Five top quality ways to visually capture a scene for litigation

With so many ways to recreate a powerful scene for your case, where do you start?

BY MORGAN C. SMITH

Twenty years ago, an attorney had limited choices when it came to developing demonstrative evidence of an accident scene. Photographs were common, but not much else. If you wanted an overhead image of a scene, you could contact a service to shoot it, and they could print out an image and send it to you.

Now, there is almost an embarrassment of riches in terms of possible ways to conduct a scene re-creation, and it's hard for an attorney to keep up with all the possibilities, including the benefits or downsides of each technology, and the foundation issues that go into each. This article will discuss some of today's best ways to capture a scene for litigation.

Google Earth

Google Earth is a great starting point when dealing with a case involving a physical location.

Google Earth is a free program that you may download and is a database of aerial photos and satellite photographs of pretty much the entire earth. It also includes *archival* photos, some going back to the 1940's in big cities. These archival photographs can be a tremendous benefit depending on the issues of a case and can help establish the conditions of the property many years ago, if necessary.

For example, I was with a client working on a case involving a property dispute. At issue was whether a structure existed on a property before a certain date. The defendants claimed the structure was built during the early part of the

Figure 1

20th century. Using the archival feature in Google Earth revealed that the structure clearly wasn't there 25 years ago, proving my client's point (Figure 1).

While archival photos can be great evidence, it does raise obvious admissibility issues. In my experience, Google will not provide anything in the way of foundation as to the accuracy or dates of the images for litigation. Therefore, for admissibility purposes you'd better have witnesses who can testify that they have personal knowledge of what is

shown in the Google Earth image, and that it accurately reflects the conditions at the time you claim it does. Secondarily, other traditional aerial photo companies provide declarations attesting to the accuracy of the date regarding any specific image. This may also be enough for foundation, especially for an expert to rely upon.

If you can get these images admitted, they provide a good overview of a scene, but they often lack real detail and don't provide a good street level view.

Figure 2

Google Maps Street View

Street View is also a free program available through Google Maps that allows you to see photographs that are digitally stitched together showing the scene. Google Street View also added in the capacity to view archival photos (generally going back no farther than 2007).

These images are a useful tool for an initial evaluation of a scene, but are limited in that the technology used to "stitch" the scene together often results in a lot of distortion, and they are low-resolution images.

Generally it is a good idea either to take your own photos or have someone else perform that task. The result is much higher quality images that are tailored to your case and much higher resolution so you can create a blow-up-sized board with the photos if necessary. Any iPhone 5 or later will take images big enough to produce a decent board-sized image.

