

NAME OF WORK: - CONSTRUCTION OF -TYPE 4 UNIT AND C-TYPE 4 UNIT AT KUKARMUNDA DIST-TAPI

ITEM WISE SPECIFICATION

Item No:- 1

Excavation for foundation upto 1.5 m depth including sorting out and stacking of useful materials and disposing off the excavated stuff upto 50 Meter lead.(A) Loose or soft soil

The relevant specification shall be followed as per General Technical specification for Building work booklet It.No.4.0.0. (A) P.No.29.

Item No:- 2

Excavation for foundation for depth from 1.5 m to 3.0 m including sorting out and stacking of useful materials and disposing off the excavated stuff upto 50 Meter lead.(B) Dense or Hard soil

The relevant specification shall be followed as per General Technical specification for Building work booklet It.No. 4.001. (C) P.No.32

Item No:- 3

Filling in foundation and plinth with sand in layers of 20 cm. Thickness including watering ramming and consolidating etc. comp.

The relevant specification shall be followed as per General Technical specification for Building work booklet It.No.4.24. P.No.35 except that using for sand instead of murrum.

Item No:- 4

Filling available excavated Earth (Excluding Rock) in trench plinth side of foundation . in layer not excluding 20 cm in depth consolidation each deposited layer by ramming and watering etc. complete

The relevant specification shall be followed as per General Technical specification for Building work booklet It.No.4.12. P.No.35

Item No:- 5

Filling foundation and plinth with murrum or selected soil in layer of 20 cm in thickness including ramming watering and consolidating etc. complete

The relevant specification shall be followed as per General Technical specification for Building work booklet It.No.4.004. P.No.35.

Item No:- 6

Applying general insecticide pest control treatment to floors, cupboards etc including labour materials etc. complete. Using Imidacloprid 30.5 SCas Per IS 6313 part -II(0.075% concentration

by mass) is recommended 10.5ml chemical diluted with 5 liters of water application 0.5 litre chemical /Sqm of surface is recommended as per I.S.

The relevant specifications of Building Booklet It. No.20.00.9. +22.00.10+22.00.11 Page No157 shall be followed as well as following points Applying general insecticide pest control treatment to floors, cupboards etc including labour materials etc. complete. Using Imidacloprid 30.5 SCas Per IS 6313 part -II(0.075% concentration by mass) is recommended 10.5ml chemical diluted with 5 liters of water application 0.5 litre chemical /Sqm of surface is recommended as per I.S.

The rate shall be measured of including all material and labour work charge included.

The Item shall be measured as finished work in Sqmt.

Item No:- 7

Providing and laying cement concrete 1:3:6 (1-Cement : 3- coarse sand : 6- machine cut stone aggregates 40 mm nominal size) and curing complete excluding cost of formwork in (A) Foundation and Plinth

The relevant specification shall be followed as per General Technical specification for Building work booklet It. No. 5.3.2. (A) P.No.38 except that using for including the cost of form work for G.FLOOR instead of excluding the cost of form work.

For form work use the relevant specification shall be followed as per General Technical specification for Building work booklet It.No.9.1 (A) P.No.63

Consolidated item shall be measured and paid for actual size of RCC member casted on **Cubic meter** basis.

Item No:- 8

Providing and laying controlled cement concrete M150 for curing complete including cost of formwork but excluding the cost of reinforcement for reinforced concrete work in (A) Foundations, footings, Base of columns, Plinth Slab and Mass concrete.

The relevant specification shall be followed as per General Technical specification for Building work booklet It.No.5.8.1.(A) P.No.46 except that using for including the cost of form work for G.FLOOR instead of excluding the cost of form work.

For form work use the relevant specification shall be followed as per General Technical specification for Building work booklet It.No.9.1 (A) P.No.63

Consolidated item shall be measured and paid for actual size of RCC member casted on Cubic meter basis.

