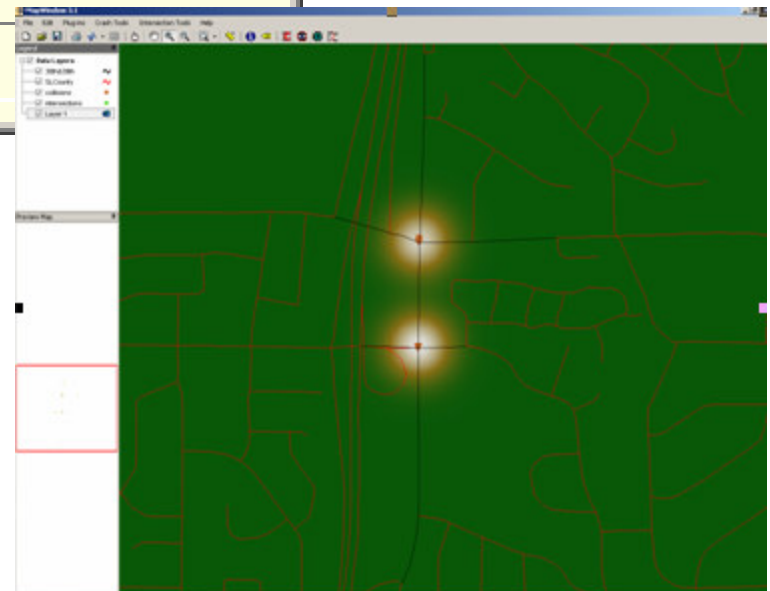
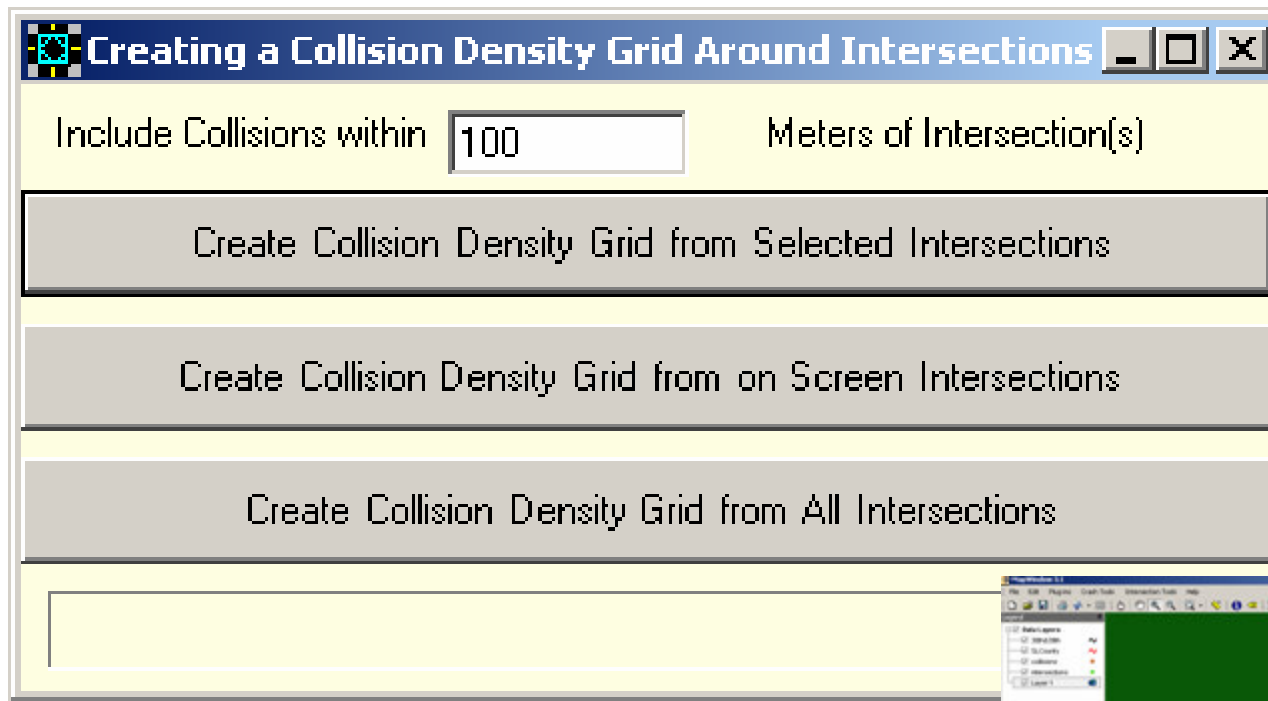
Condition B: Interruption of Continuous traffic

