

## A White Paper - From CCTV Pre-visualization of Design to Fruition – by Jay C. McCormick PSP

Have you experienced the difficulty in getting the design outcome from a CCTV Designer to someone that is unfamiliar with the nuances of CCTV cameras ability? I am a Board Certified Physical Security Professional (PSP) with 28 years of experience ranging from Install, Service, Project Manager (PM), Design and Sales. In the past, we would use a lens calculator setting the object distance, adjusting for camera size and lens size on a disc to obtain the horizontal and vertical lines that a camera would provide. Then along came the lens monacle which provided a view associated with a lens millimeter setting. These were acceptable tools of the trade in the analog world for a CCTV Designer, but did little for the End-user in having a good level of confidence that all of this would result in seeing what they want to see.

This paper has two target audiences first, the End-User and second the CCTV Designer. Those looking for a CCTV design should have interviews with their CCTV Provider(s). There are several factors that could go into selecting a designer. Factors could include but are not limited to: Have they worked at other businesses or facilities similar to yours? What certifications does the company have that are relevant to your system request (Designer, PM, Install and Service)? Perform a resume review of those working on the project and confirm these will be the personnel providing your system. Has the responding company worked on projects that are of the same or above your projects dollar amount? What tools of the trade will be utilized in creating your system as well as installing and servicing. In addition to these, note the items directed at the designer as well for their tradecraft in collecting information in generating your design... there should also be a connection with the commissioning of the system and acceptance.

Basically design breaks down to math. There are formulas that can assist with breaking down the pixels per foot on target, which puts the video at a given distance into: high identification, identification, recognition, observation, detection and monitoring from what you will see standpoint. Having to do all of these calculations by hand is not only time consuming but in the end will bring you no closer to being able to determine if the field of view (FOV) coupled with the pixels per foot on target will provide the desired end result. As the designer becomes familiar with your site conditions, your objectives, floor plans, compass direction to know whether a dynamic range is required from an eastern rising sun or western setting sun and how it influences camera selection. The designer should also be able to understand your lighting conditions and explain the influence of light (glare, hot spots and color rendering index) as well as re-strike times. They should perform a lighting survey to ensure that the camera will provide the video you desire or to set an expectation. Software can also assist in designing your system. AutoCAD and BIM/Revit can provide a cone of coverage but requires additional math, to try and fit into the FOV, what the pixels per foot on target would be and, do not give you objects to visualize if they are sufficient to your environment. This is where the JVSG software excels.

In a recent Design Build Project, the Customer a large school district submitted an RFQ/RFP (Request for Qualifications/Request for Proposal). As part of the RFP, they defined two parameters one being 100% coverage of the corridors and secondly to what level – recognition and then went further to define recognition as 50 pixels per foot on target. In addition, details were asked of the Designer to provide the

following PER VIEW: camera installation height, sensor format, aspect ratio, lens focal length, camera tilt, camera resolution and the horizontal and vertical viewing angles and a pre-visualization view of every camera.

ESCO Communications purchased the JVSG software back in 2011 and I have used it successfully in helping the End-user visualize what the camera view(s) will provide them. By taking a 2D drawing, importing it into the software and from the site survey, photographs and other tradecraft information begin re-building their environment in a 3D world. After building the 3D models we can discuss prior to purchase the scope of work (SOW) to ensure what they have in their mind is the same that I as their Designer have so there is agreement. By inputting the data, building the walls, windows, doors and placing objects i.e. columns the software renders an exportable document that can be utilized by the PM and the Installation Tech's during installation to know what desired view is required. This is a cost savings from the End-user perspective limiting change orders and from the Installing Companies standpoint as a labor saver by defining the SOW.

The tools that JVSG provides of importing drawings, scaling, placing scaled objects into the FOV, vehicles for license plate viewing, landscaping concerns, windows, doors, fencing, walls varying camera resolutions, distances from cameras and the colored zones for pixels per foot on target to name a few bring the images to have contextual meaning other than just math equations.

With the recent Design Build Project as mentioned earlier, by utilizing the JVSG software, we were able to provide 1,054 views and virtually walk through the facilities to ensure 100% coverage at 50 pixels per foot on target with a high degree of certainty. This document can provide a pre installation and a post installation details as part of the commissioning documentation.

Leonardo De Vinci was able to bring art to science, and in many ways the JVSG software brings the science of CCTV design into a form of art in its own. As a Board Certified Physical Security Professional I highly recommend this software as one of the tools in your tradecraft arsenal to understand both what is desired and required. The JVSG is a great tool for the one-off camera project or the multi-facility projects.

