15.4.1 AASTMT Guidelines

2023–2024

الأكاديمية العربية للعلوم والتكنولوجيا والنقل البحري
Arab Academy for Science, Technology & Maritime Transport

AASTMT Standards and Guidelines for Discharge of Waste Water-updated guidelines (2025 Reviewed) "A Supplementary Report to the Institutional Policy"

Brief Description

This document is a thorough framework for regulating rainwater and wastewater outflow. In order to provide ecologically responsible water management throughout campus facilities, it provides system specifications, sustainability-focused solutions, combining system functionality with SDG-aligned practices to minimize environmental impact.

System Description

Effective water management is crucial to AASTMT's commitment to sustainability and achieving SDG 15. The sewage plant and rainwater system at Abu-Qir, Alexandria, is designed to handle wastewater and rainwater from specified areas, excluding student housing, hotels, presidential buildings, and restaurants.

The Drainage Network

Extending between these buildings and reaches the wastewater and rainwater collection pit located behind the buildings of the College of Architecture and Computers. Through a slope line with a diameter of (12 inches) and the current cesspool with dimensions of (2 x 2 meters).

Sump Specifications

- **Dimensions:** The main sump has a 12-inch diameter and measures approximately 2x2 meters.
- **Storage Capacity:** With an effective storage capacity of around 12 cubic meters, the sump can handle high inflows during peak times and heavy rain events.

Pump Room Specifications

Submersible Pumps

- **Quantity:** Two submersible pumps by EBARA.

- **Horsepower:** Each pump operates at 10 horsepower.
- **Flow Rate:** Discharges water at 60-70 cubic meters per hour.
- **Self-Priming Horizontal Dry Pumps:**
- **Quantity:** Two additional Siemens dry pumps, each with 15 horsepower, offering self-priming capabilities and reliable backup.

Battery and Valve Configuration

- **Battery System:** Features five outlets, each 12 inches in diameter, providing flexibility in discharge regulation.
- **Valves:**
- **Check and Shut-off Valves:** Include four 4-inch and one 6-inch check valves, and a matching set of shut-off valves, allowing for precise flow control and isolation during maintenance.

Control Room and Electrical Panels

- **Control Panels:** Two electrical control panels manage pump operations and discharge flow, ensuring optimized, safe operations.
- **Backup and Monitoring:** Redundant control mechanisms minimize the risk of overflow or discharge issues, promoting reliability.

Wastewater Network and Outflow Connections

- **Pipeline Dimensions:** The network starts with a 12-inch diameter line tapering to an 8-inch diameter before connecting to the main external discharge line.
- **External Discharge Line:** Wastewater is channeled to an external drainage system, aligning with local standards for safe water discharge.

Illustrative Pictures of the Station

Pump Room


The battery and the Field


Control Room

Valves

Control and Monitoring System

- **Control Room:** Houses two electrical control panels that manage pump operations, discharge flow, and real-time system monitoring.
- **Redundant Systems:** The dual control panel setup ensures that, in the event of a failure, one panel will maintain functionality to prevent overflow or other discharge issues.
- **Pressurized Outflow:** The discharge line begins with an 8-inch diameter that transitions to 12 inches, connected to the main external drainage line. This configuration supports continuous pressure to facilitate wastewater movement and ensure compliance with local drainage standards.
- **Contract** with company (workers and Plumbers) that is contracted and is selected from among a group of companies in order to carry out cleaning and disinfection work for all the pump rooms on a daily basis to ensure that no blockage occurs in the pipes that could lead to leakage.

Water Conscious building Standards

AASTMT operates in full alignment with the Egyptian national building and environmental standards, ensuring that all construction and operational activities meet regulatory requirements for sustainable resource management. Compliance with the Egyptian Code of Sanitary Installations in Buildings guarantees the safe design and maintenance of plumbing systems, ensuring effective water distribution and wastewater disposal to protect public health. Furthermore, adherence to Law No. 202 of 2020 on Waste Management and Resolution No. 44 of 2000 on Liquid Waste Disposal reinforces AASTMT's commitment to reducing water pollution, preventing hazardous discharges, and promoting environmentally sound waste management practices. These integrated measures reflect AASTMT's scientific and institutional dedication to sustainability, environmental protection, and the achievement of national and global objectives, particularly those aligned with SDG 6 (Clean Water and Sanitation), SDG 11 (Sustainable Cities and Communities), and SDG 13 (Climate Action).

Operational Guidelines and Maintenance Standards

- **Routine Inspections:** Conduct bi-annual inspections of sump, pump room, and valve configurations to ensure optimal performance and compliance with safety and environmental standards.
- **Discharge Quality Monitoring:** Regular testing of discharge water for pH, turbidity, and pollutant levels to ensure alignment with environmental regulations.
- **Seasonal Adjustments:** Adjust discharge operations based on seasonal rainfall patterns, aiming to prevent overflow and maintain a balanced ecosystem impact.
- **Emergency Protocols:** the design of two electrical control panels manages pump operations and discharge flow, ensuring optimized, safe operations.
- **Develop response plans** in case of pump failure or overflow events, including staff training on spill containment and mitigation measures.

