# New Procedures and Protocols in SMAC-RT:

REC-TEC is capable of transferring information from 360 Linear Momentum to **SMAC**. Without vehicle information, only very basic information can be transferred. **REC-TEC Platinum** and **Pro** versions can compute the Centroid of Damage for the vehicles if **CRUSHV** information (.crs file) is introduced into the 360LM module (see Animation interface). The program also computes the Kv values for both of the vehicles. The help file for 360 LM contains additional information on this topic.

In **REC-TEC Platinum**, **SMAC-RT** incorporates a Collision Interface Protocol (CIP) that will reposition the point of collision interface on the display with or without a bitmap file in place.

Open the **SMAC-RT** module in **REC-TEC** and "Open" the "LMTransfer.si5" file. "Run" the SMAC simulation. Click on the "Animation" button bringing up the following display.

Figure 1
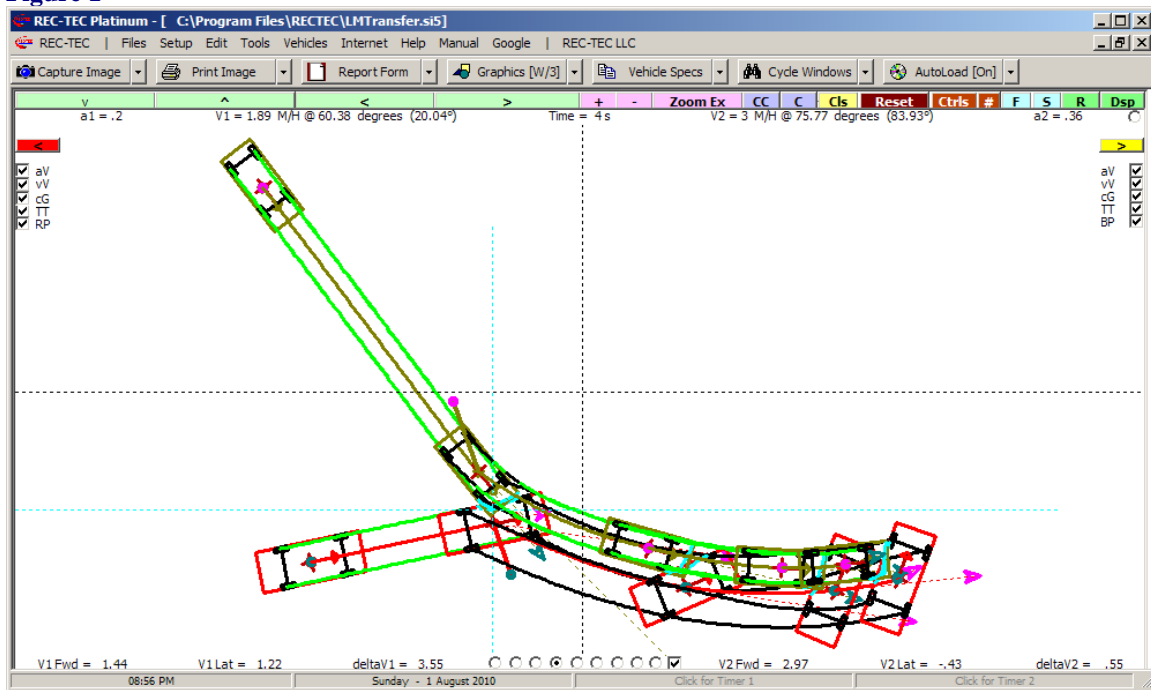
The program drew the animation positioning it in the center of the screen as it automatically engaged the "Zoom Extents" feature prior to setting the configuration for displaying the animation on the screen.

Notice that in the upper right corner of the display is a small round white (radio) button. This button is used to engage or "trigger" the Collision Interface Protocol.

The CIP consists of two steps:
1. Left Click on the current Collision Interface.
2. Left Click on the desired Collision Interface position on the screen.

If an LMTransfer file is loaded, the Collision Interface is located at the 0,0 position. This allows skipping the first step in the procedure as the program will use the 0,0 point as the Collision Interface.

