**Section 370.220 Detailed Engineering Plan Drawings Format**

a) General

 Detail plans shall contain as necessary, the following:

1) Plan views.

2) Elevations.

3) Sections and supplementary views which, together with the specifications and general layouts, facilitate construction of the works.

4) Dimensions and relative elevations of structures.

5) Location and outline form of equipment.

6) Location and sizing of piping.

7) Water levels.

8) Ground elevations.

9) Location and identification of all private and public water supply wells (refer to Section 370.210(b)(8)), structures and facilities (refer to Section 370.350(b)(1)(A)).

10) Descriptive notations as necessary for clarity.

b) Plans of Sewers

1) General Plan

 Except as provided in subsection (b)(1)(C) below, a comprehensive plan of the existing and proposed sewers shall be submitted for projects involving new sewer systems or substantial additions to existing systems. This plan shall show the following:

A) Geographical Features

i) Topography and elevations: Existing or proposed streets and all streams or water surfaces shall be clearly shown. Contour lines at suitable intervals should be included.

ii) Streams: The direction of flow in all streams, and high and low water elevations of all water surfaces at sewer outlets and overflows shall be shown.

iii) Boundaries: The boundary lines of the municipality and the sewer district or area to be sewered shall be shown.

B) Sewers

 The plan shall show the location, size and direction of flow of all existing and proposed sanitary and combined sewers draining to the treatment works concerned.

C) Sewer Atlas

 The comprehensive plan of the existing sewers described above need not be submitted in each case if the system owner has furnished the Agency a copy of its sewer atlas showing the information required by subsection (b)(1). The project submittal, however, must include all the proposed work, and must be accompanied by a location map showing the proposed project and the route of the outlet sewer to the receiving plant, where necessary.

2) Detail Plans

 Detail plans shall be submitted. Profiles should have a horizontal scale of not more than 100 feet to the inch and a vertical scale of not more than 10 feet to the inch. Plan views should be drawn to a corresponding horizontal scale. Plans and profiles shall show:

A) Location of streets and sewers.

B) Line of ground surface, size, material and type of pipe, length between manholes, invert and surface elevation at each manhole, and grade of sewer between each two adjacent manholes. All manholes shall be numbered on the plan and correspondingly numbered on the profile.

C) Except where overhead sewers are required by local ordinance, if there is any question of the sewer being sufficiently deep to serve any residence, the elevation and location of the basement floor shall be plotted on the profile of the sewer which is to serve the house in question. The engineer shall state that all sewers are sufficiently deep to serve adjacent basements except where otherwise noted on the plans.

D) Locations of all special features such as inverted siphons, concrete encasements, elevated sewers, etc.

E) All known existing structures both above and below ground which might interfere with the proposed construction, particularly water mains, gas mains, storm drains, etc.

F) Special detail drawings, made to a scale to clearly show the nature of the design, shall be furnished to show the following particulars:

i) All stream crossings and sewer outlets, with elevations of the stream bed and of normal and extreme high and low water levels.

ii) Cross sections and details of all special or non standard joints.

iii) Details of all sewer appurtenances such as manholes, lampholes, inspection chambers, inverted siphons, regulators, tide gates and elevated sewers.

c) Plans of Sewage Pumping Stations

1) Location Plan

 A plan shall be submitted for projects involving construction or revision of pumping stations. This plan shall show the following:

A) The location and extent of the tributary area.

B) Any municipal boundaries within the tributary area.

C) The location of the pumping station and force main.

2) Detail Plan

 Detail plans shall be submitted showing the following where applicable:

A) Grading plan of the station site.

B) Location of existing pumping station.

C) Proposed pumping station, including provisions for installation of future pumps or ejectors.

D) Elevation of high flood water at the site, and maximum elevation of sewage in the collection system upon occasion of power failure, and the pumping station elevations.

E) Test borings and groundwater elevations.

F) Force main routing and profile.

d) Plans of Sewage Treatment Plants

1) Location Plan

A) A plan shall be submitted showing the sewage treatment plant in relation to the remainder of the system.

B) Sufficient topographic features shall be included to indicate its location with relation to streams and the point of discharge of treated effluent.

C) All residences within one-half mile of the site shall be shown.

2) General Layout

 Layouts of the proposed sewage treatment plant shall be submitted, showing:

A) Topography of the site.

B) Size and location of plant structures.

C) Schematic flow diagram showing the flow through various plant units.

D) Piping, including any arrangements for by-passing individual units. Materials handled and direction of flow through pipes shall be shown.

E) Test borings and expected range of ground water elevations.

3) Detail Plans

 Detail plans shall show the following:

A) Location, dimensions and elevations of all existing and proposed plant facilities, including flood protection structures where applicable.

B) Elevations of high and low water levels of the body of water to which the plant effluent is to be discharged.

C) Type, size, pertinent features, and manufacturer's rated capacity of all pumps, blowers, motors and other mechanical devices.

D) Hydraulic profiles of the treatment plant at design peak flow including recirculated flows at the 25-year flood elevation in the receiving watercourse. To ensure their proper functioning, the hydraulic profile at measuring devices at minimum flow shall be shown.

E) Hydraulic profiles shall be shown for supernatant liquor lines, recirculating flow piping and sludge transfer lines at the design peak flows carried by each system.

F) Adequate description of any features not otherwise covered by specifications or engineer's report.

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