

DESIGNING HYGIENIC DRAINAGE SYSTEMS

5 Essential Strategies to Prevent Contamination



1. Choosing the Right Design Solution

01 Drain Type Optimization

Select trench, slot, or point drains based on the facility's specific water discharge and cleaning needs

Ensure fully welded joints and rounded edges to prevent bacterial harborage points

02 Hygienic Construction

Load-Bearing Capacity 03

Choose heavy-duty drain covers capable of withstanding equipment loads and traffic stress

Size drains based on peak water usage, preventing backflow and pooling that can harbor bacteria

High-Capacity Flow Design 04



2. Drainage System Integration

01 Seamless Floor-to-Drain Transitions

Ensure flush installation with coved edges to prevent debris accumulation and cleaning difficulties

Separate drainage systems for raw, processed, and wastewater areas to avoid cross-contamination

02 Zoning for Food Safety



Sloped Flooring Design 03

Maintain a 1-2% gradient towards drains to eliminate standing water and microbial growth

Install non-return valves and air gaps to stop wastewater from contaminating clean areas

Backflow Prevention 04

3. Sufficient Drainage Flow Capacity

01 Hydraulic Load Calculations

Perform flow modeling simulations to design an efficient drainage system

Use gravity-assisted slopes to minimize stagnant water and microbial buildup

02 Self-Draining Pipe Design

Ventilation & Pressure Equalization 03

Ensure proper air vents in drainpipes to maintain optimal flow rates

Conduct regular drain performance checks to detect and resolve potential blockages

Periodic Flow Testing 04



4. Wastewater Management

01 Pre-Treatment Systems

Use grease traps, sediment filters, and strainers to prevent solid waste from entering drainage pipes

Install pH, turbidity, and contamination sensors for real-time water quality analysis

02 Automated Wastewater Monitoring



Sustainable Water Recycling 03

Implement filtration and separation technologies to enable reuse of process water

Ensure proper neutralization and dilution of caustic cleaning agents before disposal

Chemical Waste Control 04

5. Cleaning Effectiveness

01 Hygienic Drain Design

Use rounded corners, seamless joints, and sloped channels to facilitate easy cleaning

Implement self-cleaning drainage systems with CIP-compatible spray nozzles

02 Automated Cleaning Solutions



High-Pressure Jet Cleaning 03

Utilize hot water or steam-based washdowns to remove fat, protein, and bacterial residues

Apply sanitizing agents and UV disinfection in high-risk drainage areas

Biofilm & Pathogen Control 04

OUR EXPERTISE

- PMG Engineering delivers end-to-end engineering design and project management services for the food manufacturing facilities globally
- We contribute to the successful development and implementation of Drainage and Sewage
- Our involvement ensures that the Drainage and Sewage Layout supports effective wastewater management, stormwater drainage, and sewage disposal while meeting regulatory requirements and contributing to the overall success

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ABOUT PMG

BUILD **WORLD CLASS** FOOD FACTORIES

At PMG, we offer complete solutions from design to commissioning, specializing in food factory construction that meets global standards.

NEW DESIGN

EXPAND

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CORE VALUES

Safe-by-Choice

Objectivity

First-time Quality

Ownership

Maximize Value

Reliable & Trustworthy Business

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