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NATIONAL IRANIAN OIL REFINING & DISTRIBUTION COMPANY
NATIONAL IRANIAN OIL ENGINEERING
& CONSTRUCTION COMPANY

NIOEC SP

NIOEC SPECIFICATION
FOR
BUILDING PIPING

SECOND EDITION

JUNE, 2017

THIS SPECIFICATION IS THE PROPERTY OF NATIONAL IRANIAN OIL ENGINEERING & CONSTRUCTION COMPANY. IT IS CONFIDENTIAL AND ALL RIGHTS RESERVED TO THE OWNER. NEITHER WHOLE NOR ANY PART OF THIS DOCUMENT MAY BE DISCLOSED TO ANY THIRD PARTY, REPRODUCED OR STORED IN ANY RETRIEVAL SYSTEM OR TRANSMITTED IN ANY FORM OR BY ANY MEANS WITHOUT THE PRIOR WRITTEN CONSENT OF THE NATIONAL IRANIAN OIL ENGINEERING & CONSTRUCTION COMPANY.

IN THE NAME OF GOD**FOREWORD**

By their very nature, technical Specifications are continuously subject to modifications and revisions. To strengthen their merit and usefulness, continuous improvements, addendum, deletion of disparate information and consequently provision of updated revisions are to be made in order to ascertain that such Specifications meet the current requirements, inclusive of Iranian Petroleum Standards (IPS) and the recognized and acceptable national and international Standards, as well as the optimal codes and practices based on the accumulated in-house know-how and plant knowledge and experiences.

However, in reality, due to several reasons, not to mention the complexity of the matter, the ultimate goal of continuous direct embedment of the required changes on the relevant Specifications may be far reaching. Therefore, in the interim periods between the officially issued revisions, the required changes will appear in other documents related to the engineering and design work of the ongoing projects.

In response to the initiative of the Design and Engineering Directorate, and considering that the task of the execution of several important and mega projects for the realization of the new oil refineries, pipelines and oil terminals as well as improvements of the existing facilities, has been assigned to NIOEC, it was decided to update the NIOEC Specifications and to issue new official revisions.

The Design and Engineering Directorate was itself entrusted to carry out this important task, and as such by forming several special technical committees, working in close co-operation and cohesion and sharing their expertise and knowledge, the updated and revised NIOEC Specifications were successfully prepared and complied.

These Specifications are intended to be used for Oil Refineries, Distribution Depots, Oil Terminals, Pipelines and Pump Stations within NIOEC's projects, and have been proven to be of high value for such purposes. It must however be appreciated that these Specifications represent the minimum requirements and should in no way be interpreted as a restriction on the use of better procedures, engineering and design practices or materials.

We encourage and highly appreciate the users and other clear sighted and experts to send their comments on the Specifications to the Design and Engineering Director of NIOEC for evaluation and approval.

REVISION INDEX

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NOTES:

- 1) THIS SHEET IS A RECORD OF ALL REVISIONS TO THIS SPECIFICATION.
- 2) WHEN APPROVED EACH REVISION SHALL BE CONSIDERED AS A PART OF THE ORIGINAL DOCUMENT.
- 3) NUMBER OF PAGES EXCLUDES THIS SHEET AND THE COVER SHEET.

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INTRODUCTION

To satisfy the requirement of the NIOEC specification, Iranian petroleum standard, IPS-E-CE-360(2) (May, 2012) with the modification as specified hereinafter shall be strictly followed.

Articles 1.0 through 4.0 of this document replace entirely the related in the reference IPS Standard.

1. SCOPE

This NIOEC Specification gives recommendations on the design of services supplying water (hot and cold) for domestic use within buildings and their curtilages (excluding generation of heat i.e., boiler house). It covers the system of pipes, fittings and connected appliances installed to supply any building, whether domestic or industrial, with water for ablutionary, cleaning, sanitary, culinary, drinking and domestic laundry purposes.

The pipe sizing methods, avoiding wasteful oversizing, are given with recommendations for prevention of bursting, preservation of water quality, frost precautions and ease of maintenance.

This Specification deals only with low temperature systems; it does not cover systems that are designed to operate with steam or high temperature hot water.

Deviations from this specification will only be permitted on obtaining written approval from NIOEC.

