

Digital Photogrammetry

Innovative digital photogrammetry equipment



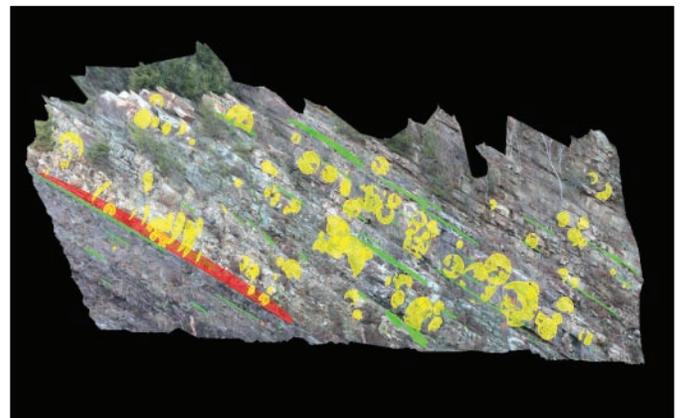
Slope stability problems and other geologic hazards affect appreciable portions of our public and private infrastructure including highway, bridge and rail transit systems, as well as dams and levees. Charged with maintaining safe operation of these complex and often aging systems are the agencies and organizations on which the public relies for uninterrupted service.

For 100 years, Gannett Fleming, has been the trusted advisor of infrastructure owners and has built its reputation on providing innovative solutions for challenging infrastructure problems. Among these are a wide variety of rock and soil slope evaluation and treatment solutions. A new technology being used by our geologists, geotechnical and structural engineers is Digital Photogrammetry.

Technologic Advantages of Photogrammetry

Precision photogrammetry has long been used for mapmaking and military intelligence applications and it is now used for geotechnical evaluation of rock and soil slopes. This highly accurate method involves collecting digital images in a controlled and precise manner and then processing them with specialty software to derive geologic structural data and evaluate their spatial characteristics and distribution. These data are essential for failure mode analyses and slope/catchment zone design. Advantages include:

- Safe data collection that avoids extended slope contact and exposure to rock fall hazards
- Remote mapping of geologic structures in steep and relatively inaccessible areas
- Very high optical location accuracy
- Collection of abundant geologic discontinuity data sets using the “whole” exposure without climbing or rappelling
- Rapid unbiased data collection and processing.



Delineation of bedding planes and geologic structural features exposed in a limestone quarry highwall

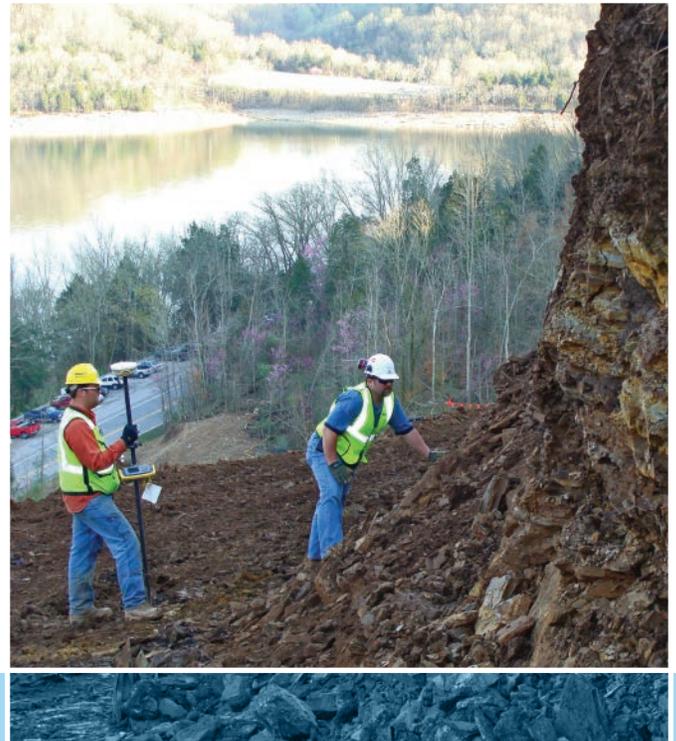
By taking a series of photographs of a rock exposure or soil slope (such as a tunnel portal, dam abutment, road-cut or highwall), and working from the known locations of control points in the scene or from known camera locations, our photogrammetry specialists are able to automatically generate a digital terrain model (DTM) of the target area. This model can then be used to classify orientations of geologic structural discontinuities (fractures, joints, foliations and faults); assess surface roughness; calculate volumes, evaluate joint spacing and prepare cross-sections. These data are of value in classifying potential rock fall failure modes and mitigating the hazards associated with them.



Geotechnical studies for roadway landslide

Relevant Applications

- Mapping quarry highwalls
- Roadcut maintenance surveys
- Landslide and settlement monitoring
- Conceptual design mapping
- Rock slope scaling volume verification
- As-built surveys
- Test trench mapping
- Mine stockpile volume estimation
- Exposure changes
- Rockfall prediction
- Tunnel mapping
- Subsidence monitoring
- Initial recon of dams
- Cut/fill volumes



Geotechnical field engineering of excavated rock slope

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For more information on Gannett Fleming's Digital Photogrammetry services, please contact:

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