

## **Working with Photos in the Diagram Program**

There are a lot of good reasons to work with photo images in your diagram. You could show actual wounds made to an assault victim next to the diagram of his body. You can trace over an aerial photo of a difficult intersection. You can draw over the top of a photo of a door or wall to highlight the location of bullet holes. You could place a scanned image of your company or department logo onto your drawing.

In the following sections we'll explain how to import and work with bitmap images in the diagram program. We'll also show some examples of bitmap images at work in the diagram program.

The photo must be scanned and converted to a JPG (jpg), BMP (bitmap), or WMF (Windows metafile) format before it can be imported into the diagram program. The photo can be scaled to match the real world scale of your diagram. Photos can come very close to matching the actual measurements of the scene but will never be perfect.

### **Photo Distortion with Conventional Lenses**

Keep in mind that there will always be some distortion in the photo depending on the angle it was taken. Even a photo taken from directly above a table, road, or vehicle will have some parallax and not be perfect. There are special cameras and lenses used for taking pictures with a minimum of parallax and are used a lot in aerial photographs. The cameras are extremely expensive so you might want to look for a local agency or department that's using them.

### **Converting a Photograph into a Bitmap Image**

Use a scanner to digitize the photo and save to jpg format. If your photos are already in digital format such as jpg (saved from a digital camera) then you're ready to import them into the program.

Bitmaps cannot be rotated inside the diagram program - you may want to match the rotation of the photo to the area of reference in the diagram while scanning, or rotate the diagram so it matches the bitmaps rotation. You can also rotate the bitmap in your Windows Paint program. Paint will only rotate in 90° increments. If you need to rotate in smaller increments you'll need to use another program. Paint Shop Pro is an excellent program for manipulating bitmap images.

### **Importing the Bitmap Image into the Diagram Program**

- Go to the "File" pull-down menu
- Select "Import Images.."
- The message on the command line (yellow bar at bottom of screen) will read, "Place

Bitmap - Enter Corner Point”. Pick a point for the first corner of the box that will define the boundary of the bitmap.

- Next, “Enter Opposite Corner Point”. Pick the point that finishes the box.
- An open file dialog will pop up so you can choose the bitmap image you want to place.
- Click on the image file and click “Open”. The bitmap image will appear in the drawing.

## **Bitmap Basics in the Diagram Program**

Now that the bitmap image is in the drawing you can drag the image to another location and you can change it’s overall size. The image will always remain symmetrical, you can’t elongate it in any direction without it automatically adjusting itself to remain symmetrical. As stated earlier, you cannot rotate the image from within the diagram program. If the bitmap isn’t rotated correctly you’ll have to rotate it in Windows Paint or another program that’s designed specifically for editing bitmap images.

## **More Bitmaps 101**

A bitmap (once imported into our program) is not a picture consisting of individual objects (lines, text, etc...). It's a static picture including the background. You cannot edit a bitmap in the diagram program other than moving and scaling it. You can trace over it and then remove the bitmap. Then you'll have a diagram of entities you can work with.

**Tip:** Bitmaps are pixel based images. They look worse the closer you zoom in on them. They're editable in programs like Paint and PaintShopPro that specialize in those types of images. You cannot draw a line in a bitmap editing program that is a specific length. You can only sketch or "paint" lines in those programs.

In a program like ours, which is vector based, you can zoom in on an object without losing any of the objects definition. Each entity in a vector based program has inherent information associated with it. Such as length, location, size, angle, etc... All these are real world values and can be manipulated to give real world results. Such as snapping to the midpoint of a line, or rotating an object 7 degrees, or drawing a building that has an overall size of 50' 6" by 73' 8".

The background of a bitmap image (even though it may be white) still takes up space. So if there is a border (excess area) around the image when it was scanned then that border will take up space in the drawing. You can tell how big a bitmap image is in the program by selecting it and looking at the location of the blue selection handles. If the handles seem to be set way beyond the content of the image then you may need to trim the image in Paint and then import it again into the diagram program.

