

Elgin O'Hare – West Bypass: Pump Stations

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Purpose

The purpose is to identify locations of proposed subways and determine the need for pump stations. Stormwater pump stations are necessary to remove stormwater from highway sections that cannot be drained by gravity. Because of high costs and potential problems with pumps stations, their use is limited to where other systems are not feasible.

Design Criteria

- The design frequency for pump stations shall be a 50-year flood frequency.
- The Hydraulic Grade Line at the 50-year flood frequency shall have 2 feet of freeboard below the top of the inlet.
- The design frequency for storm sewers draining the subways also shall be a 50-year flood frequency.
- Inlet spacing for the subway shall be determined based on a 50-year rainfall intensity.
- Access Road profile and floor elevation of the proposed pump station shall not be below the 100-year flood elevation.

Proposed Subway Conditions

North Connection York Road Option D proposes a mainline subway under the Canadian Pacific and Union Pacific Railroad lines near the intersection of Devon Avenue. This is the only North Connection with a proposed subway condition. North Connection IL-83 Option B does not integrate an underpass into the proposed design.

There are no proposed subway conditions along the Elgin O'Hare extension between Gary Avenue and Thomas Avenue. However, when there is a proposed expressway along York Road, as in Alternative 203, there are three proposed subway conditions within the interchange. First, two ramps from the southbound bypass from I-90 are below grade under York Road and outlet to westbound Elgin O'Hare near the existing Miller Fluid Power Corp. building. The pumping of these two ramps can be performed with one pump station since these two ramps have a total of three traffic lanes and are located particularly close together. The second pump station is required for a ramp with two traffic lanes that directs westbound Elgin O'Hare traffic onto the northbound bypass towards Interstate 90. This ramp's subway condition is located near the Sivert Court and York Road intersection.

Proposed South Connection Options A through D incorporate a mainline subway under the Canadian Pacific Railroad line near Green Street in the Village of Bensenville. The location

of this underpass is the same for all four of these connections. This underpass is not located in a floodplain.

Potential Pump Stations and Sites

Table 1 shows the pump station needs for each alternative.

TABLE 1
Required Pump Stations

	202	203	401	402	403	404	501
North Connections							
West Bypass (Thorndale to I-90)		1				1	
Elgin O'Hare Extension & Interchange							
System Interchange at York Road		2				3	
South Connections							
West Bypass (Thorndale to I-294)	1	1	1	1	1		
Totals	1	4	1	1	1	4	0

North Connections

The pump station for the subway condition under the railroad corridor near Devon Avenue will be located in the area of land between York Road, south of the proposed ramp to Devon Avenue, and west of southbound mainline bypass lanes in Elk Grove Village. An analysis of the Rogers Industrial Park drainage plan shall be performed to determine the relocation of an existing detention pond and whether this pump station is able to outlet to this pond.

Elgin O'Hare Extension and Interchange

The potential pump station for a ramp directing westbound Elgin O'Hare traffic onto the northbound bypass towards I-90 may be installed at the open field immediately south of Sivert Court in the Village of Bensenville.

Subways of two ramps from the southbound bypass from I-90 will also require a pump station. The potential pump station site may be at the open field between Pan Am Drive and Supreme Drive on the west side of York Road.

Alternative 404 will require an additional pump station at the system interchange due to a dual subway condition. A proposed ramp passes underneath another proposed subway. Due to the depth of this dual level underpass, a separate pump station is required.

South Connections

The pump station for the subway condition under Canadian Pacific Railroad near Green Street may be located on the south side of the proposed bypass to Interstate 294 to facilitate in the eventual drainage to Addison Creek, located to the south in the Village of Bensenville.