- **Stakeholder Engagement:** Regular workshops and collaborations with environmental organizations to promote sustainable water practices and utility company Abu Qir Ash Sharqiyah, Alexandria.

Validation

	Validation criteria	Validation method	Frequency
System capacity	Sump must handle up to 12 cubic meters.	Capacity Test	Bi-annual
Pump flow rate	Each pump should discharge 60-70 cubic meters per hour.	Flow Rate Test	Monthly
Battery and valve configuration	Check valves and shut-off valves should operate smoothly and regulate discharge effectively.	Functional check	Monthly
Control panel operation	Control panels must manage discharge flow and respond to real-time system monitoring.	Operation test	quarterly
Discharge water quality	Water should meet pH, turbidity, and pollutant standards.	Quality Testing (Lab Analysis)	Monthly
Routine maintenance	Routine Maintenance Bi-annual inspection of sump, pump room, and valves must be conducted.	Visual and Functional Inspection	Bi-annual

Responsibility

Task	Responsible party	Role
Daily Cleaning and Disinfection	Contracted Company (Workers & Plumbers)	Ensure pipes are clear to prevent blockage.
System Monitoring	Control Room Operators	Monitor pump operations and discharge flow
Routine Inspections	AASTMT Maintenance Team	Conduct bi-annual inspections.
Authorization and Oversight	AASTMT Facilities Management & Maintenance Team	Oversee system authorization and compliance.
Stakeholder Engagement Workshops	SDG 6 and 15 officers	Coordinate with environmental organizations

A Review Program

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Supplementary Report to the AASTMT's Standards and Guidelines for Discharge of Wastewater

Introduction

The Arab Academy for Science, Technology, and Maritime Transport (AASTMT) is committed to safeguarding water resources and ensuring that its campuses adhere to the highest environmental and governmental standards. In compliance with Egyptian regulations, AASTMT follows a comprehensive framework for water discharge and wastewater management that prevents pollution, ensures separation of potable and wastewater systems, and guarantees safe disposal of hazardous waste.

Compliance with Egyptian Regulations

AASTMT aligns its water management systems with Egyptian governmental authority regulations to prevent polluted water from entering natural watercourses. The framework reflects both mandatory national standards and international best practices:

- **Wastewater Discharge:** All wastewater is directed to a governmental treatment plant through a centralized sewage collection system available at each campus. This system is connected to the public utility treatment company of the respective city, ensuring that all wastewater is treated according to nationally accepted levels.
- **Waste Management Compliance:** AASTMT applies building standards aligned with the Egyptian Standard for Waste Disposal, which sets strict rules for sustainable wastewater disposal and prevents contamination of surface or groundwater resources.
- **Environmental Law Compliance:** AASTMT adheres to Law No. 6/2009 and Law No. 9/1982 for hazardous waste management and environmental protection.

كود 102 | كود الشبكات | 2010الكود المصري لأسس التصميم وشروط التنفيذ

لخطوط المواسير المستخدمة في شبكات

مياة الشرب والصرف الصحي

Code 102 | Egyptian Code for the Design and Implementation of Drinking Water and Sewage Networks | 2010
AASTMT Compliance with Egyptian Regulations on AASTMT webpage

Framework for Separation of Potable and Wastewater

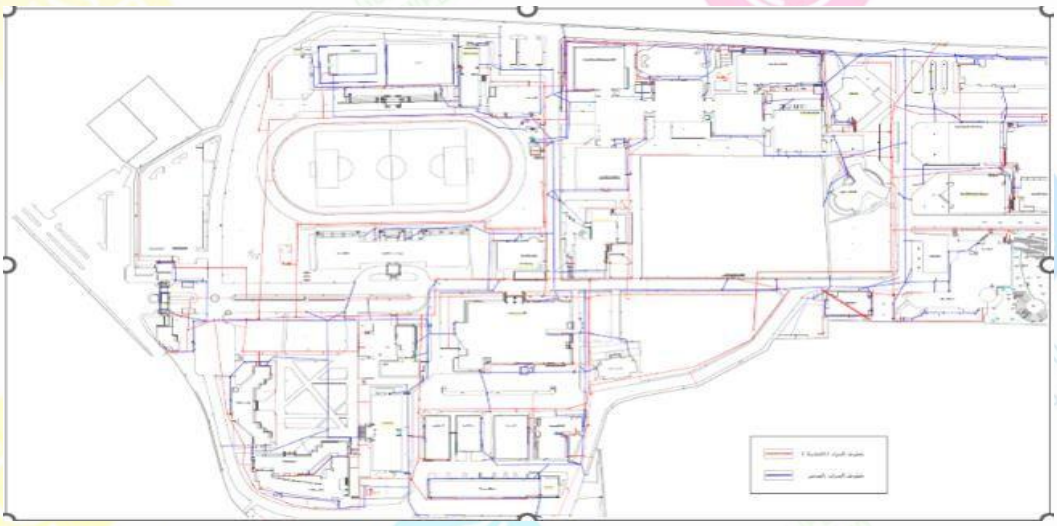
AASTMT strictly enforces the Egyptian Code 102 (2010) for the Design and Implementation of Drinking Water and Wastewater Networks, ensuring safe separation of potable water from wastewater systems:

