



NATIONAL PETROCHEMICAL COMPANY
STANDARDS

CONSTRUCTION STANDARD FOR BUILDING

NPCS-CS-ST-08

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1 STRUCTURAL

1.1 GENERAL

1.1.1 Scope

This standard covers minimum requirements for the construction of buildings.

All structural work shall be executed in accordance with part 1 of this standard and all applicable approved documents for construction drawings.

Al.1 plumbing work shall be executed in accordance with part 2 of this standard and all applicable approved documents for construction drawings.

All electrical work shall be executed in accordance with part 3 of this standard and all applicable approved documents for construction drawings.

1.1.2 Related Engineering and Construction Standards

Separate E.S., C.S. define the requirements for:

- a) Site Grading, Earth-Work in Excavation and Back Filling? NPCS-CS-GC-04.
- b) Concrete, NPCS-CS-ST-01.
- c) Coating & wrapping of underground piping, NPCS-CS-GC-09.
- d) steel structures, NPCS-CS-ST-02.
- e) Fencing, NPCS-CS-GC-07.
- f) Painting, NPCS-CS-TP-06.
- g) Fire fighting system, NPCS-CS-GC-10.
- h) Master Mat. long description, NPCS-MS-PI-03.
- i) Piping system design, NPCS-ES-PI-01.
- j) Piping Fabrication and Erection, NPCS-CS-PI-02.
- k) Underground piping system, NPCS-ES-GC-09.



1.1.3 Regulations

This Standard requires compliance with all national, local laws and regulations which may be applicable.

1.1.4 Codes

The following codes shall constitute minimum requirements for this standard :

- Applicable codes as published in Uniform Building Code, latest edition.
- All codes, regulations, guidelines, etc., referred to in the applicable sections.

1.2 EXECUTION OF THE WORK

1.2.1 'Brick Work

General

Type of brick wall laying shall be approved by owner prior to execution. During construction of a brick wall in any portion of a building, wall height shall not exceed more than one metre above other portions of walls already constructed. Construction of brick walls and or work shall not be implemented at temperatures below 5°C. At intersections of walls each layer of bricks shall be properly bonded and brick work shall not be stopped at vertical cross sections. Connection of steel column and brick work shall be as per drawings and if no specific details is given, the detail shown in fig.1 shall be considered at interval of 1.0m height.

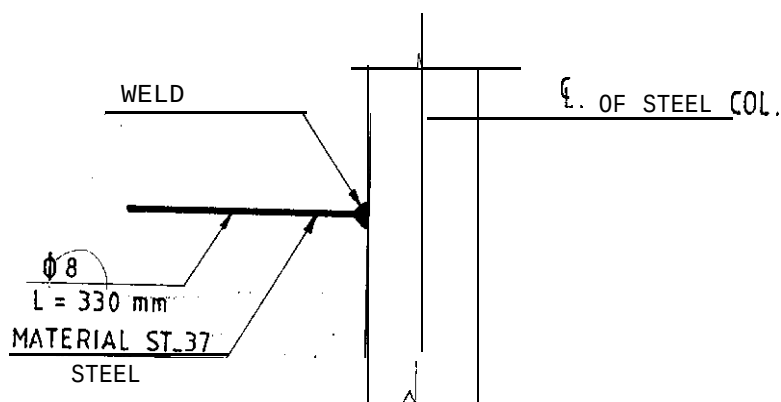
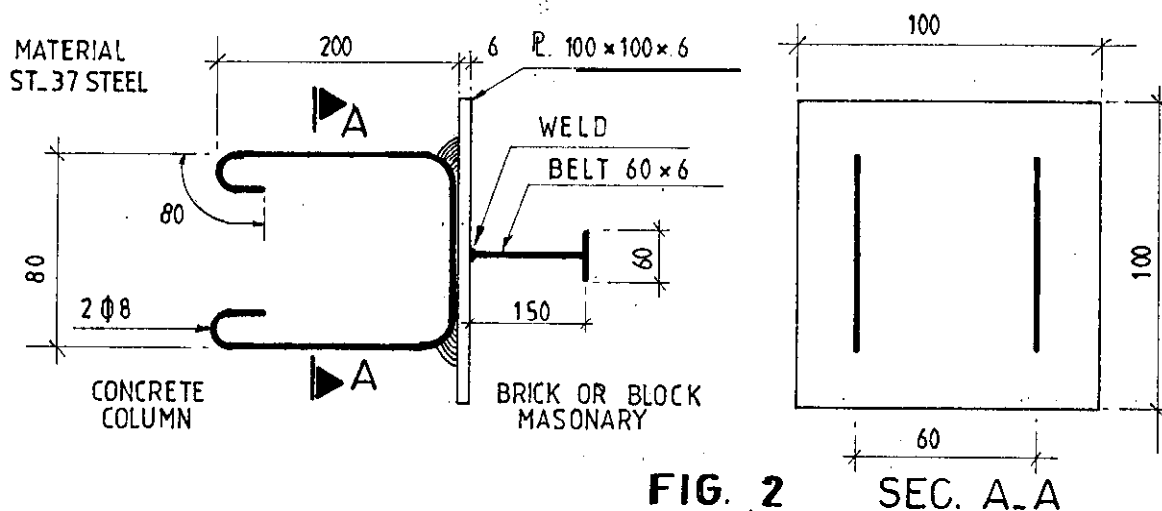


