Hellenic Gas Transmission System Operator S.A.
357-359 Messogion Av., GR 152 31 Halandri
Tel.: 213 088 4000
Fax: 210 674 9504
Email: desfa@desfa.gr

TECHNICAL SPECIFICATION

HIGH PRESSURE (HP) TRANSMISSION SYSTEMS

CONCRETE PAVING AND CURBS

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0	05/04/2011	First Issue (as Spec 452/1)
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1. SCOPE

This specification refers to the general requirements of design and construction for paving and curbs.

This specification shall be considered and applied in conjunction with the following technical documents: soil investigation report (if any), the technical specifications applied for site preparation, and the corresponding standard drawing for concrete paving and curbs.

2. REFERENCES

2.1 Reference Documents

ΠΤΠ Ο-150
[Technical Standard Specification Ο-150, Construction of road subbases]

ΠΤΠ Ο-155
[Technical Standard Specification Ο-155, Construction of road base courses]

ΕΤΕΠ 1501-05-03-03-00 Layers of Road pavement layers with undound aggregates

ΕΤΕΠ 1501-05-03-01-00 Road pavement subgrade layer with unbound material.

Job Spec. No. 499/2
[Trenching and excavation]

Job Spec. No. 499/7
[Concrete Works]

Dwg No. STD- 1-43-02
[Paving and Curbs Standard]

2.2 Reference Codes and Standards

EN 13877 Concrete pavements

EN10080 Steel for the reinforcement of concrete-Weldable reinforcing steel- General

EN 14188 Joint filers and sealants

Note: For the referred Specs, Codes and Standards, the last valid version is applicable

3. ACRONYMS

HP	HIGH PRESSURE
NG	Natural Gas

4. CONCRETE PAVING AND CURBS

Site areas to be paved shall be as defined in paving engineering drawings.

Light duty concrete paving, is generally used in areas subject to non vehicular traffic, or areas with occasional light vehicle traffic and where loads due to heavy equipment are not anticipated, e.g. sidewalks and paved areas around and between buildings.

It shall consist of a concrete slab on grade 150mm thick with a single layer of welded wire mesh reinforcement.

Heavy duty concrete paving, shall be generally used in areas subject to heavy vehicle traffic and loads of heavy equipment. Heavy duty concrete paving may be used to support light equipment and pipe supports if required, subject to verification by structural calculation. Heavy duty concrete paving shall consist of a concrete slab on grade, 200mm minimum thickness, with two layers of welded wire mesh reinforcement.

Reinforcement for concrete paving shall be grade B500 according to EN 10080, or equivalent to National standards where applicable.

Minimum reinforcement for heavy duty concrete paving shall be two layers of welded wire mesh #T196, one placed at the top and one at the bottom of the concrete slab.

Minimum reinforcement for light duty concrete paving shall be a single welded wire mesh #T196 placed at the top 1/3 of the concrete section.

The reinforcement shall be securely fixed in position to give the specified concrete cover and avoid movement during compaction. The specified concrete cover shall be maintained by the use of spacers or other approved means. The top reinforcement shall be rigidly supported by mild steel chairs. Placing tolerance for reinforcement shall be ±10mm. Wire mesh reinforcement shall be continuous in construction joints but it shall not extend through expansion joints.

Heavy duty concrete paving shall be provided with expansion joints arranged on an orthogonal grid, with maximum spacing 20x20m. All paving panels, formed between the expansion joints, shall have a length/width ratio L/B≤1.50m. The arrangement of joints shall be symmetrical, to the extent possible, with the perimeter of the paving and any internal features, such as manholes, islands, supports and foundations.

Expansion joints shall be formed straight and located according to project drawings. Maximum permissible deviation from a straight line shall be 5mm. They shall be constructed true to vertical alignment.

Concrete paving shall be sloped towards pavement edges, or towards drainage channels, or catch basins to avoid accumulation and ensure discharge of rainwater. Minimum slope shall be 1%.

Inclination of the top surface may be achieved by increasing above minimum the thickness of the base course, or for small differences in elevation the top concrete cover. The concrete cover, as well as the specified thickness of the concrete slab, shall not in any case be reduced below the specified minimum requirements.

All paving works shall be supervised by a qualified Civil Engineer. The setting out shall be performed by a qualified surveyor according to the drawings.

Concrete curbs shall be placed at the edges of paving. Concrete curbs shall be 150 mm thick and between 150-200 mm height with two continuous reinforcing bars Ø10 mm and stirrups of Ø 8 mm at 300 mm spacing.

Paving shall be laid on polythene foils of grade 500, which serve as water barrier for the water in the concrete. The polythene foils shall be placed on top of a 50 mm sand layer to avoid damage, as shown in the standard drawing for concrete paving and curbs **Dwg No STD-1-43-02.**

Construction and expansion joints are detailed in the standard drawing for concrete paving and curbs and shall be provided as follows:

- Construction joints shall consist of a D/4 deep score in the top surface of the slab where D is the slab thickness. They shall be provided at spacing not exceeding 5 meters both ways.

- Longitudinal and transverse expansion joints shall be used in concrete pavements at spacing not

exceeding 15 meters, both ways. Expansion joints shall also be used in paving slabs adjoining building walls, columns, catch basins, manholes, and equipment foundations. These gaps shall be filled with premoulded asphalt expansion joint materials for the upper 20 mm and with expanded polystyrene (FELIZOL) for the rest. The way of application of the asphalt joint material shall be according to manufacturer's instructions. Gap shall be 25 mm wide around blocks supporting reciprocating machines and 12 mm wide for all other expansion joints.

- In heavy duty paving expansion joints shall be provided with dowels.

- Expansion joints may be omitted around certain piers, when the deck is utilized to resist lateral loads.

Paved surfaces shall be provided with a wood float finish, unless otherwise indicated on paving drawings.

The subgrade soil shall be provided as follows:

- The upper part (base) shall consist of two layers sand gravel 100mm min thick each (0,074mm min and 19,1mm max grain dia). Each layer shall be compacted to a degree of compaction of 95% of modified Proctor complying with National Technical Specification **ΠΤΠ Ο-155,** or any equivalent Greek Legislation.
- The lower part (subbase) shall consist of two layers gravel 200mm thick each (24,5mm min and 76,2mm max grain dia). Each layer shall be compacted to a degree of compaction of 95% of modified Proctor complying with National Technical Specification **ΠΤΠ Ο-150**, or any equivalent Greek Legislation.

Special care must also be taken when compact the backfill over sewers, drainage facilities and other permanent structures in the paved area.