Resolution on cases not explicitly stipulated in this Specification, or on cases where conflicts may arise among the requirements of the referenced IPS and the international standards, shall be made through written consent and approval of NIOEC.

2. REFERENCES

The following standards, codes, and specifications, to the extent specified hereinafter, shall constitute a part of this NIOEC Specification. Latest edition of the undated referenced documents and the cited edition of the dated references shall apply. The applicability of changes made to the dated references, after the cited date shall be mutually agreed upon between NIOEC and the vendor/ contractor.

ASHRAE (AMERICAN SOCIETY OF HEATING, REFRIGERATING AND AIR-CONDITIONING ENGINEERS)

ASHRAE Handbook	"Applications (SI)"
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BSI (BRITISH STANDARDS INSTITUTION)

BS 6700	"Design, Installation, Testing and Maintenance of Services Supplying Water for Domestic Use within Buildings and their Curtilages"
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IPS (IRANIAN PETROLEUM STANDARD)

IPS-E-CE-360	"Building Piping (Hot and Cold)"
IPS-M-AR-255	"Material Standard for Thermoplastics Piping For Hot and Cold Water in Building"

IRANIAN BUILDING REGULATIONS

National Building Regulations "Topic 16, 19"

NIOEC-SP (NIOEC-SPECIFICATIONS)

NIOEC-SP-00-10 "NIOEC Specification for Units"

NATIONAL STANDARD PLUMBING CODE

Plumbing – Heating- Cooling Contractors Association "National Standard Plumbing Code"

3. UNITS

International system of units (SI) shall be used in accordance with NIOEC-SP-00-10, unless otherwise specified.

4. DEFINITIONS & TERMINOLOGY**4.1. Air Gap**

The unobstructed vertical distance through the free atmosphere between the lowest opening from any pipe or faucet supplying water to a tank, plumbing fixture or other device and the flood level rim of the receptor.

4.2. Air Chamber, Waterlogged

A pressure surge absorbing device operating through the compressibility of air.

4.3. Calorifier

A water tank fitted with a coil or coils that can be heated in order to heat the water.

4.4. Chase

A recess that is cut or preformed and designed to accommodate water pipes and fittings which can be accessible by removal of a cover or covers.

4.5. Cylinder

A closed cylindrical vessel capable of storing water under mains pressure.

4.6. Direct Heating System

A hot water supply system in which the water supplied to the draw-off points is heated by a primary source of heat such as gas, electricity, etc.

4.7. Dead Leg

A length of water pipe leading to a draw-off point and not forming part of a circuit.

4.8. Indirect Heating System

A hot water supply system in which the water supplied to the draw-off points is heated by means of a heat exchanger, calorifier or an indirect cylinder.

4.9. Duct (Pipe Duct)

An enclosure designed to accommodate water pipes and fittings and other services if required and constructed so that access to the interior can be obtained either throughout its length or at specified points by removal of a cover or covers.

4.10. Faucet

A small tap that controls the flow of water from a pipe or container.

4.11. Pipe Fitting

A component fitted to a pipe for jointing, connecting or changing the direction or bore of a pipe.

4.12. Potential Head (Position Head)

The vertical height to the surface of water at a given point above a datum.

4.13. Friction Head (Friction Loss)

Loss of head due to friction i.e. the reduction in head which takes place when water flows from one point to another.

4.14. Velocity Head

The vertical height through which a fall under the influence of gravity alone would give the water a velocity equal to its actual velocity.

4.15. Primary Circuit

A circuit in which water circulates between a boiler and a calorifier.

4.16. Secondary Circuit

A circuit in which water circulates in distributing pipes (supply return pipes) from and back to a calorifier.

4.17. Water Hammer Arrester, Engineered

A manufactured device, other than an air chamber or calculated air chamber, containing a permanently sealed cushion of gas or air, designed to provide protection against excessive shock pressure without maintenance.

4.18. Servicing Valve

A valve intended to facilitate maintenance or servicing of a sanitary fixture or appliance (known as "pissaire" in Iran).

4.19. Domestic Hot Water System

Hot Water supply system for ablution, culinary and cleaning purposes only.

4.20. Hot Water System

Installation of pipes and associated components in which water is heated and distributed for heating hot water supply.

4.21. Water Services

Services for Supplying water to individual premises.