



**PIMA COUNTY
REGIONAL WASTEWATER RECLAMATION DEPARTMENT
DIRECTIVE**

Directive: ENG2009-19

Effective Date: January 1, 2010

SUBJECT: Sewer Design and As-built Slope Annotation

STATEMENT OF PURPOSE

This Directive shall define how a sewer reach's pipe slope and pipe length are displayed on sewer improvement plans, and how the as-built slopes and lengths will be displayed. Current procedures use the center of manhole for the end points of pipe length, which when calculating slope, does not best represent the actual pipe slope. In order to more accurately describe the pipe slope, this directive shall require the design pipe slope to be based on the horizontal pipe length, measured from the inside face of each connecting manhole on the sewer reach.

GENERAL PROVISIONS

Design Standards for Sewer Profile Display and Calculation

For sewer profile design, the pipe reach annotation shall identify the standard reach length from center of manhole to center of manhole, and in addition, shall now have parentheses containing the horizontal pipe length measured from the inside face of the opposing manholes, and the pipe slope calculation using that distance (e.g. Length 350.00 feet (pipe length = 346.00 feet, slope = 1.00 %)). The center-of-manhole pipe length shall still be used to determine compliance with maximum manhole spacing regulations.

As-Built Calculation and Annotation

The as-built slope calculations shall be based on the measured horizontal pipe length (inside manhole face to inside manhole face) and the recorded invert elevations from the survey data. Where data differs from the original design, the design values shall have a strikethrough, and the measured values written beside the strikethrough.

AUTHORITY

Federal Regulations, Arizona State Regulations, Pima County Ordinances and other enabling legislation which affect the collection, conveyance, treatment, and control of sanitary sewage. The Chief Engineer of Pima County Regional Wastewater Reclamation Department, and designated representatives, are responsible for the enforcement of this Directive and the associated Standards.

PROCEDURE

Effective January 1, 2010, all first submittals of Sewer Improvement Plans or sewer design plans and profile sheets shall show the additional pipe reach annotation.

RECOMMEND

Eric Wieduwilt, P.E.
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APPROVED

Michael Gritzuk, P.E.
Director