

## Digital Panoramic Manhole Inspection As Provided By RapidView

Overview: The City is contracting professional inspection service providers to proactively inspect manholes to determine the detailed condition and to collect data of every notable feature, defect, or other important information. The inspection shall be complete in a two-step process consisting of Data Collections and Data Review, Reporting, and Delivery. Contractor must perform a quality inspection utilizing a digital manhole inspection system that can provide superior imagery and geometric data as compared to traditional methods. The inspection system used by the selected contractor shall meet all the following specifications:

### Data Collections

- ❑ The inspection camera system must be 100% digital. Any analog or NTSC video camera will be deemed unacceptable.
- ❑ The inspection camera system must have two independently or simultaneously controlled digital cameras, one facing in the downward direction and one facing in the upward direction. Each camera must have a minimum of 185 degree field of view.
- ❑ The inspection camera system must illuminate the interior of the manhole using a xenon strobe light. The light shall be positioned 360 degrees around the camera lens to distribute the light evenly onto the structure walls. The lighting must be able to illuminate manholes up to 120” in diameter without the need of any auxiliary lighting. Any systems not using strobe light technology will be deemed unacceptable due to motion blur during imaging recording.
- ❑ The inspection system shall produce individual images or frames with no more than 0.001 inches of movement during image or frame exposure to produce crisp, clear images.
- ❑ The inspection camera must provide a minimum of 3000 line of vertical resolution in the side view and a minimum of 500 lines in the perspective view.
- ❑ The system must be capable of inspection speeds of 14 inches per second to ensure maximum production per day with each inspection system and to minimize the time at each location to maintain traffic flow and reduce safety concerns of contractor’s employees.
- ❑ Collected digital film files and header files shall be recorded onto a hard drive and original un-edited data shall be archived for a minimum of 5 years after project complete in the event the City request copies for internal use.

### Data Review, Reporting, and Delivery

- ❑ Contractor is responsible for reviewing collected data, coding observations, and completing a full MACP evaluation of each inspected manhole, however the City must have the ability to view the digital film file in the way that the contractor can view them, including full control of the virtual pan and tilt.
- ❑ The digital film files must include an unfolded view of the manhole with a minimum of 3000 lines of vertical resolution.

- The digital film files must include the capability to produce a three dimensional representation of the manhole structure. This data shall be used to perform geometric measurements. This file shall be exportable to common CAD programs for further analysis.
- The digital file files must include a distortion-free virtual pan and tilt allowing the review of the manhole structure from any angle from any depth. The virtual pan and tilt must be able to view 360 degrees in any direction. The virtual pan and tilt must consist of views from the top and bottom camera, any virtual pan and tilts that artificially create this view from a single camera will be deemed unacceptable due to distorted images on the direct side view.
- The virtual pan and tilt and up/down direction of the view must be able to be controlled from a computer mouse.
- The virtual pan and tilt and unfolded views must be able to be viewable by the City without the need of any third party data logging software
- The contractor must review the film files using MACP certified personnel.
- The contractor must supply the City with single or dual layer DVD's, a removable hard drive, or other pre-approved media with the data and reports.
- All deliverables must be supplied to the City within 5 days of completion of fieldwork.