FIG. 1



Connection of brick work and concrete column shall be as per drawings and if no specific detail is given the detail shown in fig. 2 shall be considered at interval of 1.0m height.



1.2.1.1 Brick Masonry

When type of brick and mortar are not specified, following specifications shall be used:

Interior load bearing wall:

Bricks with **minimum** compressive strength of 50kg/cm² and Cement Sand mortar of 1:6.

Interior non load bearing wall:

Table 1-7 gives data for different thickness of wall and **material** required.



TABLE 1-1

TYPE OF MORTAR	60 mm (THK)	100mm* (THK)	200mm (THK)
1:6 Cement Sand Clay and Gypsum	x	x	x

Bricks used shall have the minimum compressive strength of 50kg/cm^2 .

* Type of mortar will be determined based on humidity condition of wall surrounding.

1.2.1.2 Facing Bricks Wall

Bricks at any condition shall be first rated and good quality and shall be approved by owner. Joints in brick wall preferably shall be filled joints. Bricks shall be submerged in water for 60 min and shall be used immediately. Thickness of horizontal joints shall be as specified and in general it should be between 10mm and 12mm. Brickwork shall be kept moist for at least 3 days.

1.2.1.3 Cavity Brick Walls

Following points shall be considered for cavity brick walls:

- Two partition walls should be built above ground level on a safe foundation.
- If no dimensions are given in the drawing the thickness of wall shall not be less than standard brick width and the hollow space shall be between 50mm and 80mm.
- The two walls should be connected to each other by means of rectangular frames made of 8mm diameter bars at distance of 500mm in vertical and 600 mm in horizontal direction. The number of these connections shall not be less than four in each square meter. Additional connections shall be provided for opening and corner areas.



- d) penetration of water between the walls shall be avoided. If water found to be present drain holes of 15mm diameter shall be provided for adequate drainage at maximum spacing of 1m.
- e) Top of doors, windows, openings and foundations, shall be covered by galvanized sheet or other acceptable materials, so that water is directed easily toward drain holes.
- f) Cavity space between two brick walls shall not be filled with mortar. Falling of mortar between two walls shall be avoided.

1.2.1.4 Joints

If no finishing plaster is specified on the walls all horizontal and vertical joints shall be filled. Mortar shall be cement fine sand (1:4) mixture if not otherwise specified on the drawings.

1.2.1.5 Door and Window Locations

When laying brick walls, holes and openings shall be provided for installation of windows, door frames, ventilation ducts and electrical cables in order to avoid future destruction of walls.

When grouting the space behind door frames, they should be supported by at least three pieces of plank at their span.

1.2.1.6 Plumbing and Levelling of Brick Walls

All brick walls shall be set level and plumb according to the construction drawings. All doors and windows also shall be installed plumb and level.

1.2.2 Concrete Block Masonry

1.2.2.1 General

Masonry work shall be avoided below 5°C temperature. Working bed for block wall, shall be properly cleaned and all concrete blocks shall be kept moist prior to execution. Mortar shall be cement-sand (1:5) mixture if not otherwise specified on the drawings. During construction of a block wall in any portion of a building, wall height shall not exceed more than one metre above other portions of walls already constructed.