If a non-LMTransfer file is loaded, the Collision Interface is located at an unknown position. This requires that the Collision Interface position be marked on the screen so the program can compute the Collision Interface.

For non-LMTransfer files, once the Collision Interface Protocol button is clicked, the following messages will appear.
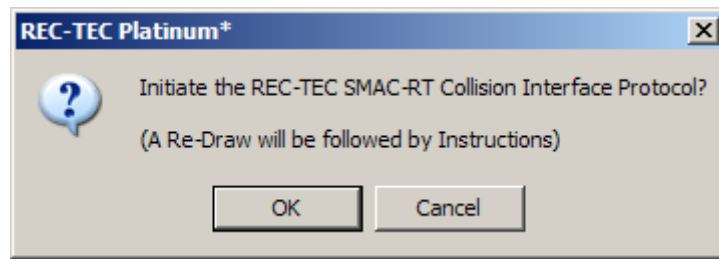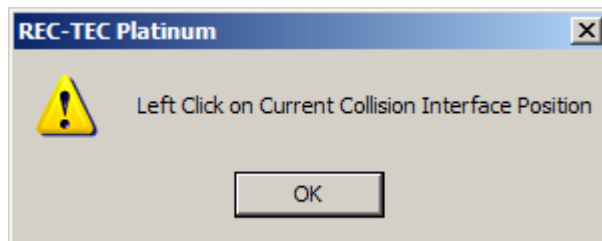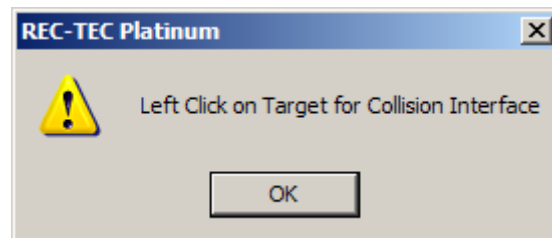
Figure 2

Figure 3

Once the above steps have been completed for non-LMTransfer files, or if the file is an LMTransfer file, the following message will appear.

Figure 4

Place the Cursor on the desired location for the Collision Interface and Left Click on the Mouse. The Animation is automatically redrawn running over your cursor at collision.

You may still draw on the screen using the mouse. Zooming in and out on the animation or using the "C" or "CC" buttons to alter the animation has no effect on CIP operations.

The Repeat and Display options function differently if a Bitmap is in the scene background. With the bitmap loaded into the module, the program is not allowed to change the position, rotate the diagram (the bitmap cannot be rotated), or independently alter the position of the Collision Interface as it is allowed to do if no bitmap is loaded.

Utilizing the 360LM Transfer with the vehicles from CRUSH in conjunction with the Collision Interface Protocol in SMAC makes the tedious job of positioning vehicles correctly in SMAC and then on a bitmap with the Animation run as an overlay, just a few mouse clicks away. The picture on the next page shows a collision positioned on a Google Earth bitmap with the collision quickly moved to show the Collision Interface at the correct location on the bitmap.

Just because it is easy and quick, it does not relieve the investigator from gathering the information, analyzing it in light of all the facts of the case, and doing a proper reconstruction. These tools in REC-TEC

are designed to provide for rapid checking of the hypothesis drawn from the reconstruction. They are not a substitute for the hard work required as an integral part of a good reconstruction.