Surveillance video

With the proliferation of cameras recording everything we do, the number of surveillance videos in litigation has exploded in the last few years. However, surveillance videos often have poor quality and generally are not pointed in the
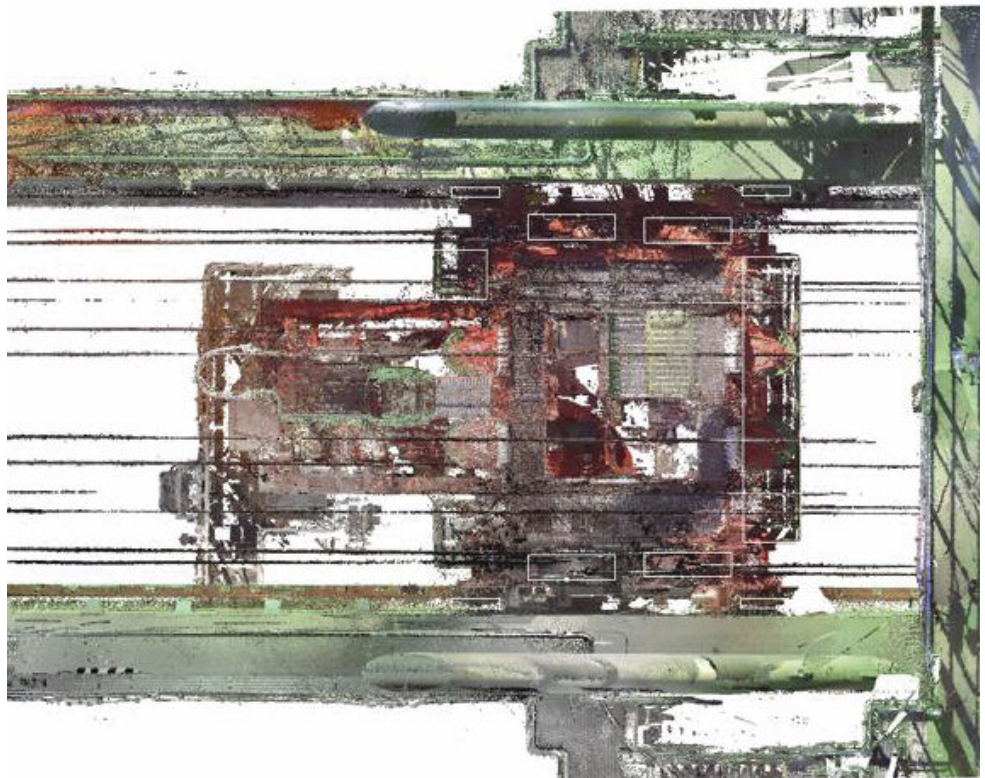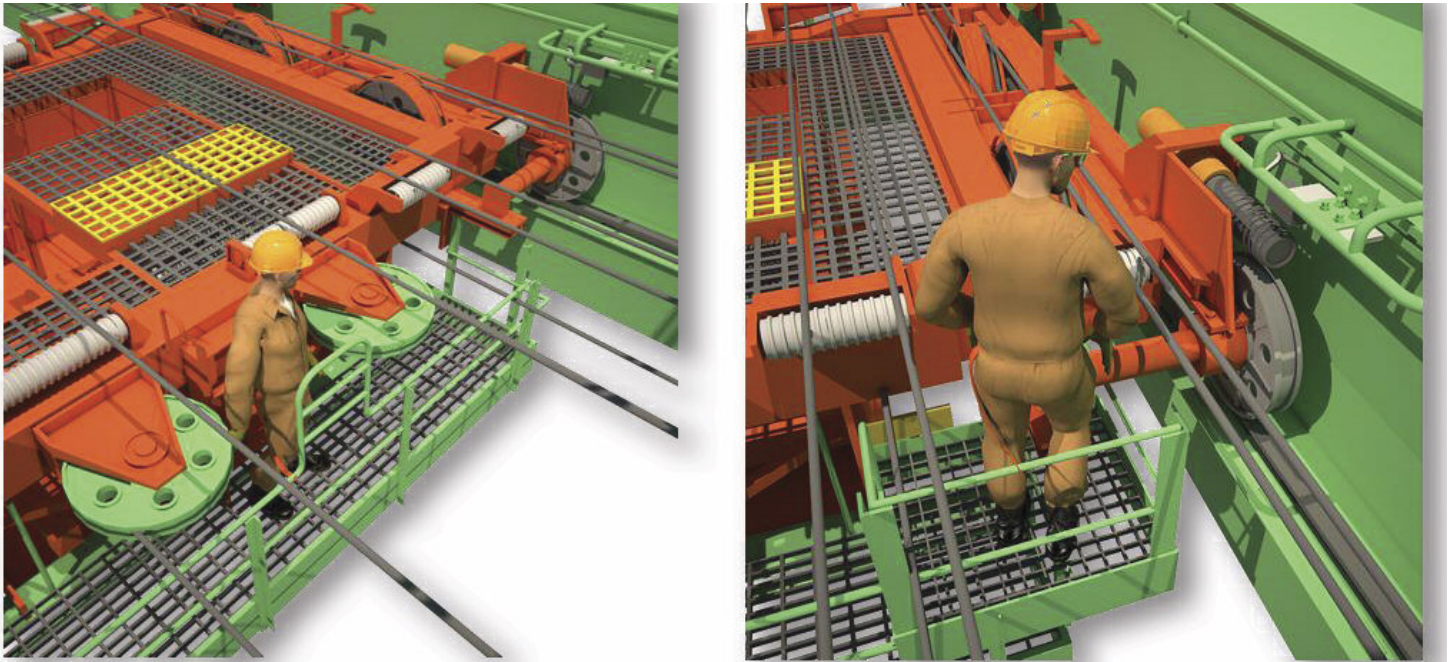

Top View of Trolley

Figure 3

Figure 4

perfect direction to capture what occurred.

If the camera captures only part of the accident, it's worth considering re-creating the missing action in a manner that is admissible and finishes out the story of the incident. As an example, Figure 2 (see page 2) is an image with the original surveillance video on the left and a 3D modeled scene on the right. Since the incident occurred just off frame of the video, the 3D model animation allowed the viewer to see the rest of the re-created incident, and have it timed exactly with the actual surveillance video. The two can work nicely together.