[Volumes if veh/h]	Minimum Requirements (80% Shown in brackets)			
Approach Lanes:	1		2 or more	
Volume Level:	100%	70%	100%	70%
Both approaches Major Road	750 (600)	525 (420)	900 (720)	630 (504)
Highest Approach Minor Road	75 (60)	53 (42)	100 (80)	70 (56)

Satisfied for Eight hours of the day
 80% Satisfied for eight hours of the day

Satisfied for Eight hours of the day
 80% Satisfied for eight hours of the day

Construct Density Grid



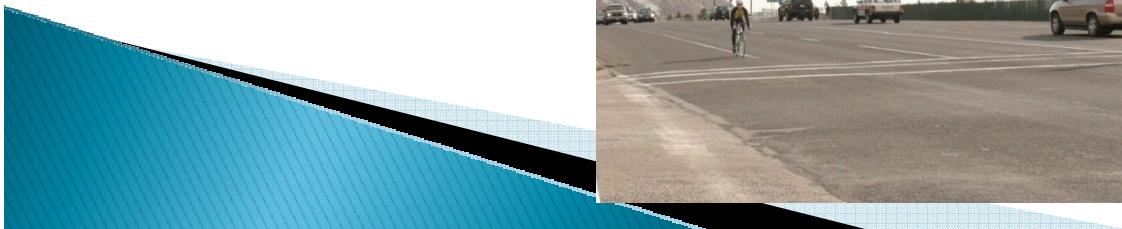
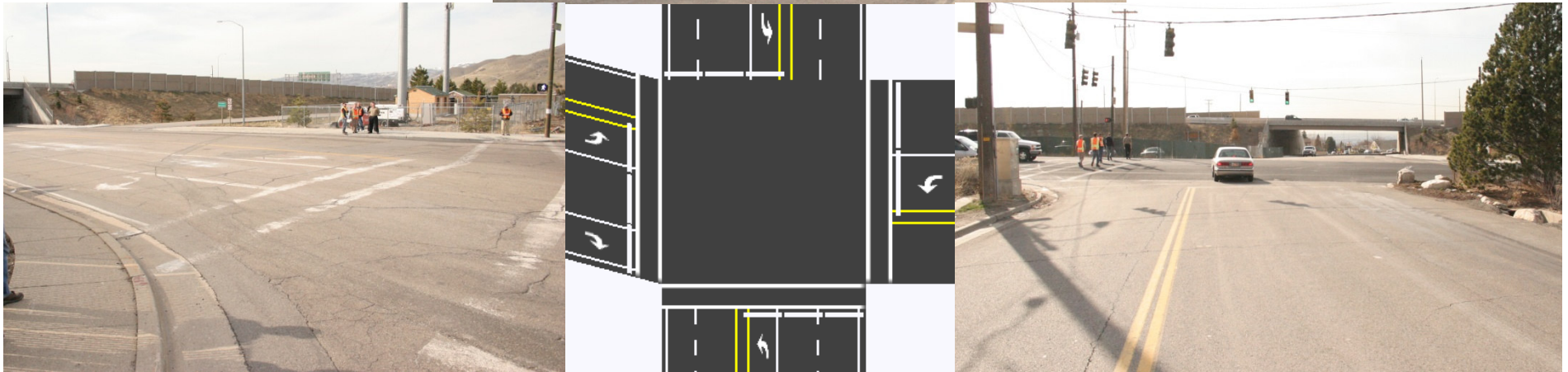
Case Study – 3800 S & 3900 S @ Wasatch Blvd.

Andrea Pullos – Salt Lake County Transportation Mngr.

