**Section 653.119 Protection of Water Main and Water Service Lines**

Water mains and water service lines shall be protected from sanitary sewers, storm sewers, combined sewers, house sewer service connections and drains as follows:

a) Water Mains:

1) Horizontal Separation:

A) Water mains shall be laid at least ten feet horizontally from any existing or proposed drain, storm sewer, sanitary sewer, combined sewer or sewer service connection.

B) Water mains may be laid closer than ten feet to a sewer line when:

i) local conditions prevent a lateral separation of ten feet;

ii) the water main invert is at least 18 inches above the crown of the sewer; and

iii) the watermain is either in a separate trench or in the same trench on an undisturbed earth shelf located to one side of the sewer.

C) Both the water main and drain or sewer shall be constructed of slip-on or mechanical joint cast or ductile iron pipe, asbestos-cement pressure pipe, prestressed concrete pipe, or PVC pipe meeting the requirements of Section 653.111 when it is impossible to meet (A) or (B) above. The drain or sewer shall be pressure tested to the maximum expected surcharge head before backfilling.

2) Vertical Separation:

A) A water main shall be laid so that its invert is 18 inches above the crown of the drain or sewer whenever water mains cross storm sewers, sanitary sewers or sewer service connections. The vertical separation shall be maintained for that portion of the water main located within ten feet horizontally of any sewer or drain crossed. A length of water main pipe shall be centered over the sewer to be crossed with joints equidistant from the sewer or drain.

B) Both the water main and sewer shall be constructed of slip-on or mechanical joint cast or ductile iron pipe, asbestos-cement pressure pipe, prestressed concrete pipe, or PVC pipe meeting requirements of Section 653.111 when:

i) it is impossible to obtain the proper vertical separation as described in (A) above; or

ii) the water main passes under a sewer or drain.

C) A vertical separation of 18 inches between the invert of the sewer or drain and the crown of the water main shall be maintained where a water main crosses under a sewer. Support the sewer or drain lines to prevent settling and breaking the water main.

D) Construction shall extend on each side of the crossing until the normal distance from the water main to the sewer or drain line is at least ten feet.

b) Water Service Lines:

1) The horizontal and vertical separation between water service lines and all storm sewers, sanitary sewers, combined sewers or any drain or sewer service connection shall be the same as water main separation described in (a) above.

2) Water pipe described in (a) above shall be used for sewer service lines when minimum horizontal and vertical separation cannot be maintained.

c) Special Conditions - Alternate solutions shall be presented to the Agency when extreme topographical, geological or existing structural conditions make strict compliance with (a) and (b) above technically and economically impractical. Alternate solutions will be approved provided watertight construction structurally equivalent to approved water main material is proposed.

d) Water mains shall be separated from septic tanks, disposal fields and seepage beds by a minimum of 25 feet.

e) Water mains and water service lines shall be protected against entrance of hydrocarbons through diffusion through any material used in construction of the line.