You can load scanned images into Windows Paint and cut out the area you want to use (trimming so to speak). Use the Paint cutout feature, cut the new selected area to the clipboard, select New from the File pull-down menu, paste the clipboard image back onto the screen. Now you can re-save your trimmed bitmap.

## **Bitmap Size**

Click on the bitmap (photo) to select it, grab a selection handle and stretch to the desired size. If you were placing an image of a garage door with bullet holes in your drawing you would first draw a rectangle in the program to the actual dimensions of the garage door. Next, you would scale the image to fit inside the rectangle. Now you could take real world measurements right off of the photo image.

Be careful not to accidentally stretch or re-scale the diagram! It's been created at actual size. Any change in size will distort the accuracy of any measurements taken.

## **Drawing on Top of a Bitmap Image**

You might want to change the color and thickness of the entities (lines, arcs, circles, etc.) you draw on top of the bitmap image so they'll stand out on top of the bitmap.

Once you start drawing on or near a bitmap image you're going to run into an un-expected situation. The bitmap, once selected, will cover up your work. Like any entity in the program if you move it or change it in any way it moves to the top of the entity list inside the program code. Most of the time you won't be aware this is happening because lines and other entities in the program are not thick enough for you to see a difference such as one line crossing over the top of another. However, with hatch and fill patterns or bitmap images you'll notice that they completely cover up all entities they're on top of. These entities are not transparent.

The following discussion will give you the techniques and tools necessary to work with bitmap image, hatch, and fill display:

## **Selected Bitmaps Covering Up the Drawing**

Every time you click on or even near the bitmap image you will select it causing the portion of the diagram it's occupying to disappear or be covered up by the bitmap. To bring back the portion of the diagram hidden by the bitmap, de-select the image and refresh the drawing.