- Geometrics
- Operations
- Crash Data (2003-2005)



3800 S @ Wasatch Blvd. – Geometrics



3900 S @ Wasatch Blvd. – Geometrics

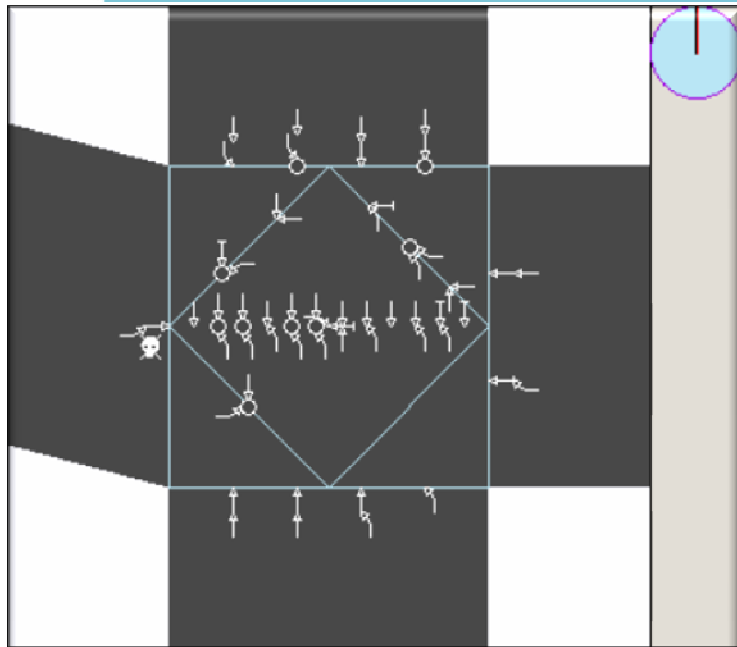


3800 S & 3900 S @ Wasatch Blvd. – Operations

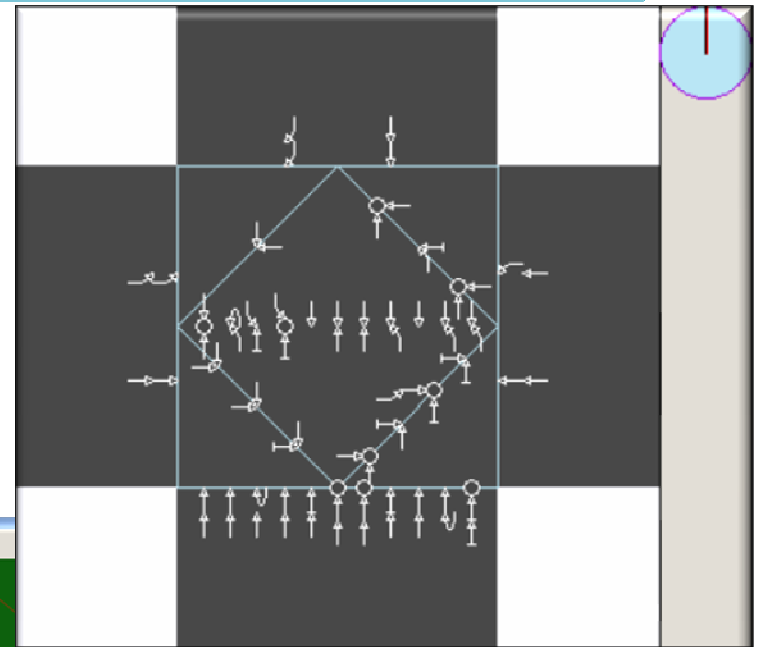


8 hour/24 hour/AM Peak/PM Peak

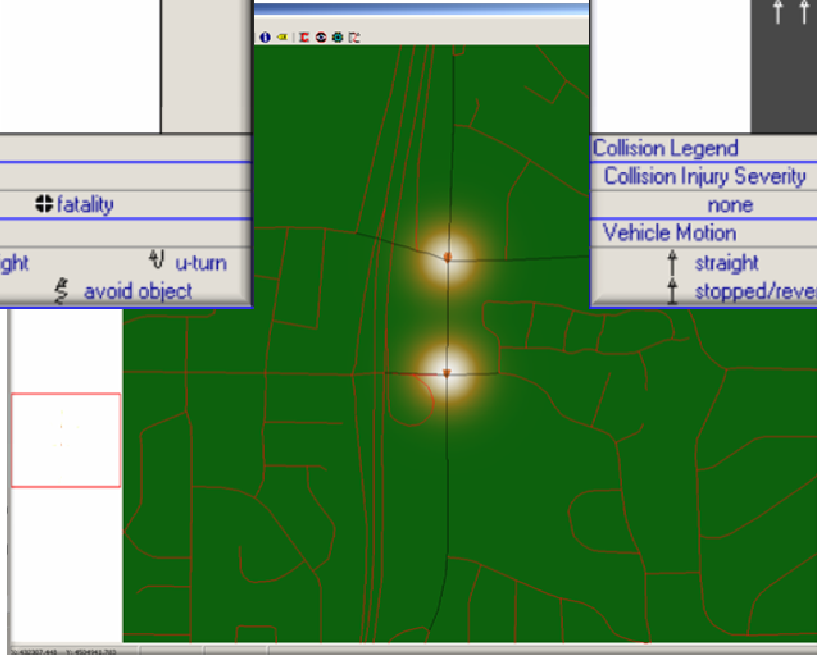
3800 S & 3900 S @ Wasatch Blvd. - Collisions



