**Section 370.340 Sewers in Relation to Streams**

a) Location of Sewers on Streams

1) Cover Depth

A) The top of all sewers entering or crossing streams shall be at a sufficient depth below the natural bottom of the stream bed to protect the sewer line. In general the following cover requirements must be met:

i) One foot of cover is required where the sewer is located in rock.

ii) Three feet of cover is required in other material. In major streams, more than three feet of cover may be required.

iii) In paved stream channels, the top of the sewer line should be placed below the bottom of the channel pavement.

B) Less cover will be approved only if the proposed sewer crossing will not interfere with the future improvements to the stream channel. Reasons for requesting less cover should be given in the project proposal.

2) Horizontal Location

Sewers located along streams shall be located outside of the stream bed and sufficiently removed therefrom to provide for future possible stream widening and to prevent pollution by siltation during construction.

3) Structures

The sewer outfalls, headwalls, manholes, gate boxes, or other structures shall be located so they do not interfere with the free discharge of flood flows of the stream.

4) Alignment

Sewers crossing streams should be designed to cross the stream as nearly perpendicular to the stream flow as possible and shall be designed without change in grade. Sewer systems shall be designed to minimize the number of stream crossings.

b) Construction

1) Materials and Backfill

A) Sewers entering or crossing streams shall be constructed of cast or ductile iron pipe with mechanical joints and shall be capable of absorbing pipe movement and joint-deflection while remaining intact and watertight.

B) The backfill used in the trench shall be coarse aggregate, gravel, or other materials which will not cause siltation, pipe damage during placement or chemical corrosion in place.

2) Siltation and Erosion

Construction methods that will minimize siltation and erosion shall be employed. The design engineer shall include in the project specifications the methods to be employed in the construction of sewers in or near streams to provide adequate control of siltation and erosion. Specifications shall require that cleanup, grading, seeding, and planting or restoration of all work areas shall begin immediately. Exposed areas shall not remain unprotected for more than seven days.

c) Aerial Crossings

1) Structural Support

Support shall be provided for all joints in pipes utilized for aerial crossings. The supports shall be designed to prevent frost heave, overturning and settlement.

2) Freeze and Expansion Protection

Protection against freezing shall be provided. This may be accomplished through the use of insulation and increased slope. Expansion jointing shall be provided between the aerial and buried sections of the sewer line.

3) Flood Clearance

For aerial stream crossings, the impact of flood waters and debris shall be considered. The bottom of the pipe should be placed no lower than the elevation of the 50 year flood.

d) Inverted Siphons

Inverted siphons shall have not less than 2 barrels, with a minimum pipe size of 6 inches and shall be provided with necessary appurtenances for convenient flushing and maintenance. Long radius fittings should be used. The inlet and outlet structures shall have adequate clearances for rodding; and in general, sufficient head shall be provided and pipe sizes selected to secure velocities of at least 3.0 feet per second for design average flows. The inlet and outlet structures shall be designed so that the design average flow is diverted to 1 barrel, and so that either barrel may be cut out of service for cleaning.

(Source: Amended at 21 Ill. Reg. 12444, effective August 28, 1997)