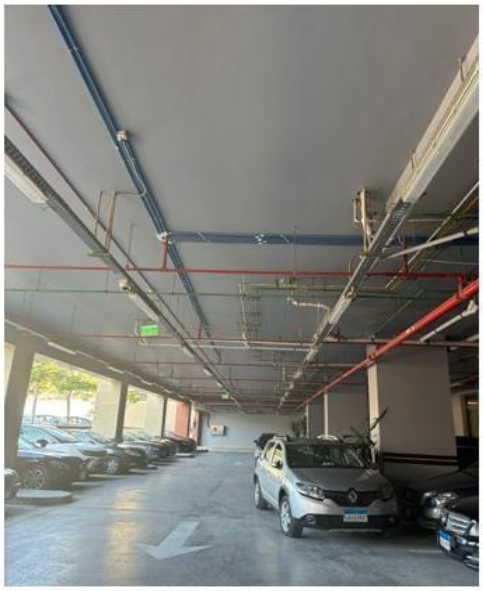
- **Dual Pipeline Systems**: Distinct pipelines are used for potable water and wastewater

across all facilities, preventing cross-contamination.

- **Backflow Prevention Devices**: Installed and regularly maintained to prevent wastewater re-entering potable systems.
- **Routine Inspections and Audits**: Regular inspections cover potable water pipes, wastewater lines, valves, sewage manholes, rain gutters, and building roofs.
- **Water Storage and Supply Safety**: Potable water is stored in separate tanks isolated from sewage lines, with designated monitoring systems to ensure supply safety.
- **Redundant Monitoring and Control:** Wastewater systems are equipped with backup control panels that prevent overflow or accidental discharge in case of failure.

Visual plans and schematics at AASTMT illustrate potable (red) and wastewater (blue) pipelines, ensuring clarity and compliance. Laboratory systems also demonstrate color-coded separation (green for potable water, grey for drainage).





AASTMT applies building standards for separation of potable water and wastewater

AASTMT Framework for Separation of Potable and Wastewater on AASTMT webpage

AASTMT's Wastewater Treatment

AASTMT's wastewater management approach demonstrates full compliance with national environmental standards and guidelines, as all wastewater is directed to government-operated treatment facilities in accordance with Egyptian Standard No. 44 (2000) and Law No. 93 (1962). This ensures that all treated effluents meet the required discharge standards for environmental protection. By integrating these regulatory frameworks into its institutional sustainability policy, AASTMT reinforces its commitment to responsible wastewater management, environmental stewardship, and active contribution to SDG 6 (Clean Water and Sanitation) and SDG 13 (Climate Action).

AASTMT Executive Regulation of the Law No.93 of 1962 as amended by Decree No.44 of 2000.
AASTMT Wastewater Treatment

Laboratory Waste Management Framework

AASTMT implements a **comprehensive hazardous waste disposal system** to protect water quality from laboratory pollutants:

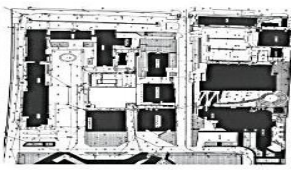
- **Waste Collection and Storage**: Laboratory waste is segregated into chemical and biological waste streams and temporarily stored in controlled campus facilities.
- **Certified Disposal**: Disposal is conducted twice weekly by Nahdet Misr, a certified company, under contracts adhering to Egyptian hazardous waste laws.
- **Safe Disposal Sites**: Wastes are transferred to the Alexandria Governorate Hazardous Waste Management facility, ensuring safe treatment and disposal.
- **Regulatory Compliance**: Laboratory waste management is governed by Egyptian legislation and aligned with international biosafety protocols.

This system prevents harmful chemicals, biological agents, and pollutants from contaminating water sources.


Nahdet Misr disposal of wastes into Alexandria Governorate Hazardous Waste Management (Naseria)


Wastes separation


Checkup checklist for all pipes and sanitation


Plan with location of inspection points

AASTMT's Environmental Standards and Certifications

AASTMT integrates its water discharge framework into broader environmental management standards, including:

- **ISO 14001 Certification**: Establishes a systematic framework for managing environmental responsibilities.
- **Consumption and Recycling Policy**: Reduces waste production and promotes sustainable use of resources.
- **Life Policy and Water Usage Practices**: Educates stakeholders on conserving water and minimizing pollution.
- **Workshops and Training**: AASTMT regularly organizes wastewater treatment workshops and awareness campaigns with students, staff, and local communities.

Awareness and Community Engagement

AASTMT reinforces its technical standards with awareness initiatives, funded projects, and stakeholder workshops:

- **Wastewater Treatment Awareness**: Campaigns and funded projects spread knowledge about the importance of safe wastewater management.
- **Workshops with Stakeholders**: Collaborative programs involve local communities, municipalities, and governmental authorities.
- **Scientific Research and Innovation**: AASTMT faculty and students contribute to research on wastewater treatment, green infrastructure, and sustainable campus operations.

AASTMT Preventing water system pollution on AASTMT webpage