Collision Legend			
Collision Injury Severity			
○	○	+	+
none	injury	fatality	
Vehicle Motion			
↑	↶	↷	↻
straight	left	right	u-turn
↑	↶	↷	↻
stopped/reverse	lane change	avoid object	



Collision Legend			
Collision Injury Severity			
○	○	+	+
none	injury	fatality	
Vehicle Motion			
↑	↶	↷	↻
straight	left	right	u-turn
↑	↶	↷	↻
stopped/reverse	lane change	avoid object	



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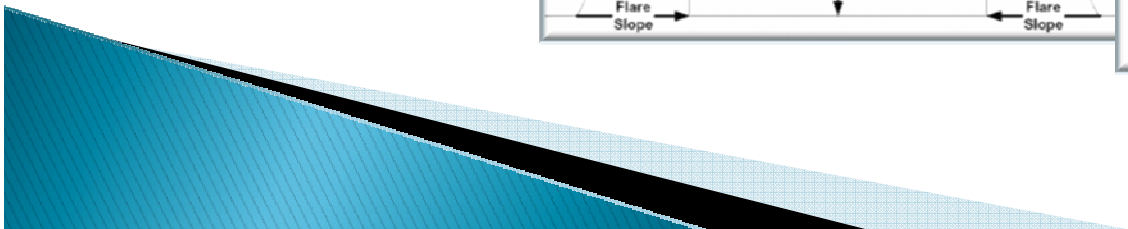
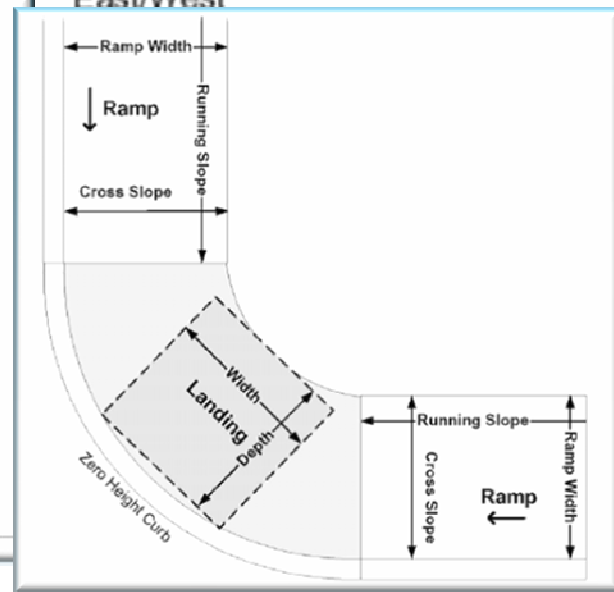
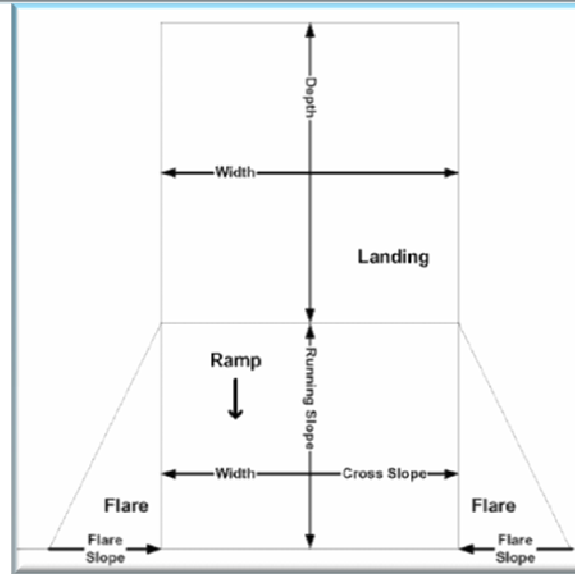
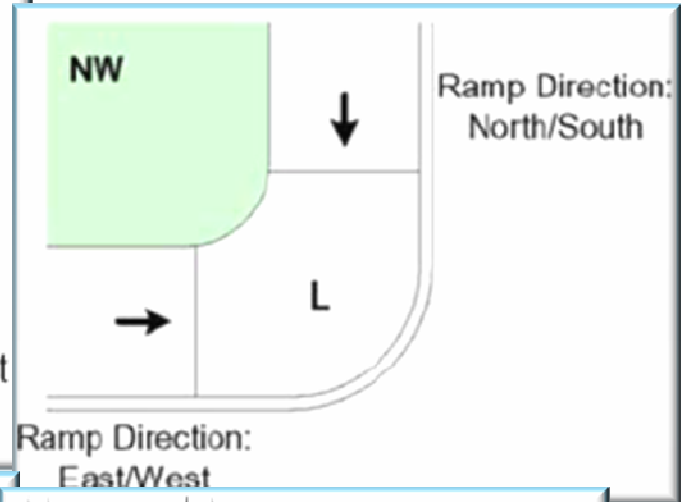
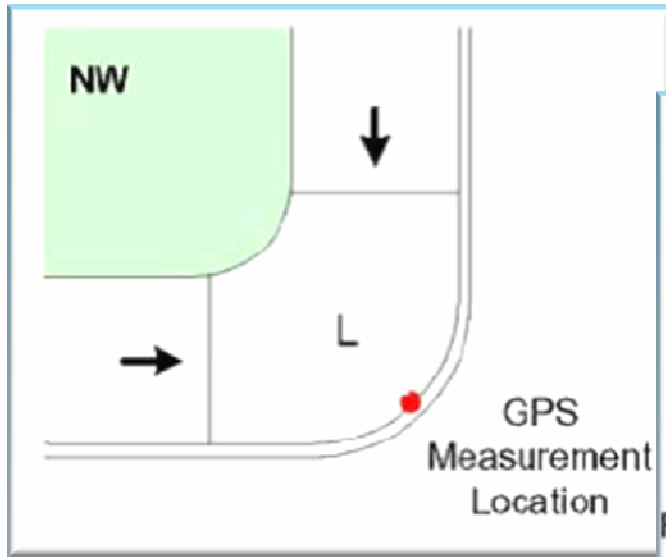
ADA

