

Title: CATT Develops New 2018 OPS Standard for Laser Pipe Inspections

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The CATT Technical Committee takes on assignments for governing agencies to develop specifications for use in municipal- and provincial-orientated contracts. The “CONSTRUCTION SPECIFICATION FOR LASER AND LIDAR SURVEYING OF BURIED PIPELINES” has been completed and submitted to the Ontario Ministry of Transportation, and accepted for publication in the next round of OPSS updates and releases. While Laser Profiling and LIDAR Scanning collect similar information, they work using different methods. Both laser technologies are similar in that they only take measurements above the fluid level and do not work underwater. Aside from that similarity, it has been difficult for years to understand how to use and specify this technology.

Laser Profiling projects a red ring onto the pipe wall at a precise distance in front of the CCTV camera. Image processing techniques then measure the size and shape of the red ring. Each frame of the video constitutes another cross-section measurement of the pipeline, and as the inspection progresses through the pipe, these cross-section slices can be analyzed to highlight areas where the pipe is corroding or deforming and presented in series to simulate a 3D model. LIDAR Scanning measures how long it takes for light to return to the LIDAR scanner. This measured time-of-flight is then converted to a distance measurement. Photons of light can be sent out by the scanner at all angles in all directions. These individual measurements can be assembled into a full 3D model of the pipe interior, called a “point cloud.” The 3D model can then be analyzed to highlight areas where the pipe is corroding or deforming and additionally be analyzed to determine the longitudinal or central axis of the pipe.

This presentation will review the standard with examples of the technology applications to pipeline owners and how a municipality or engineer can specify the correct terminology and technology to meet their needs.