Figure 5
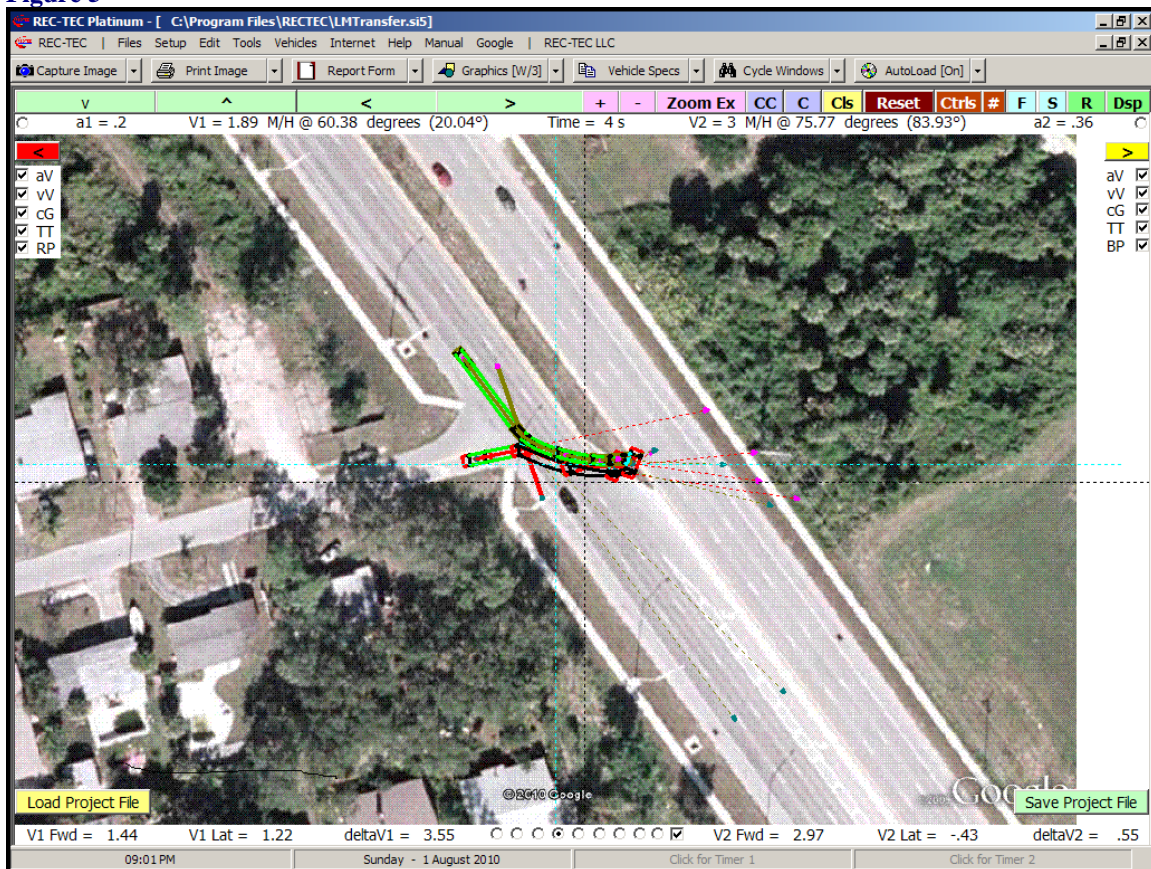
The image above used a Google Earth captured image that was placed into Microsoft Paint and exported as a JPEG (.JPG) file imported as a bitmap type (.bmp, .gif, .jpg) file. The animation was reduced in size to match the image and positioned using the procedure outlined above. The entire process took less than 10 minutes.

Bitmaps cannot be manipulated in REC-TEC. They must be set up in other programs (CAD or Paint) and turned into a .gif, .jpg, or .bmp file, which can be imported into REC-TEC.

The animation can be manipulated. It can be rotated by 90 degrees at a time. I can be zoomed in or out so that it matches the scale of the bitmap.

Photomaps (Google Earth or Microsoft Virtual Earth) can be rotated and cropped to produce a bitmap that can serve as a background for the animation with or without a CAD overlay for a hybrid-view bitmap. Using the Zoom (+/-) feature, the user can manually attempt to scale the animation to the bitmap.