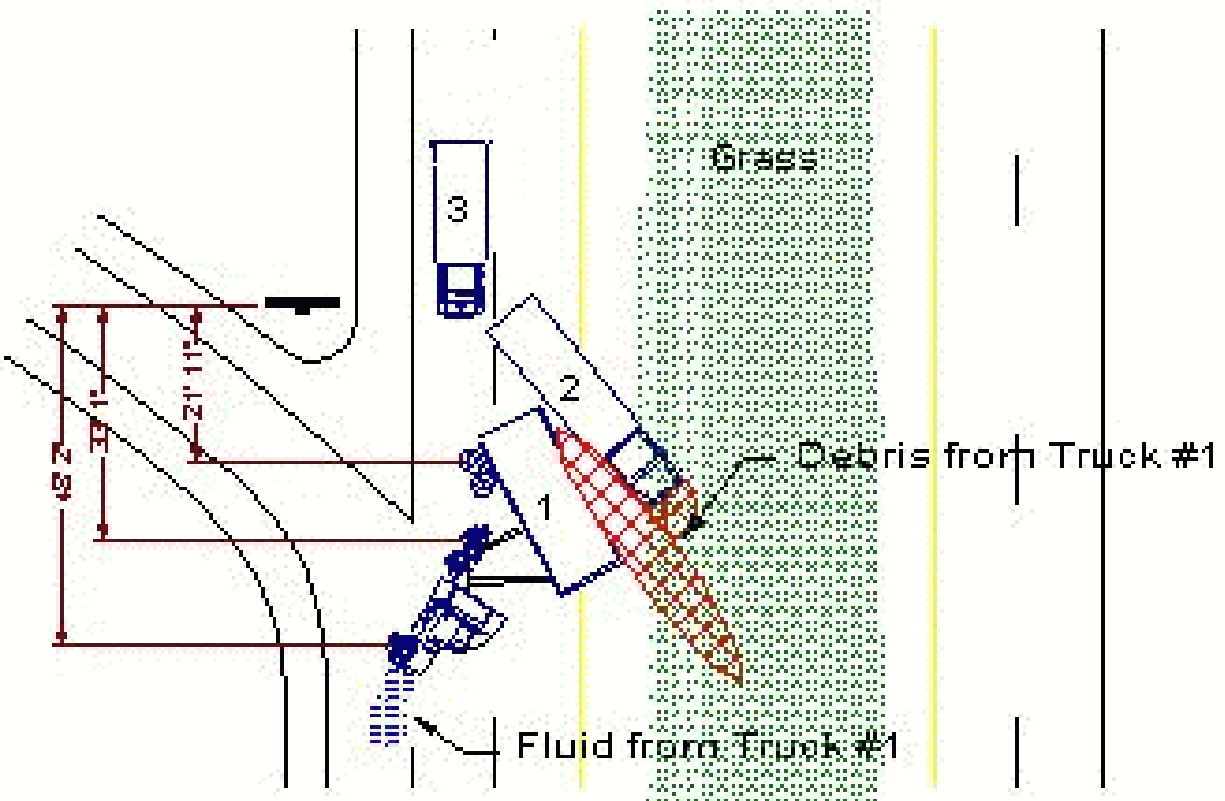
## **Send to Back**

If the bitmap gets moved or edited in any way then it will be on top of all other entities at that time and will appear to cover up the part of the drawing it occupies even if you de-select it and refresh the screen. To remedy this situation simply click on the image to select it and then select the "Send to Back" feature. You can find "Send to Back" on the "View" pull-down menu or on the "Hatch" menu in the Left Toolbox.

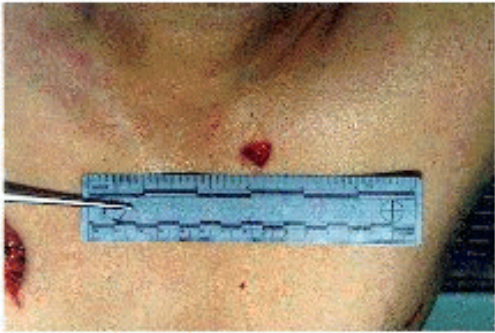
## **Bitmap Image Layer (this is the best tip of all)**



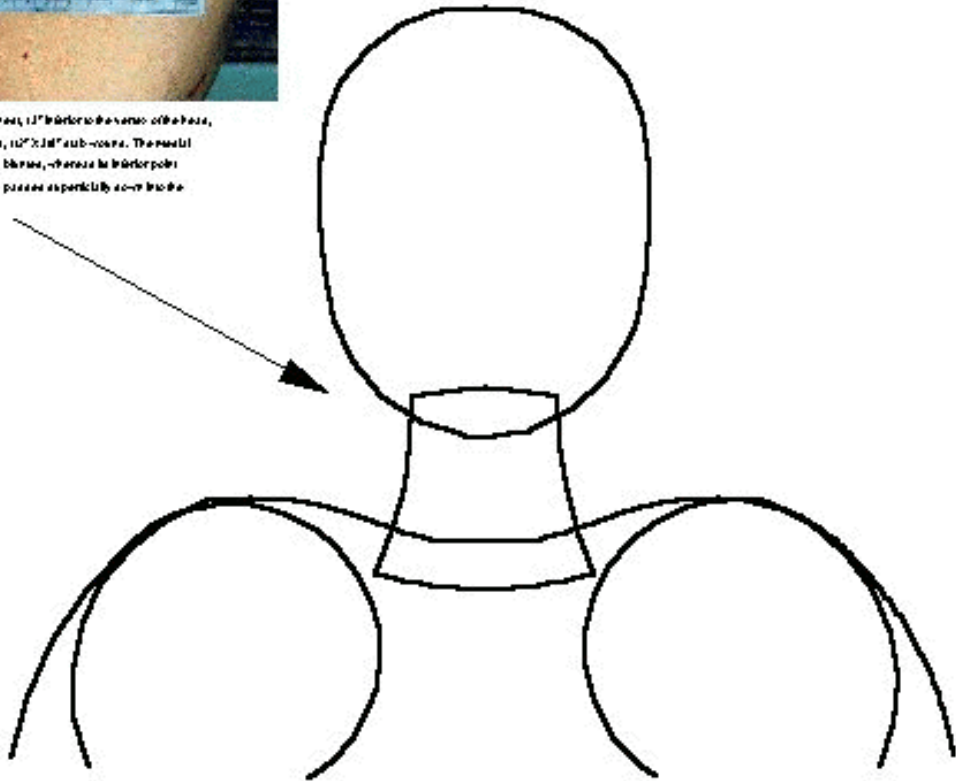
Crash scene photo inserted into the diagram.