Laser scanning

Some cases need more in the way of evidence for mediation and trial than aerial or street images can provide. Rather than simply showing the conditions, you may want to actually show what happened, or show what conditions existed from many different angles not possible with a camera alone.

The gold standard for scene re-creation is still a laser scan, which shoots out a highly accurate laser beam millions of times measuring the distance between it and various objects. Each time the laser shoots, it creates a point where it hits an object and records the coloration of that point. At the end of the process you have a "point cloud," which when imported into a 3D modeling program, creates a ghost-like view of the entire scene. Each of those points is an accurate measurement down to 2mm, and allows for highly precise reproduction of the scene. Figure 3 (see page 2) is an image done with a laser scan of a trolley at the Port of Oakland on a big container crane.

As you can see, the scan captures the distance and coloration of the trolley, but lacks much visual appeal and could confuse a jury as to what they are looking at.

However, a person trained in 3D modeling can use this scan data for fancy 3D tracing. By building a digital model using the scan as a guide for all heights,

widths and distances, the modeler creates an accurate and understandable 3D model. In Figure 4 are images from the 3D model developed using the laser scan data above; the details of the trolley become much more understandable for the view.

The next consideration is the foundation for admissibility of these images. If you seek only to use your images as pure demonstrative evidence, essentially just showing the conditions, you may not need any foundation beyond a witness who can say they look substantially similar to the real scene or equipment. Or alternatively you can call an expert who testifies the images visually explain his or her opinion about what happened or should have happened. (See *People v. Duenas* (2012) 55 Cal.4th 1)

However, if you need to establish that images are scaled accurately, you will need to disclose the person who did the laser scan as an expert, and likely the person who created the model as well. Both can then testify as to the nature

Figure 5

of how the images were measured and created for foundation.

Cost is another issue to consider in using a laser scan. Since the scan is a physical device, it must be placed all around the scene or object to "see" all sides of it. This process can be time consuming with expensive equipment and personnel to run it. If you are doing a piece of equipment, it does not take too long to do all sides of the equipment. But, if you have a large intersection or roadway, that greatly increases the time and expense of scanning the scene.

HD drone scans

When you hear the word "drone," it's hard not to think about the unmanned attack drones flown from airbases and used to hunt down suspected terrorists or something out of Star Wars.

Despite that reputation, drones are developing into an indispensable tool for litigation and have helped bring down the costs of scanning a larger section of land for modeling a scene.

A drone can be pre-programmed to fly a set path while using an HD video capability to film the entire scene from whatever height is desired. The magic comes into play when the HD video is then processed through software that converts the HD video to a "point cloud" similar to what comes out of the laser scan (although not as highly accurate as the laser scan). The software basically interprets the video to determine the dimensions of all objects based on "seeing" the object from all different directions, which in turn creates a very accurate 3D model.

Figure 5 (above) is an example of the high-quality point cloud that comes out of the HD video. While it looks similar to a photograph, it includes all the point cloud data needed for 3D modeling software to create a highly accurate scene.

This 3D model can be viewed from any angle. Additionally, since the model is in a 3D environment, any changes can be made to it in order to re-create the conditions at the time of the incident.

With this data, you can do a "sight-line study" that accurately reflects what any driver saw at the time of the incident from their perspective. You could also create an overhead "bird's eye" view of the accident, or any other angle you wish. Since the cost of doing a drone scan is generally much less than the laser scan, it also opens the possibility of obtaining a scan soon after an attorney receives a new, larger-size case where the conditions existing at the time of the incident may become very important. By obtaining a scan of the area within days of the incident, the attorney creates a powerful data source for all important conditions and measurements that existed at the time of the incident. Since the drone scan also captures photos and video of the scene, conducting a scan at the same time of day as the incident will also create a record of lighting conditions that existed at the time of the incident. Using a drone scan early in a case creates flexible data accessible as discovery progresses. The data allows for highly accurate diagrams for deposition or mediation, and then allows for animations before trial.

Conclusion

Bring the scene re-creation and presentation of your next case into the 21st century. There are so many tools available that almost anything you can think of can be done, and the trick is mostly just figuring out how best (and most cost efficiently) to obtain the result you want for that particular case.

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