A more accurate method is to "measure" some features, which then can be used to scale the animation to the bitmap. This feature is only available when a bitmap is loaded. The control for scaling is the radio button located in the upper center of the picture.
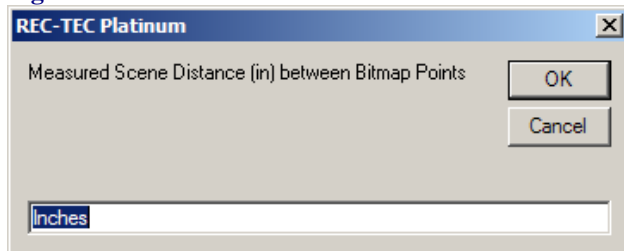
Figure 6
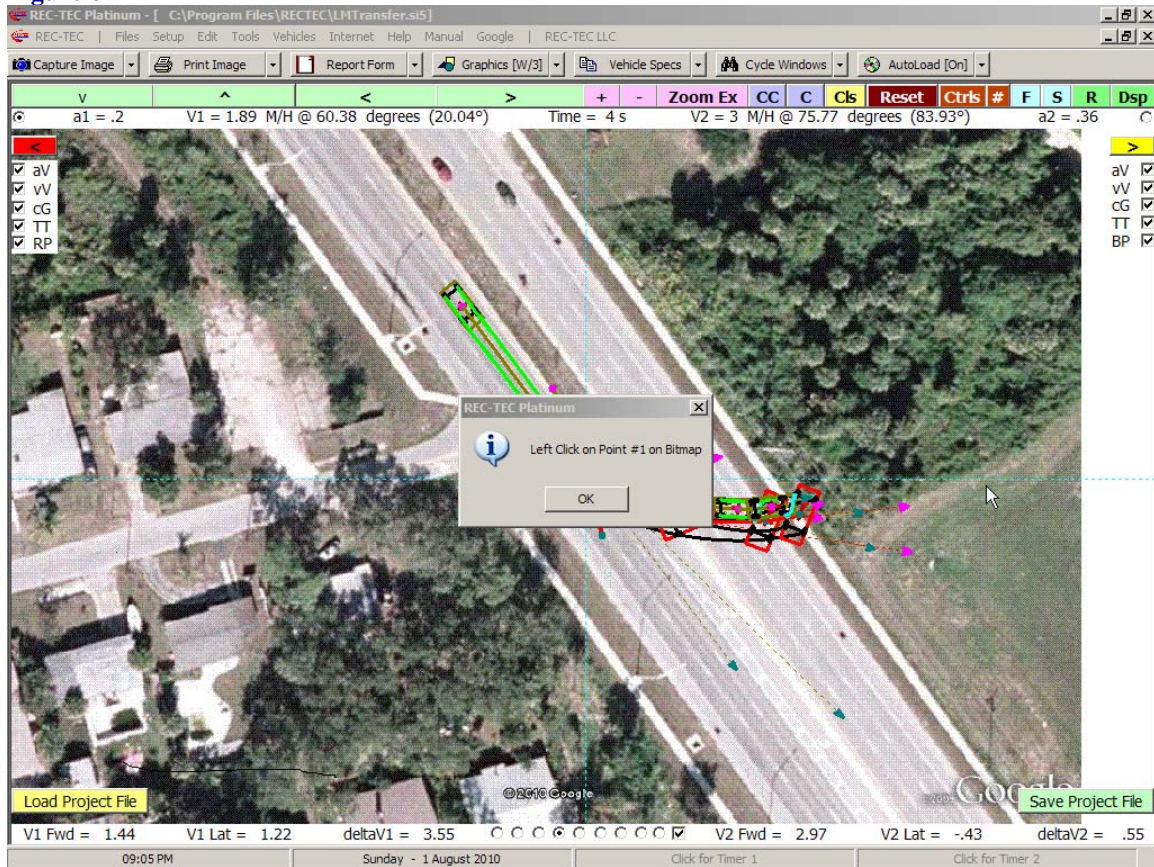
Clicking on the center radio button brings up the above message box. Select two points where the distance between them is known (measured). For this exercise we will use the lane width (distance between lane stripes) with a known distance of 8 feet (96 inches).

