State Construction Office

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Laser Profiling Calibration Criteria

1.1. Equipment

A combination color CCTV pipeline survey system with, a cable distance counter, circumferential laser ring projection system and measurement software shall be used to perform a measurement survey of new or existing lines as directed by the Florida Department of Transportation. The equipment and software used must be tested and approved by a recognized independent testing group and include a tested certified accuracy of 0.5% or greater and a repeatability of 0.12% or greater.

1.1.2. Procedure

The measurement survey shall be accomplished using a CCTV color pipe inspection system as specified above. To determine the representative diameter of a given pipe, select a cross-section, in the pipe, evenly spaced between two points 10 feet apart. The selected section should be in the barrel (away from collar or junction) and defect free. Measure the internal diameter at the section. Take at least 4 measurements at the selected cross section. Ignore the section if the variance in measurements is too high and the section appears non-circular. Average the four (4) diameters and round to the nearest 1mm to arrive at the representative diameter of that line. If the pipe deformation is too great to make the above measurements then the pipe diameter as shown on the as built drawings may be used for the generation of the required reports.

A lens distortion calibration chart shall be imaged by the survey camera and recorded on the survey DVD in an MPEG2 format for 15 to 20 seconds. The measurement software shall include a lens distortion correction capability to assure the measurement accuracy regardless of the survey camera used.

A calibration target shall be imaged by the survey camera and recorded on the survey DVD in an MPEG2 format for 15 to 20 seconds. The measurement software shall have the capability to reference and calibrate to this target assuring unlimited accurate report processing of the recorded survey.

The survey system with laser ring projection head shall be placed into the pipe. The laser projection head shall be positioned, in relationship to the camera, so that the red laser ring fills minimum 75% of the monitor screen height and the alphanumeric cable distance display does not interfere with the laser ring image. The camera and laser projection head shall be moved through the pipe at a speed not to exceed 30 feet per minute. The color video image, from the camera, shall be recorded on the survey DVD in an MPEG2 format.