**Section 370.610 Screening Devices**

a) Bar Racks and Screens

1) Where Required

Screening of raw sewage shall be provided at all mechanical treatment works. For lift station applications, see Subpart D.

2) Design and Installation

A) Manually Cleaned Screens

Clear openings for manually cleaned screens between bars should be from 1 to 1 3/4 inches. Design and installation shall be such that they can be conveniently cleaned. An accessible platform shall be provided on which the operator may rake screenings easily and safely. Suitable drainage facilities with return flow to process shall be provided for the platform.

B) Mechanical Screens

Clear openings for mechanically cleaned screens may be as small as practical to assure the proper operation and maintenance of treatment facilities. Mechanical screens shall be located so as to be protected from freezing and to facilitate maintenance.

C) Velocities Through Screens

For manually or mechanically raked bar screens the maximum velocities during peak flow periods should not exceed 2.5 feet per second. The velocity shall be calculated from a vertical projection of the screen openings on the cross-sectional area between the invert of the channel and the flow line. Excessive head loss through the screen, which may affect upstream flow measurement or bypassing, shall be taken into account.

D) Invert

The screen channel invert shall be at least 3 inches below the invert of the incoming sewers. To prevent jetting action, the length and/or construction of the screen channel shall be adequate to reestablish hydraulic flow pattern following the drop in elevation.

E) Slope

Manually cleaned screens should be placed on a slope of 30 to 45 degrees with the horizontal.

3) Control Systems

A) Timing Devices

All mechanical units which are operated by timing devices should be provided with auxiliary controls which will set the cleaning mechanism in operation at predetermined high water marks.

B) Manual Override

Automatic controls shall be supplemented by a manual override.

C) Electrical Fixtures and Controls

Electrical fixtures and controls in enclosed places where gas may accumulate shall comply with the National Electrical Code requirements for Class I, Group D, Division I locations.

4) Disposal of Screenings

A) Amply-sized, vector-proof facilities shall be provided for removal, handling and storage of screenings in a sanitary manner. Suitable drainage facilities shall be provided for the storage areas with drainage returned to process. The return of ground screenings to the sewage flow is unacceptable.

B) Disposal shall be in accordance with 35 Ill. Adm. Code 700 and shall be discussed in the plan documents.

b) Auxiliary Screens

Where mechanically operated screening is used, auxiliary manually cleaned screens shall be provided. Design shall include provisions for automatic diversion of the entire sewage flow through the auxiliary screens should the regular units fail. Refer to subsection (a)(2).

c) Fine Screens

Fine screens may be used in lieu of primary sedimentation providing that subsequent treatment units are designed on the basis of anticipated screen performance. Fine screens should not be considered equivalent to primary sedimentation. Where fine screens are used, additional removal of floatable oils and greases shall be provided if they will adversely affect the function of downstream treatment units.

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