NASHPA Gas Processing and LPG Recovery Plant

PROC-FC-CB/NASHPA/PROJ-1247 /2015

PROJECT NO.: NASHPA 1247

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Specification for Brick Works

REVISION DETAILS						
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1.0 GENERAL

1.1 Introduction

OIL & GAS Development Company Ltd. (OGDCL) is operating NASHPA Oil & Gas fields in Khyber Pakhtunkhwa of Islamic Republic of Pakistan. OGDCL intends to install LPG Recovery Plant, Compressors & Allied Facilities at this field.

1.2 Scope

The work under this specification includes Brick Work of any thickness and heights as shown in drawings. The bricks shall be carried out in cement sand mortars of proportions as specified on drawings, specification and BOQ.

1.3 Definitions

Within this document the following definitions apply:

Project	NASHPA Gas Processing and LPG Recovery Plant PROC-FC-CB/NASHPA/PROJ-1247 /2015
Company/Owner	Oil & Gas Development Company Ltd.(OGDCL)
Consultant	Zishan Engineers (Pvt.) Ltd.
Contractor	Hong Kong Huihua Global Technology Limited Wholly owned Subsidiary of China OIL HBP Science and Technology Corporation Ltd
Manufacturer/Supplier/Vendor	Party(ies), which manufactures and/or supplies material, equipment and service to perform the duties as specified by CONTRACTOR in the scope of supply
Shall	Indicates a mandatory requirement
Should	Indicates a strong recommendation to comply with the requirement of this document

2.0 REFERENCES AND ABBREVIATIONS

2.1 Codes and Standards

Doc. No.	Description
ACI 530-11	Building Code Requirements for Masonry Structures
IBC 2012	International Building Code
ASCE 7-10	Minimum Design Loads for Buildings and Other Structures
ASTM C34-03	Standard Specification for Structural Clay Load-Bearing Wall Tile
ASTM C426-07	Standard Test Method for Linear Drying Shrinkage of Concrete Masonry Units

Doc. No.	Description
ASTM C1006-07	Standard Test Method for Splitting Tensile Strength of Masonry Units
ASTM C1386-07	Standard Specification for Precast Autoclaved Aerated Concrete (AAC) Wall Construction Units

2.2 Project Specifications, Procedures and drawings

Particular reference is made to the following project specifications:

Design Basis for civil and Structure works	NGP-000-SCW-15.05-0001-00
General Notes for Reinforced Concrete Works	NGP-000-SCW-15.01-0001-00

2.3 Abbreviations

The following abbreviations are used in this document:

ACI	American Concrete Institute
AISC	American Institute of Steel Construction
API	American Petroleum Institute
ASCE	American Society of Civil Engineers
ASME	American Society of Mechanical Engineers
ASTM	American Society for Testing and Materials
AWS	American Welding Society
BS	British Standards
EN	European Standard
ISO	International Organization for Standardization

3.0 WALLING

3.1 Materials

3.1.1 The moulds used in the manufacture of bricks shall be thoroughly sanded before each use and shall be sufficiently larger than the size of the bricks being manufactured tallow for shrinkage in drying and burning. Over-size, irregular and worn moulds shall be destroyed. Each finished brick for brick masonry shall be 225 x 150 x 115 mm in size and shall weight between 3.2 to 4.2 kgs:

All bricks shall have a “frog” 6 mm deep on one face.

3.1.2 All bricks shall be manufactured by the Trench Kiln Method or other standard methods. The earth used in manufacturing bricks shall be carefully selected and shall be free from objectionable quantities of lime, gravel, coarse sand, roots, or other organic matter. Salts shall not exceed 0.3% and calcium carbonate shall not exceed 2.0%.

3.1.3 All bricks shall be of first class quality made from good brick earth, free from saline deposit and shall be hand molded. They shall be thoroughly burnt without being vitrified, shall be regular, uniform in shape

and size with sharp and square edges, parallel faces and of deep red or copper colour. First class bricks shall be homogeneous in texture and shall emit a clear ringing sound when struck, and shall be free from flaws, cracks, chips, stones and modules of lime.

3.1.4 All facing bricks shall be fair face. The size of the facing brick shall be as per drawings.

3.1.5 Physical Requirements of Bricks shall be:

Minimum compressive strength, brick flatwise (using average gross area)	17 Mpa	15 MPa
Minimum Modules of Rupture, brick flatwise (using average gross area)	3 Mpa	2 MPa
Maximum water absorption (By 5-hour boiling)	22%	25%
Maximum saturation coefficient *	0.88	0.90

* Saturation Coefficient is the ratio of absorption by 24-hour submersion in cold water to that after 5 hour submersion of brick in boiling water.

3.2 Placing

Brick shall not be placed during rains sufficiently heavy or prolonged to wash the mortar from the brick. Mortar which becomes diluted by rain shall be removed and replaced before continuing with the work. All brick to be used in brick masonry shall be moistened with water for three to four hours before they are used by a method which will ensure that each brick is thoroughly and uniformly wetted. All bricks shall be free from water adhering to their surface when they are placed in the brick masonry.

Bricks shall be laid “frog” upward with mortar joints and in English and Flemish bond as shown on the Drawings or as directed by the Owner’s Engineer. Both bed and vertical joints shall be 6 mm in thickness completely filled with cement mortar as specified herein, and each brick shall be bedded by firmly tapping with the handle of the trowel. All horizontal joints shall be parallel and all vertical joints in alternate courses shall be directly over one another. Excess mortar at the outer edges shall be removed and joints drawn straight with the edge of trowel and a straight edge. All anchors and similar work required to be embedded in the brick masonry shall be installed as the work progresses. At the completion of the work all holes or defective mortar joints shall be cut out and repointed.

4.0 DAMP PROOF COURSE

All damp proof course unless otherwise specified shall consist of Grade ‘C’ cement concrete, 50 mm thick, mixed with 2.5 kg of PUDLO per bag of cement or other approved quality waterproofing- compound as per manufacturer’s specifications and shall be laid at required levels as per Drawings and instructions of the Engineer. The D.P.C. shall be tamped, consolidated, levelled and edges and corners made to the requirements of the relevant Drawings, including finishing and curing complete. All damp proof courses shall be laid over approved water proofing materials as specified on the Drawings.

5.0 POINTING

The joints of brick masonry walls shall be given fine groove pointing by striking the joints to external surfaces of the wall. Tooling shall be done when the mortar is partially set but still sufficiently plastic to bond. All tooling

shall be done with a tool which compacting the mortar, pressing the mortar out of the joint rather than dragging it out. Raked joints shall be 12 mm deep fine grooved in order to give pressed and compacted surface. All joints shall be given finish with 1:3 cement sand mortar with a pointing tool.

At the completion of the work all holes, and defective mortar joints shall be cut and repointed, Exposed masonry shall be protected against staining or other damages and excess mortar shall be cleared off the surfaces as the work progresses. All exposed masonry shall be clean, smooth, and fine shall be of acceptable finish. In the event ordinary cleaning is not adequate special methods such as sand plastering or otherwise as approved by the Owner's Engineer shall be used to clean the surface.

6.0 CURING AND REPAIR

All brick masonry shall water cured and shall be kept wet for at least seven days by an approved method which will keep all surface to be cured continuously wet. Water used for curing shall meet the requirements of the specifications for water used in the manufacture of bricks.