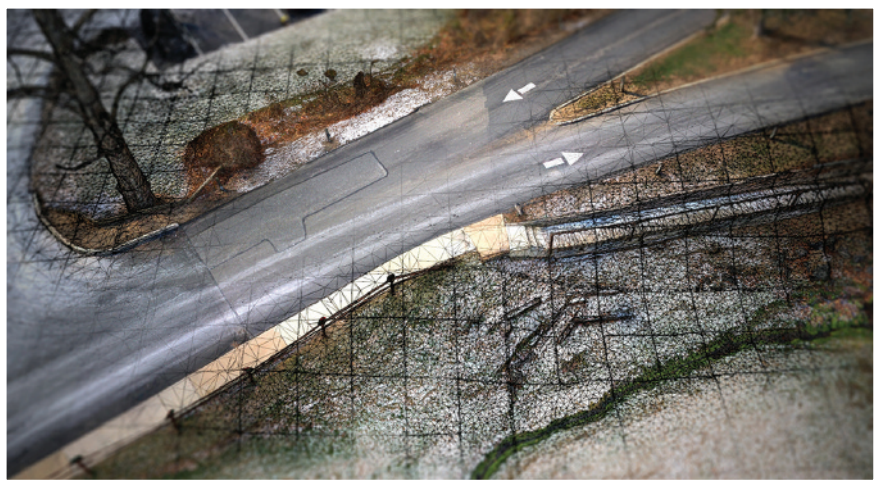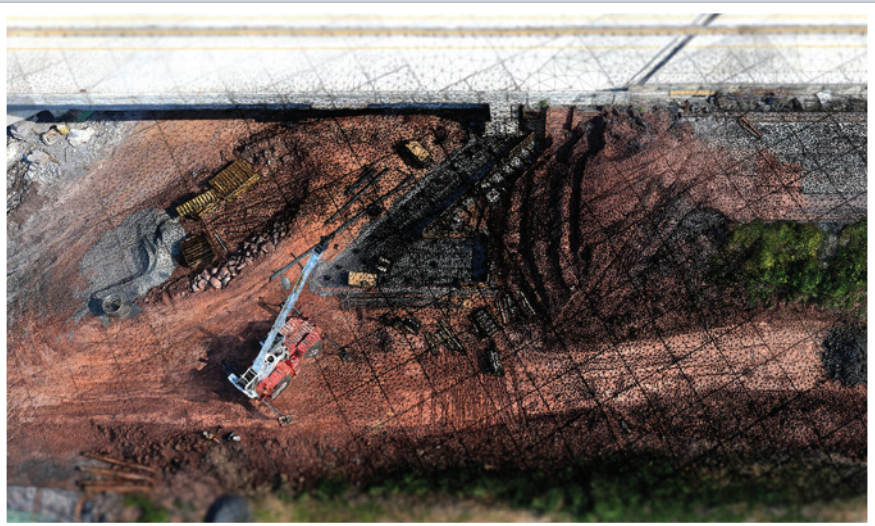# CEDARVILLE Engineering Launches New Technology For Planning, Design & Construction

An Interview with April Barkasi, CEO, and Chris Skorny, 3D Modeling Specialist & UAV Pilot

Reality Modeling of Painters Crossing Roadway, Chadds Ford

State Route 422, Stowe Interchange

Reality Modeling of Eastern State Penitentiary, Philadelphia

What is "Reality Modeling" as it relates to engineering?

APRIL: We are challenging conventional engineering and construction survey methods by gathering GPS tagged images to generate 3D Reality Models.

CHRIS: It's the process of capturing existing conditions – structures, land, objects - in 3D. We use a combination of devices including an unmanned aerial vehicles (UAVs), a handheld camera, a laser scanner, and a smart phone. These images can be stitched together into a 3D model that can be used for different purposes such as planning, mapping, design, construction, inspection, and asset management.

How do you collect the data?

APRIL: It begins in the field. Chris and his team have developed a work flow that allows them to efficiently collect information. Depending on the site, there can be huge time savings over conventional survey methods.

CHRIS: For data collection via an UAV, the process starts by reviewing the site for possible constraints that could limit a flight. We establish an area of interest and set ground control from survey grade equipment i.e. GPS and/or total stations. A flight plan is created that determines exactly where to fly, the altitude to fly, and the frequency of image acquisition. While UAVs are a great tool, models can also be created by individuals on foot, or vehicle mounted equipment.

What type of businesses would benefit from this kind of technology?

APRIL: 3D Reality Models can be created to analyze the surface features of large parcels of land, roadways, and critical pieces of infrastructure. The data can be captured more efficiently than by using traditional survey methods. It's ideal for construction companies, engineering firms, government entities, or anyone responsible for managing land or infrastructure.

CHRIS: For example, the technology can be used to model busy highways, calculate quantity data on stockpiled or excavated materials, access restricted sites or any site where access can be hazardous, monitor changing conditions, or just to get a quick, quality survey.

Can you share any special projects you are currently working on?

APRIL: The latest special project is Eastern State Penitentiary in Philadelphia. This site had some challenging aspects to it, so we decided to use Reality Modeling technology.

CHRIS: This project utilized traditional survey, UAV, and ground based imagery capture methods. By combining all 3 of these data sets, we produced a model that had a precision of 1/4 of an inch for anything below 10 feet above the ground, and 2 inches for anything higher than that. We are able to use the model for the design phase of the project and again during actual construction.