The screenshot displays a GIS application window titled "MapWindow GIS*" with a menu bar (File, Edit, View, Plug-ins, Help, TAMS ADA) and a toolbar. On the left, a "Data Layers" panel shows "SummitCountyRoads" and "SignInv2004" checked. The main map area shows a network of roads with purple and yellow markers. Overlaid on the map is a dialog box titled "ADA" with tabs for "Location Details", "R values", and "Other".

The "Location Details" tab is active and contains the following fields:

- New Record** button
- Location ID: 224
- Alt Location ID: (empty)
- Location Type: Corner
- Region: 4C
- State: ARKANSAS
- County: ASHLEY
- City: ALPINE
- Route: (empty)
- Accum Mile: (empty)
- Comments: (empty text area)
- Cross Street: (empty)
- Cross Street SR: Yes
- CS Route: (empty)
- CS Accum Mile: (empty)
- Picture Number: (empty)
- Inventory Date: Monday, January 16, 2006
- Inventory By: (empty)
- Save** button

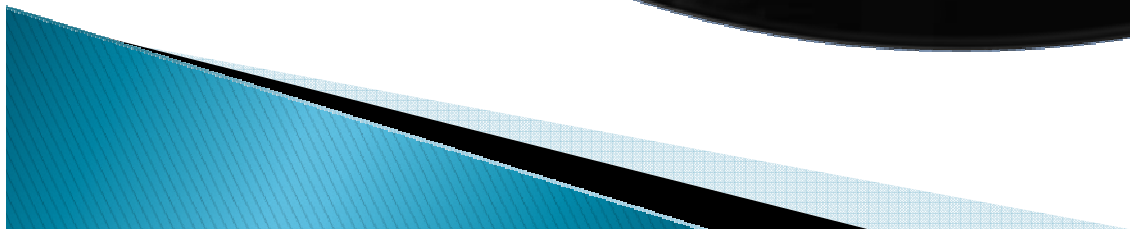
On the right side of the dialog, there are four diagrams illustrating "GPS Measurement Location" at a corner block. The diagrams show a corner with four quadrants labeled NW, NE, SW, and SE. Red dots indicate the measurement location, and arrows show the direction of travel. The text "Picture: Corner Block" is centered below the diagrams.



Note



Questions.....



Thanks

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