Item No:- 9

Providing and laying controlled cement concrete M.250 and curing complete including the cost of formwork and excluding reinforcement for reinforced concrete work in (A) Foundations, footings and Mass concrete. footing

The relevant specification shall be followed as per General Technical specification for Building work booklet It.No.5.8.3.(A) P.No.47 except that using for including the cost of form work for G.FLOOR instead of excluding the cost of form work.

For form work use the relevant specification shall be followed as per General Technical specification for Building work booklet It.No.9.1 (A) P.No.63

Consolidated item shall be measured and paid for actual size of RCC member casted on Cubic meter basis.

Item No:- 10

Providing and laying controlled cement concrete M-250 and curing complete including the cost of form work but excluding the cost of reinforcement for reinforced concrete work in (d) Columns Up to Plinth level.

The relevant specification shall be followed as per General Technical specification for Building work booklet It.No.5.8.3.(D) P.No.47 except that using for including the cost of form work for G.FLOOR instead of excluding the cost of form work.

For form work use the relevant specification shall be followed as per General Technical specification for Building work booklet It.No.9.1 (G) (I) P.No.65

Consolidated item shall be measured and paid for actual size of RCC member casted on Cubic meter basis.

Item No:- 11

Providing and laying controlled cement concrete M-200 and curing complete including the cost of form work but excluding the cost of reinforcement for reinforced concrete work in Columns, pillars posts and struts Ground Floor

The relevant specification shall be followed as per General Technical specification for Building work booklet It.No.5.8.2.(D) P.No.47 except that using for including the cost of form work for G.FLOOR instead of excluding the cost of form work.

For form work use the relevant specification shall be followed as per General Technical specification for Building work booklet It.No.9.1 (G) (I) P.No.65

Consolidated item shall be measured and paid for actual size of RCC member casted on Cubic meter basis.

Item No:- 12

Providing and laying controlled cement concrete M-200 and curing complete including the cost of form work but excluding the cost of reinforcement for reinforced concrete work in Columns, pillars posts and struts First Floor

The relevant specification shall be followed as per General Technical specification for Building work booklet It.No.5.8.2. (D) P.No.47 + It.No.5.4.13. P.No.46

Except that using for including the cost of form work for F.FLOOR instead of excluding the cost of form work.

For form work use the relevant specification shall be followed as per General Technical specification for Building work booklet It. No. 9.1 (G) (I) P.No.65

Consolidated item shall be measured and paid for actual size of RCC member casted on Cubic meter basis. On First floor

Item No:- 13

Providing and laying controlled cement concrete M-200 and curing complete including the cost of form work but excluding the cost of reinforcement for reinforced concrete work in Columns, pillars posts and struts Second floor

The relevant specification shall be followed as per General Technical specification for Building work booklet It.No.5.8.2. (D) P.No.47 + It.No.5.4.13. P.No.46except that using for including the cost of form work for S.FLOOR instead of excluding the cost of form work.

For form work use the relevant specification shall be followed as per General Technical specification for Building work booklet It. No. 9.1 (G) (I) P.No.65

Consolidated item shall be measured and paid for actual size of RCC member casted on Cubic meter basis. On Second floor

Item No:- 14

Providing and laying controlled cement concrete M-200 and curing complete including the cost of form work but excluding the cost of reinforcement for reinforced concrete work in Columns, pillars posts and struts Third floor

The relevant specification shall be followed as per General Technical specification for Building work booklet It.No.5.8.2. (D) P.No.47 + It.No.5.4.13. P.No.46except that using for including the cost of form work for T.FLOOR instead of excluding the cost of form work.

For form work use the relevant specification shall be followed as per General Technical specification for Building work booklet It. No. 9.1 (G) (I) P.No.65

Consolidated item shall be measured and paid for actual size of RCC member casted on Cubic meter basis. On Third floor

Item No:- 15

Providing and laying controlled cement concrete M-250 and curing complete including the cost of form work but excluding the cost of reinforcement for reinforced concrete work in Ground & Plinth BEAMS

The relevant specification shall be followed as per General Technical specification for Building work booklet It.No.5.8.3.(C) P.No.47 except that using for including the cost of form work for G.FLOOR instead of excluding the cost of form work.

