

**TITLE 18. ENVIRONMENTAL QUALITY**  
**CHAPTER 9. DEPARTMENT OF ENVIRONMENTAL QUALITY**  
**ARTICLE 3. AQUIFER PROTECTION PERMITS**  
**PART E. TYPE 4 GENERAL PERMITS**

**R18-9-E301. 4.01 General Permit: Sewage Collection Systems**

- D. Design requirements.
4. Force mains. An applicant may install a force main if it meets the following design, installation, and testing requirements. The applicant shall:
    - a. Design force mains to maintain a minimum flow velocity of 3 feet per second and a maximum flow velocity of 7 feet per second. The applicant may design for sustained periods of flow above 7 feet per second, if the applicant justifies the design using the process specified in R18-9-A312(G);
    - b. Ensure that force mains have the appropriate valves and controls required to prevent drainback to the lift station. If drainback is necessary during cold weather to prevent freezing, the control system may allow manual or automatic drainback;
    - c. Incorporate air release valves or other appropriate components in force mains at all high points along the line to eliminate air accumulation. If engineering calculations provided by the applicant demonstrate that air will not accumulate in a given high point under typical flow conditions, the Department shall waive the requirement for an air release valve;
    - d. Design restrained joints or thrust blocks on force mains to accommodate water hammer, surge control, and to prevent excessive movement of the force main. Submitted construction plans shall show restrained joint or thrust block locations and details;
    - e. If a force main is proposed to discharge directly to a sewage treatment facility without entering a flow equalization basin, include in the Notice of Intent to Discharge a statement from the owner or operator of the sewage treatment facility that the design is acceptable;
    - f. Design a force main to withstand a pressure of 50 pounds per square inch or more above the design working pressure for two hours and test upon completion to ensure no leakage;
    - g. Supply flow to a force main using a lift station that meets the requirements of subsection (D)(5); and
    - h. Ensure that force mains are designed to control odor.