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**TECHNICAL JOB
SPECIFICATION**

499/16

REVISION 0

DATE 29/06/2011

LNG PLANT

STRUCTURAL STEEL WORKS

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QUALITY ASSURANCE PAGE

CHANGES LOG

REVISIONS LOG

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REFERENCE DOCUMENTS

Job Spec. No. 840/1
[Fireproofing]

ELOT EN 719
[Welding Coordination - Tasks and Responsibilities]

ELOT EN 1011-2
[Welding - Recommendations for Welding of Metallic Materials -
Part 2: Arc Welding of Ferritic Steels Together]

ELOT EN 1991
[Eurocode 1: Actions on structures]

ELOT EN 1993
[Eurocode 3: Design of steel structures]

ELOT EN 10025
[Hot rolled unalloyed structural steel products; technical delivery conditions]

ELOT EN 10034
[Structural steel I and H sections; tolerances on shape and dimensions]

ELOT EN 10055
[Hot rolled Steel Equal Flange Tees with Radiused Root and Toes
- Dimensions and Tolerances on Shape and Dimensions]

ELOT EN 10056-1
[Structural Steel Equal and Unequal Leg Angles]

ELOT EN 10058
[Hot rolled flat steel bars for general purposes - Dimensions and
tolerances on shape and dimensions]

ELOT EN 10279
[Hot rolled steel channels - Tolerances on shape, dimensions and mass]

ELOT EN 13479
[Welding consumables - General product standard for filler metals and
fluxes for fusion welding of metallic materials]

ELOT EN 14399
[High-strength structural bolting assemblies for preloading]

ELOT EN 15048
[Non-preloaded structural bolting assemblies]

ELOT EN 20898-2
[Mechanical Properties of Fasteners Part 2: Nuts with specified
Proof Load Values - Coarse Thread]

ELOT EN ISO 898-1
[Mechanical properties of fasteners made of carbon steel and alloy steel -
Part 1: Bolts, screws and studs]

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ISO 888

[Bolts, screws and studs; Nominal lengths, and thread lengths for general purpose bolts]

EN 729

[Quality Requirements for Welding Fusion Welding of Metallic Materials Part 1: Guidelines for Selection and Use]

EAK-2003 ΦΕΚ 781Β/18.06.2003

«Τροποποίηση και συμπλήρωση Ελληνικού Αντισεισμικού Κανονισμού ΕΑΚ 2000»

[Hellenic Seismic Code]

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1.0 SCOPE

This specification covers the minimum requirements for the design of steel structures.

2.0 APPLICABLE STANDARDS

ELOT EN 719

ELOT EN 1011-2

ELOT EN 1991 (Eurocode 1)

ELOT EN 1993 (Eurocode 3)

ELOT EN 10025

ELOT EN 10034

ELOT EN 10055

ELOT EN 10056-1

ELOT EN 10058

ELOT EN 10279

ELOT EN 13479

ELOT EN 14399

ELOT EN 20898-2

ELOT EN ISO 898-1

EN 729

ISO 888

EAK-2003 ΦEK 781B/18.06.2003

3.0 LOADS. MATERIALS & ALLOWABLE STRESSES

Loads shall be in accordance with ELOT EN 1991 (Eurocode 1).

Material for structural steel shall be Fe360 as per ELOT EN 10025.

Structural steel profiles shall be according to the relevant European Standards:

Beams and Columns	: ELOT EN 10034
Channels	: ELOT EN 10279
Angles	: ELOT EN 10056-1
Tees	: ELOT EN 10055
Plates	: ELOT EN 10058

Grating shall be galvanized steel welded, non-skid grating.

Bearing bars shall be 30 x 3 mesh 30 x 50. Min design load 500 kg/m².

High strength bolts shall be 10.9 (ELOT EN ISO 898-1).

Bolts for minor connections shall be 4.6 (ELOT EN ISO 898-1).

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The maximum allowable stresses to steel elements due to the load combinations shall be in accordance with **ELOT EN 1993 (Eurocode 3)** and the Greek Seismic Regulation.

4.0 DESIGN DEFINITION & DETAILING RESPONSIBILITIES

Shop details and shop fabrication of steel works shall be done by the structural steel fabricator.

All details and fabrication procedure shall be approved the designer contractor so that the performance of steel structure shall as designed.

5.0 CLEARANCES

Minimum vertical clearances, including allowances for fireproofing and insulation, shall be as follows:

- 2100 mm over platforms and walkways
- 2100 mm plus one riser over stairways
- 2500 mm under ladder cages
- 4000 mm over truck access areas
- 6200 mm over maintenance road (crane areas)

6.0 MINIMUM PLATFORMS WIGHT AND CLEARANCES

Access ways shall have a minimum width of 750 mm. All operating and service platforms shall have a minimum width of 1000 mm. Stair landing shall be a minimum of 750 mm in the direction of the stairways. Stairs shall be broken when their vertical rise exceeds 5.0 m.

7.0 LADDERS

Ladders shall be provided with landings not more than 9 m height intervals. Where landings are provided, the ladder shall be placed "vice versa" continuously.

Ladders over 6.0 m height shall have a safety cage.

Ladders shall have a safety cage even where are joining platforms, wherever ladders are less than 6.0 m high, also where ladders are near by the platform edge or handrails to prevent of falling hazards.

Safety swing gates (safety chains are not acceptable) shall be provided at every ladders entrance.

8.0 FIREPROOFING

The fireproofing design shall be performed as per **ELOT EN 1993 (Eurocode 3)**, Part 1-2: Supplementary rules for structural fire design.

The thermal and mechanical loads shall be obtained from **ELOT EN 1991 (Eurocode 1)**, Part 2-2: Actions on structures exposed to fire.

In addition the fireproofing of steel structures shall follow the principles specified in **Job Specification 840/1** for "Fireproofing" while the thickness of fireproofing material specified in this specification shall be regarded as the minimum one.