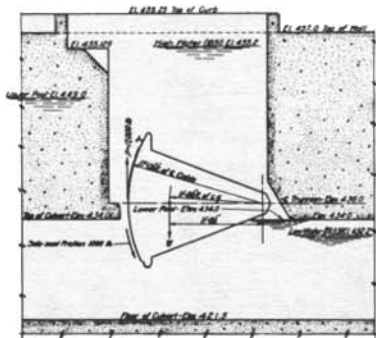


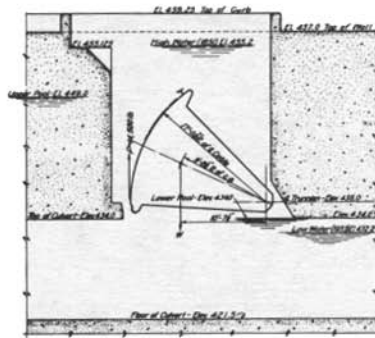
VALVE CLOSED

$P=48,000$ lb. - Pull required to crest valve, which includes sub and friction and residual friction friction, due to Water Pressure and dead weight



VALVE HORIZONTAL

$P=17,000$ lb. - Pull required to raise valve, which includes sub and friction and friction friction due to dead weight
 W - Dead Weight - 23,000 lb.



VALVE FULLY OPEN

$P=14,000$ lb. - Pull due to dead weight of valve

Time required to open valve if handle