

review the orthophotos for radiometric and geometric quality and respond accordingly. Consultants are instructed to proceed with other mapping activities after they have completed, reviewed, and accepted the orthophotos.

DO NOT WAIT for VDOT's approval of the orthophotos to proceed with other mapping activities. Any noted problems regarding the orthophotos will prompt immediate communication from VDOT to the respective consultant firm.

Sec. 5.16 **Light Detection and Ranging (LIDAR)**

Light Detection and Ranging (LIDAR) data may be used for certain VDOT projects. Such projects include corridor location studies, and any other preliminary engineering projects that require a digital terrain model (DTM) at a lower level of accuracy than traditional location surveys. The use of LIDAR typically provides a faster delivery of data at a lower cost than conventional Photogrammetry and survey methods. VDOT does not have airborne LIDAR capabilities and relies on the consultant community for all airborne LIDAR services.

VDOT does have limited terrestrial (ground-based) LIDAR capabilities for projects less than one mile in length. Terrestrial LIDAR can be used for location studies and any other preliminary engineering projects.[◊]

VDOT does demand that any consultant performing LIDAR work for the department have the necessary hardware, software, and experience that will provide a consistent, accurate, and reliable product. LIDAR procedures must include appropriate data filtering and editing to eliminate incorrect, non-surface readings, and reduce the file to a manageable size. Photogrammetry must be utilized to develop break lines for the DTM and to provide a means for quality control of the LIDAR data. This has become a standard practice within the industry, and will be expected by VDOT. Break lines are to be added by Photogrammetry along all pavement, ditches, ridges, valleys, streams, edges of water and any other significant surface feature that would require a break line for proper definition.

Note: LIDAR data is ***not*** to be used for any location survey unless written approval is given by the State Survey Program Manager or the State Photogrammetry Manager.

As LIDAR technologies improve, the requirements listed in this section will be modified. Therefore, anyone providing LIDAR services to VDOT will be expected to check the online version of the survey manual for the updates or contact the State Survey Program Manager or the State Photogrammetry Manager.

The following list outlines a basic framework for executing LIDAR projects:

1. Approval/Notice to Proceed utilizing LIDAR.
2. Establish/set control for aerial photography.
3. Fly photography and LIDAR. LIDAR platform must include a fully functioning airborne

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