

Each main pump shall have equal capacity and be of the same make and type.

Low capacity pump should be used as the first to switch on when using a small number of large capacity pumps. This pump is not part of the sequencing that follows.

## 6.4. Pumping Station Arrangement

### 6.4.1. Suction and Discharge Pipework

Design of the suction piping shall follow ANSI/HI 9.8 Pump Intake Design standard and selected pump manufacturer recommendations.

In addition the following suction piping recommendations shall be considered by the Consultant:

Design Element	Consideration
Direct connection of the pipe fittings to pump nozzle shall be avoided since.	Pipe fitting cause uneven flow patterns
The short radius elbows shall be avoided	Always use long radius elbows where possible
Suction piping approaching to pump should be straight with length from 5D to 10D	Ideally, length of the suction pipe should be 10D. (10D rule is not always applicable due to construction / economic limitations)
Pump inlet piping shall be designed and installed to provide smooth and even flow	Introduction of the suction bell is recommended. Suction bell shall reduce frictional losses and approach mean velocity
The eccentric reducer in flat to the top position should be used when a pipe size transition is required	Connection of the large pipe to pump suction
Installation of foot valves shall be avoided	
Gate valves shall be used as shut off valves	
Minimum pumping velocity shall be sufficient to avoid clogging of the suction line due to presence of the solids in the water	
Anchorage of the suction piping should be near to the pumps and in the same time piping arrangement should ensure easy removal of the pump	Misalignment of the suction piping can cause excessive loads at pump nozzle. The contraction/ expansion of the suction piping should be reduced on the acceptable level
The suction line size shall never be smaller than suction nozzle size	

**Table 6-3 - Suction Piping Design Considerations**