

UNITED STATES GOVERNMENT

Memorandum

HYDRAULICS BRANCH
OFFICIAL FILE COPY

Memorandum

Denver, Colorado

TO : Chief, Division of Water Operation and Maintenance **DATE:** February 21, 1978

FROM : Chief, Hydraulics Branch

277
PAP 347
SUBJECT: Test Results of a Cox Flowmeter

The Cox Piro-Swivel manometer velocity gage was tested in the Hydraulics Branch laboratory to determine its accuracy in several sizes of pipe. The velocity of the meter was compared with the average velocity computed from measured discharges through the laboratory system.

The sensing head of the meter was placed one-fourth inch below center of pipe as specified in the manufacturer's instructions. A minimum of 10 pipe diameters of straight pipe was provided upstream from the meter. The meter was tested in 4-, 8-, and 12-inch nominal inside diameter steel pipes. A vertical traverse was also made to obtain a velocity profile for each pipe.

Comparisons of the measured velocity with the computed velocities are as follows:

1. The indicated velocity through the 4-inch pipe varied from 4 percent less than the computed velocity at 2 ft/s (computed) to 2 percent less at 9 ft/s.
2. The indicated velocity through the 8-inch pipe varied from 1 percent greater than the computed velocity at 2 ft/s to 5 percent greater at 9 ft/s.
3. The indicated velocity through the 12-inch pipe varied from 11 percent less than the computed velocity at 4 ft/s to 3 percent less at 9 ft/s. The error was as much as 58 percent near a computed velocity of 2 ft/s.

277
PAP 347
The curves for the vertical traverse show essentially the same velocity from the centerline to 1 inch below center for the 4-, 8-, and 12-inch pipes. Therefore, the manufacturer's suggested placement is reasonable.

Attached are curves comparing the indicated velocity with the computed velocity, and the vertical velocity distribution for each pipe.

D. E. KING

Attachment