For form work use the relevant specification shall be followed as per General Technical specification for Building work booklet It.No.9.1 (H) (1) P.No.65

Consolidated item shall be measured and paid for actual size of RCC member casted on Cubic meter basis.

Item No:- 16

Providing and laying controlled cement concrete M.150 and curing complete including the cost of formwork and excluding reinforcement for reinforced concrete work in (C) Plinth Slabs

The relevant specification shall be followed as per General Technical specification for Building work booklet It.No.5.8.1.(C) P.No.46 except that using for including the cost of form work for plinth slab instead of excluding the cost of form work.

For form work use the relevant specification shall be followed as per General Technical specification for Building work booklet It.No.9.1 (I) P.No.65

Consolidated item shall be measured and paid for actual size of RCC member casted on Cubic meter basis

Item No:- 17

Providing and laying controlled cement concrete M.200 and curing complete including the cost of formwork and excluding reinforcement for reinforced concrete work in (C) Ground floor Beams

The relevant specification shall be followed as per General Technical specification for Building work booklet It.No.5.8.2.(C) P.No.47 except that using for including the cost of form work for G.FLOOR instead of excluding the cost of form work.

For form work use the relevant specification shall be followed as per General Technical specification for Building work booklet It.No.9.1 (H) P.No.65

Consolidated item shall be measured and paid for actual size of RCC member casted on Cubic meter basis

Item No:- 18

Providing and laying controlled cement concrete M.200 and curing complete including the cost of formwork and excluding reinforcement for reinforced concrete work in (C) First floor Beams

The relevant specification shall be followed as per General Technical specification for Building work booklet It.No.5.8.2.(C) P.No.47+5.4.13/P.no 46 except that using for including the cost of form work for F.FLOOR instead of excluding the cost of form work.

For form work use the relevant specification shall be followed as per General Technical specification for Building work booklet It.No.9.1 (H) (1) P.No.65

Consolidated item shall be measured and paid for actual size of RCC member casted on Cubic meter basis on first floor

Item No:- 19

Providing and laying controlled cement concrete M.200 and curing complete including the cost of formwork and excluding reinforcement for reinforced concrete work in (C) Second floor Beams

The relevant specification shall be followed as per General Technical specification for Building work booklet It.No.5.8.2. (C) P.No.47+5.4.13/P.no 46 except that using for including the cost of form work for S.FLOOR instead of excluding the cost of form work.

For form work use the relevant specification shall be followed as per General Technical specification for Building work booklet It.No.9.1 (H) (1) P.No.65

Consolidated item shall be measured and paid for actual size of RCC member casted on Cubic meter basis on Second floor.

Item No:- 20

Providing and laying controlled cement concrete M.200 and curing complete including the cost of formwork and excluding reinforcement for reinforced concrete work in (C) Third floor Beams

The relevant specification shall be followed as per General Technical specification for Building work booklet It.No.5.8.2. (C) P.No.47+5.4.13/P.no 46 except that using for including the cost of form work for T.FLOOR instead of excluding the cost of form work.

For form work use the relevant specification shall be followed as per General Technical specification for Building work booklet It.No.9.1 (H) (1) P.No.65

Consolidated item shall be measured and paid for actual size of RCC member casted on Cubic meter basis on Third floor.

Item No:- 21

Providing and laying controlled cement concrete M-200 and curing etc. complete including the cost of form work and reinforcement for reinforced concrete work in (c) Chhajja for First floor

The relevant specification shall be followed as per General Technical specification for Building work booklet It.No.5.8.2.(C) P.No.47+ 5.4.13 P.46 + 5.4.13(A) including the cost of form work and excluding cost of reinforcement for reinforced concrete work for First floor instead of excluding the cost of form work.

For form work use the relevant specification shall be followed as per General Technical specification for Building work booklet It. No. 9.1 (L) P.66

Consolidated item shall be measured and paid for actual size of RCC member casted on Cubic meter basis.

