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

NIOEC SP

NIOEC SPECIFICATION FOR GEOMETRIC DESIGN OF ROADS AND ASPHALTIC CONCRETE PAVING

SECOND EDITION

JULY, 2009

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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1. SCOPE

This specification covers the minimum requirements for the geometric design of roads, material selection, construction and testing of asphaltic concrete roads and paving.

1.1. This specification includes:

- a) Geometric design of roads
- b) Preparation of existing surface to the proper compaction, elevation and shape to receive base course or paving.
- c) Crushed stone base course only for those areas as indicated on the drawings.
- d) Asphaltic concrete road, walkways and area paving.

1.2. Asphaltic concrete road, walkway and area paving shall be installed in accordance with lines, grades, typical cross sections and details shown on the plan and detail drawings.

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/relevant 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.

AASHTO (AMERICAN ASSOCIATION OF STATE HIGHWAY AND TRANSPORTATION OFFICIALS)

AASHTO M57	"Standard Specification for Materials for Embankments and Subgrades"
AASHTO M147	"Standard Specification for Materials for Aggregate and Soil-Aggregate Subbase, Base, and Surface Courses"
AASHTO T89	"Standard Method of Test for Determining the Liquid Limit of Soils"
AASHTO T90	"Standard Method of Test for Determining the Plastic Limit and Plasticity Index of Soils"
AASHTO T96	"Standard Method of Test for Resistance to Degradation of Small-Size Coarse Aggregate by Abrasion and Impact in the Los Angeles Machine"
AASHTO T193	"Standard Method of Test for the California Bearing Ratio"
AASHTO T180	"Standard Method of Test for Moisture-Density Relations of Soils Using a 4.54-kg (10-lb) Rammer and a 457-mm (18-in)"

AASHTO T245

"Standard Method of Test for Resistance to Plastic Flow of Bituminous Mixtures Using Marshall Apparatus"

A Policy on Geometric Design of Highway and Streets (AASHTO)

ASTM (AMERICAN SOCIETY OF TESTING AND MATERIALS)

ASTM C131

"Standard Test Method for Resistance to Degradation of Small-Size Coarse Aggregate by Abrasion and Impact in the Los Angeles Machine"

ASTM D4

"Standard Test Method for Bitumen Content"

ASTM D5

"Standard Test Method for Penetration of Bituminous Materials"

ASTM D1241

"Standard Specification for Materials for Soil-Aggregate Subbase, Base, and Surface Courses"

ASTM D1557

"Standard Test Methods for Laboratory Compaction Characteristics of Soil using Modified Effort"

ASTM D1883

"Standard Test Methods for CBR (California Bearing Ratio) of Laboratory- Compacted Soils"

ASTM D3515

"Standard Specification for Hot-Mixed, Hot-Laid Bituminous Paving Mixtures"

ASTM D 4318

"Standard Test Methods for Limit and Plasticity Index of Soils"

NIOEC-SP (NIOEC-SPECIFICATION)

NIOEC-SP-00-01

"NIOEC Specification for Civil Design Criteria"

NIOEC-SP-00-02

"NIOEC Specification for Site Preparation Earthwork and Sewers"

NIOEC-SP-00-05

"NIOEC Specification for Excavation and Backfill for Civil Work"

NIOEC-SP-00-10

"NIOEC Specification for Units"

NIOEC-SP-00-53

"NIOEC Specification for Layout and Spacing"

NIOEC-SP-10-17

"NIOEC Specification for Soil Engineering"

NIOEC-SD (NIOEC STANDARD DRAWING)

NIOEC-SD-1015

"Typical Cross Section for Asphalt Concrete Paving"

3. UNITS

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