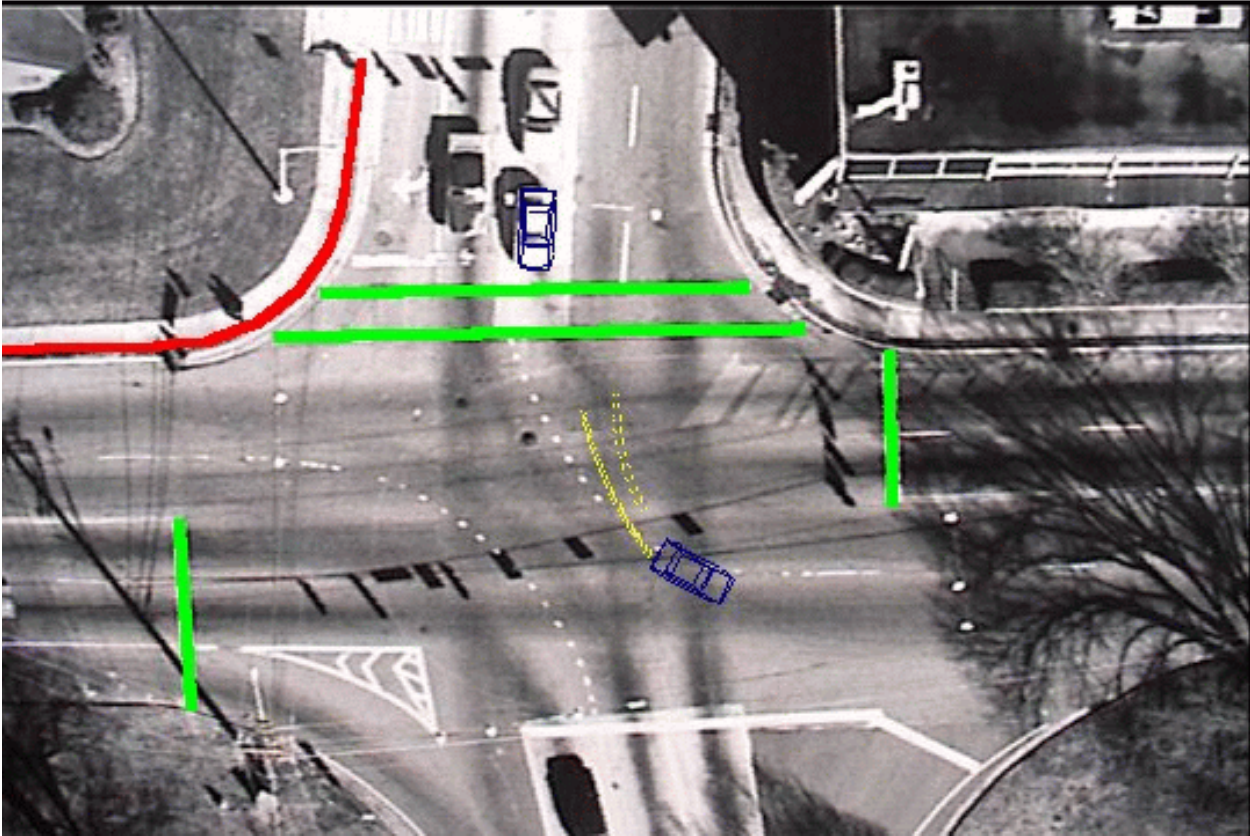
**Knife wound photo inserted into the diagram.**



