

# WATER SUPPLY UPGRADE FOR FACTORY

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## INTRODUCTION

Water supply refers to the provision of water, often through a network of pipes or pumps to meet the needs of specific areas, communities, or facilities. In the realm of industrial development, factories rely significantly on a consistent, reliable, and robust water supply. However, over time, aging and undersized water supply pipes can restrict the flow, delaying efficiency, productivity, and profitability. Upgrading the water supply pipes within factory premises emerges as a critical measure to guarantee efficient and consistent water distribution in industrial settings. Choosing the correct pipe size for the building's water supply system is crucial for its efficient operation. Besides, proper diameters ensure the delivery of sufficient water to meet the demands of machinery, production lines, sanitation facilities, and maintain consistent pressure throughout the building. The execution of pipe upgrades necessitates to fulfill the increasing demands of industrial production and ensuring a constant water supply for optimal functionality.

## IDENTIFYING THE NEEDS FOR UPGRADING PIPE SIZE

Several factors impact the need to upgrade pipe size, with the following key examples illustrating considerations:

- **System Efficiency and Performance**  
The assessment of the system efficiency and performance of the current pipe use is crucial to minimize wastage and optimize energy consumption. It is crucial to assess whether the existing pipe size is contributing to any inefficiencies that may have a negative impact on the overall performance of the water supply system. By identifying these needs for upgrading pipe size, we can ensure system efficiency and improve performance.
- **Extension Plans**  
Considering for extension of buildings development necessitate in incremental water demands, to ensure the water supply can accommodate of expansion. It is crucial to ensure that the upgraded pipe system can accommodate growth of expansion by considering the factory's foreseeable development and water demands in the upcoming years. By doing so, we can ensure that the new pipe size will be able to meet the future needs of the factory.
- **Flow Rate Analysis**  
If the current pipes face difficulty in providing the required flow rate at the appropriate pressure for all equipment and processes, upgrades should be considered. It is important to identify periods of peak water demand, such as specific production phases or optimum equipment operations, to ensure adequate flow during peak times. Evaluating the necessary flow rate for the factory's operations considering both peak demand and usage is crucial to confirm that the new upgrading pipe size can adequately support the required water flow rate of the factory building.

## FLOW PROCESS IN FACTORY PIPE UPGRADES

1. **Technical Information Application**  
The application is purposely to obtain WDL's acknowledgement of the new development water demand. The preliminary information provides the size of pipe and material of pipe at the tapping source, the location of where such pipe/tapping source can be found, or any other limitation or technical requirement specific to the proposed project.
2. **Water Pressure Test**  
The water pressure test is conducted to obtain pressure head and tapping source information from WDL for subsequent water reticulation design. The pipe material and size of tapping source should be as indicated in the pressure test result issued by WDL.

### 3. Design Stage

The engineer prepares detailed drawings and specifications for the upgraded water supply system. These drawings outline the materials, layout, and connections, incorporating as-built drawings of the existing system for accuracy.

### 4. Design Submission

Water reticulation design require approval from WDL prior to commencement of site water reticulation work. The endorsed approval plan shall include letter and drawings.

### 5. Material Inspection

The Submitting Person (SP) shall invite WDL to inspect purchased material (by contractor) and delivered pipes and fittings stored on site prior to their installation. Pipe material and fittings must possess valid SPAN certificates and the delivery order of purchased material has to be submitted to WDL officer before inspection. The inspection will be witnessed by WDL Officer, SP's representative, and contractor.

### 6. Pressure & Leakage Test

Pressure & Leakage test is required for newly constructed external reticulation main and communication pipe. Hydrostatic pressure is applied, and any detected leakage must be rectified until the test is successful. Pressure Test and leakage test report need to be submitted to WDL after inspection.

### 7. Flushing and Disinfection Test

Flushing and Disinfection Test is required on newly constructed external reticulation main and communication pipe. Before being put into service, newly constructed pipes shall undergo flushing with potable water followed by disinfection. Water samples are collected for subsequent laboratory testing to identify residual contaminants within the tested section, with the test report submitted to WDL for approval.

### 8. Final Inspection

Upon satisfactory final inspection by WDL, all completed pipe sections upstream of the water meter are surrendered for future maintenance. Final inspection includes verifying the construction such as the meter stand, alignment, position, dimensions, and fittings. Once approved, WDL issues a support letter for the project's Certificate of Completion and Compliance (CCC) issuance.

## CONCLUSION

In conclusion, upgrading a factory's water supply pipes is crucial to ensure efficient and consistent water distribution, which is vital for successful industrial operations. By implementing proper planning and execution, the factory can establish well-functioning water distribution system that meet the increasing operating demands and minimize potential disruptions. Prioritizing such improvements is key to fostering a resilient and high-performing industrial environment.

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