

SECTION 685.3 PIPELINES.

Section 685.31 Pipeline Design.

Irrigation Pipelines can be used to deliver water to any irrigation system. Most often they are used to deliver water to sprinklers system, furrow irrigation through gated pipe, and drip systems.

Pipelines can be either permanent or moveable. Except for center pivots, most of the permanent installations are buried. Pipelines are also classified as either high pressure or low pressure pipe. By definition, high pressure pipe is pipe that is designed to operate with more than 50 psi of internal pressure.

Technical guidance is given on the design of pipelines from specific materials in the following Conservation Practice Standards for Pipelines: 430-BB - Asbestos Cement, 430-CC - Nonreinforced concrete, 430-DD - High-pressure, Underground Plastic, 430-EE - Low-pressure, Underground Plastic, 430-FF - Steel. Information on appurtenances can be found in NEH Section 15, Chapter 3, pages 3-73 to 3-86.

Three examples of irrigation pipeline design are shown on pages NB15-110, 15-111, and 15-112 of the E.F.M. Note in each case that a needed pressure head and flow must be assumed at each outlet, and trial pipe sizes are assumed back to the pump. It should be noted that as the velocity of flow in the designed pipeline gets below 5 feet per second, the friction losses decrease dramatically. As a rule of thumb if increases in pipe size, will pay for the saved energy in five years, the larger pipe size should be used. Formulas that will help determine annual energy costs can be found in Section 688, Economics.

Section 685.32 Use of Head Loss Tables for Pipelines.

The following tables have been included to show head losses in plastic, asbestos cement, concrete, and aluminum pipe. A table is also included which shows the more common minor losses that occur in a pipeline. The more complex minor losses can be figured using the formulas shown on page 3-89 and 3-90 in the E.F.M.