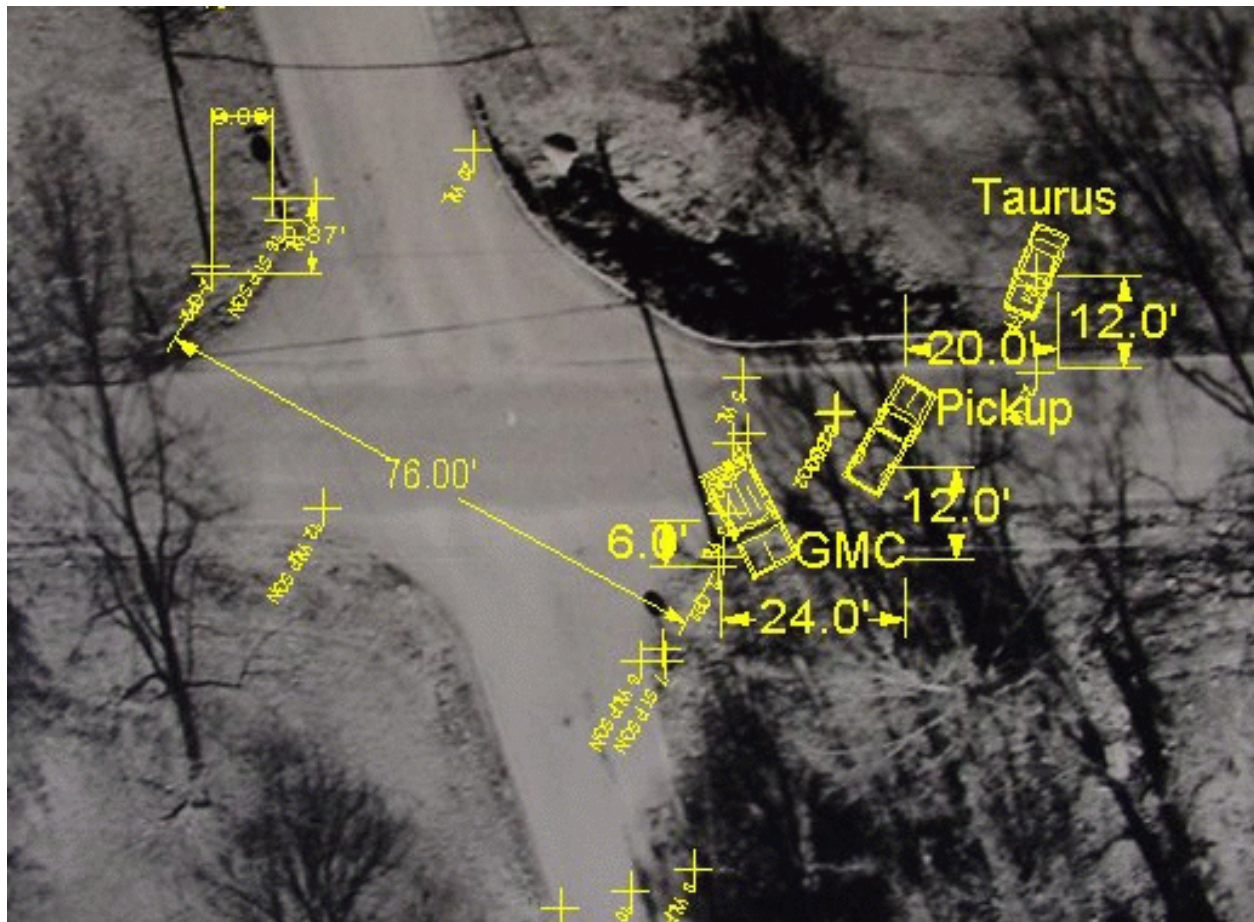
**2** - Location over the left upper chest, 12" inferior to the vertex of the head, 2-10" lateral to the midline, 20" above the 10" x 10" sub-costal. The medial pole of the sub-costal appears bilinear, whereas the inferior pole appears angular. This wound passes superficially across the transcostal muscle.



Intersection aerial photo with key points traced over using lines and arcs and added symbols.



Intersection photo with total station data overlaid (symbols, text, and dimensions are also included).



**Insert vehicle photos on top of a road segment created in the diagram program.**