Figure 7
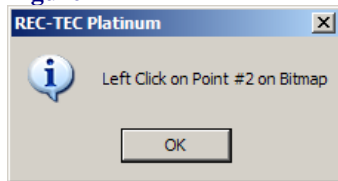
After clicking on the second point, an input box appears on the screen asking for the distance between points in inches or millimeters depending on the configuration. After entering the distance, click on OK. This causes a redraw of the animation, which is now scaled to the bitmap.

Figure 8

The rescaled animation now must be placed at the correct location over the photograph using the Collision Interface Protocols as outlined above.
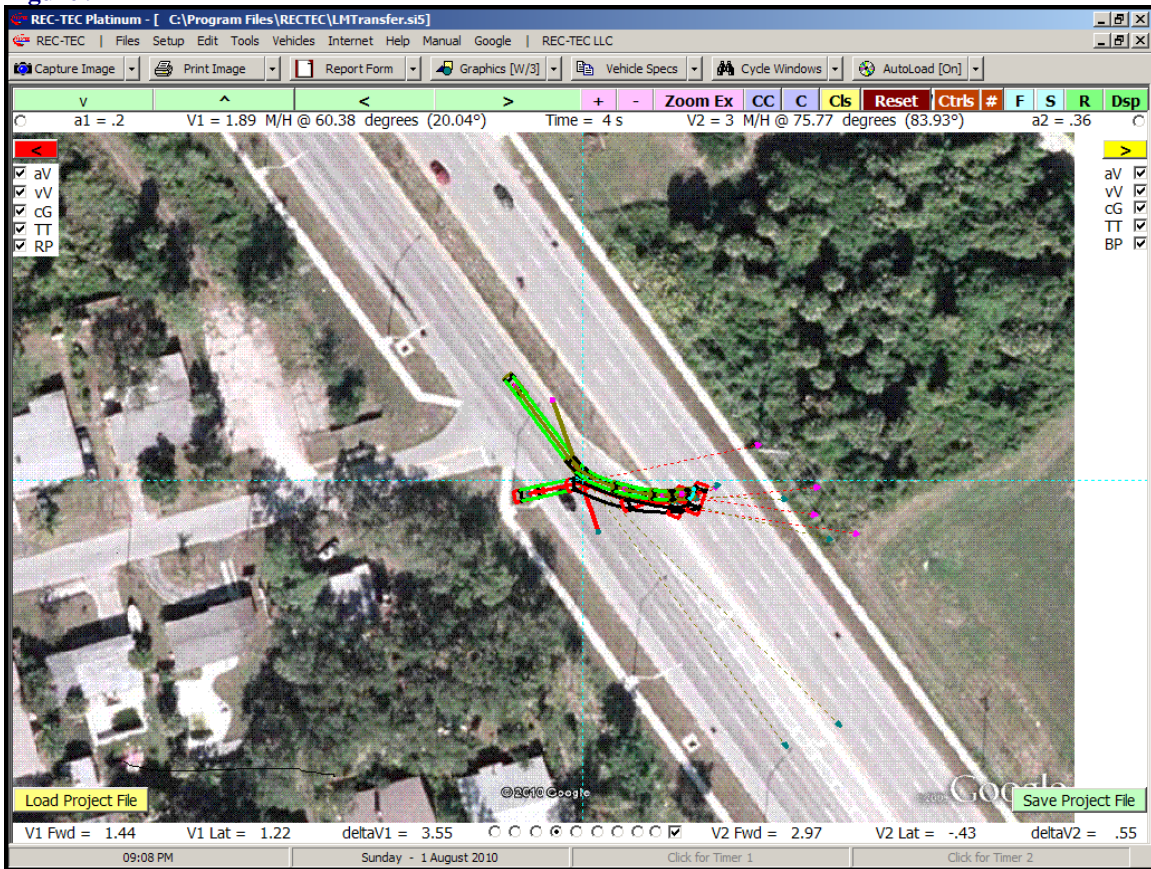
Figure 9

Figure 10 shows the animation scaled to a bitmap, cropped using Paint, and positioned in the correct location using the Collision Interface Protocol. The CTRL button has been used to clear the screen controls.

Figure 10