

“What’s more important, Quantity or Quality in Maintenance Hole Inspections”

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Manholes, or maintenance holes, or chambers, or shafts, all require inspection at one time or another to provide data to populate asset management programs and complete the inventory of municipal assets. Technologies have developed over the last 2 decades from floating candles to pole cameras, then truck mounted zoom cameras to equipment that is now portable and capable of LIDAR scanning to 1mm accuracy, achieving picture perfect images without lighting requirements.

Trucks mounted systems were and are still being developed so that a cost effective quantity of manhole inspections can be completed per day. The race has been on, with claims of “we average XX inspections per day”. Easy to measure when the manholes are typical depth and in the roadways and in close proximity. After all, even if you use a pole camera, you need to mobilize.

But what if the manholes become deep, on larger deeper main lines? What if the manhole now has a round top and rectangular bottom – with a baffle wall. Conventional inspection systems become challenged, and suddenly discussions center not around speed of inspection, but rather to that of accuracy and quality of the inspections.

The advent of GPS locating to survey accuracy, and the ability to key those measurements to the invert has enabled engineers to now tie in 3D models into their surface assets. Chambers become shafts as the size increases on larger trunk sewers and interceptors. The problem is that existing trunk sewers followed the lay of the land for ease of construction, and are usually found in ravines and easements. The truck is no longer useful and portability becomes necessary.

LIDAR scanning of shafts, tie in to tunnels, off-road requirements is changing and challenging the standard NASSCO MACP reporting and modifications are now required. Additionally, more of these manholes that have been exposed to H₂S over many years now face rehab.

Is it time to start moving the industry towards instituting manhole/chamber/shaft LIDAR scans as S1,S2,S3 and S4 surveys for rehab projects? (Scan 1 for existing conditions, Scan 2 for after cleaning, Scan 3 for after manhole rehabilitation to verify wall liner thickness, and S4 for warranty inspections)

This issue and recent evolution of technology and capabilities will be discussed with ample real life samples that illustrate why we need to pay more attention to quality of accuracy than production output per day.

(Gord Henrich has used PANO, Helix, and CUES Spider, in addition to FARO and Trimble LIDAR for manholes to 38m depth, chambers with baffle walls and drop structures, to 10m shafts 40m deep that contain gantry crane and 3m diameter duckbill valves. He has personally assisted in all these deployments, in addition to GoPro Video inspections. He is MACP V7 trained as well. The only technology he has not had hands on is the portable CleverScan at the moment)