

# Force Main & Piping Design

## John Street Feasibility Design Analysis Report

Off-Site Force Main Data	
Design Pump Rate (gpm) =	4039
Select Force Main Size (in) =	24
Velocity (fps) =	2.86
<i>Meets Minimum Velocity Requirement?</i>	<b>OK</b>
<i>Meets Maximum Velocity Requirement?</i>	<b>OK</b>
<i>Required Pump?</i>	<b>Use Non-Clog Pump</b>
Line Length (ft) =	1,200
Account for Minor Losses =	5%
Equiv Length (ft) =	1,260

Connection Point:	<b>24" Force Main @ John Street Pump Station Pond</b>
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Pump Station Piping Data			
Design Pump Rate (gpm) =		4039	
Pick Wet Well & Valve Vault Piping Size (in) =		24	
Velocity (fps) =		2.86	
<i>Meets Minimum Velocity Requirement?</i>		<b>OK &gt; 2 FPS</b>	
<i>Meets Maximum Velocity Requirement?</i>		<b>OK &lt; 8 FPS</b>	
Item	Number of Fittings	L/D Ratio	Equivalent Length
45 bend	2	16	64.00
90 bend	4	30	240.00
22.5 bend	1	9	18.00
Branch Tee Flow	1	60	120.00
Check valve	1	135	270.00
Plug Valve	1	17	34.00
			0.00
			0.00
			0.00
Equivalent Fitting Length (ft) =		746	
Wet Well & Valve Vault Piping Length (ft) =		20	
Total Equivalent Pump Station Pipe Length (ft) =		766	
Equivalent Off-Site Diameter Length (ft) =		766	
<b>Total Equivalent Force Main Length (ft) =</b>		<b>2026</b>	