Item No:- 22

Providing and laying controlled cement concrete M-200 and curing etc. complete including the cost of form work and reinforcement for reinforced concrete work in (c) Chhajja for Second floor

The relevant specification shall be followed as per General Technical specification for Building work booklet It.No.5.8.2.(C) P.No.47+ 5.4.13 P.46 + 5.4.13(A) including the cost of form work and excluding cost of reinforcement for reinforced concrete work for Second floor instead of excluding the cost of form work.

For form work use the relevant specification shall be followed as per General Technical specification for Building work booklet It. No. 9.1 (L) P.66

Consolidated item shall be measured and paid for actual size of RCC member casted on Cubic meter basis

Item No:- 23

Providing and laying controlled cement concrete M-200 and curing etc. complete including the cost of form work and reinforcement for reinforced concrete work in (c) Chhajja for Third floor

The relevant specification shall be followed as per General Technical specification for Building work booklet It.No.5.8.2.(C) P.No.47+ 5.4.13 P.46 + 5.4.13(A) including the cost of form work and excluding cost of reinforcement for reinforced concrete work for Third floor instead of excluding the cost of form work.

For form work use the relevant specification shall be followed as per General Technical specification for Building work booklet It. No. 9.1 (L) P.66

Consolidated item shall be measured and paid for actual size of RCC member casted on Cubic meter basis

Item No:- 24

Providing and laying controlled cement concrete M-200 and curing etc. complete including the cost of form work and reinforcement for reinforced concrete work in (c) Lintal for Ground floor

The relevant specification shall be followed as per General Technical specification for Building work booklet It.No.5.8.2.(C) P.No.47+ 5.4.13 P.46 including the cost of form work and excluding cost of reinforcement for reinforced concrete work for Ground floor instead of excluding the cost of form work.

For form work use the relevant specification shall be followed as per General Technical specification for Building work booklet It. No. 9.1 (H) (1) P.65

Consolidated item shall be measured and paid for actual size of RCC member casted on Cubic meter basis.

Item No:- 25

Providing and laying controlled cement concrete M-200 and curing etc. complete including the cost of form work and reinforcement for reinforced concrete work in (c) Lintal for First floor

The relevant specification shall be followed as per General Technical specification for Building work booklet It.No.5.8.2.(C) P.No.47+ 5.4.13 P.46 including the cost of form work and excluding cost of reinforcement for reinforced concrete work for First floor instead of excluding the cost of form work.

For form work use the relevant specification shall be followed as per General Technical specification for Building work booklet It. No. 9.1 (H) (1) P.65

Consolidated item shall be measured and paid for actual size of RCC member casted on Cubic meter basis

Item No:- 26

Providing and laying controlled cement concrete M-200 and curing etc. complete including the cost of form work and reinforcement for reinforced concrete work in (c) Lintel for Second floor

The relevant specification shall be followed as per General Technical specification for Building work booklet It.No.5.8.2.(C) P.No.47+ 5.4.13 P.46 including the cost of form work and excluding cost of reinforcement for reinforced concrete work for Second floor instead of excluding the cost of form work.

For form work use the relevant specification shall be followed as per General Technical specification for Building work booklet It. No. 9.1 (H) (1) P.65

Consolidated item shall be measured and paid for actual size of RCC member casted on Cubic meter basis.

Item No:- 27

Providing and laying controlled cement concrete M-200 and curing etc. complete including the cost of form work and reinforcement for reinforced concrete work in (c) Lintel for Third floor

The relevant specification shall be followed as per General Technical specification for Building work booklet It.No.5.8.2.(C) P.No.47+ 5.4.13 P.46 including the cost of form work and excluding cost of reinforcement for reinforced concrete work for Third floor instead of excluding the cost of form work.

For form work use the relevant specification shall be followed as per General Technical specification for Building work booklet It. No. 9.1 (H) (1) P.65

Consolidated item shall be measured and paid for actual size of RCC member casted on Cubic meter basis.

Item No:- 28

Providing and laying controlled cement concrete M.200 and curing complete including the cost of formwork and excluding reinforcement for reinforced concrete work in (C) Ground floor Slab

The relevant specification shall be followed as per General Technical specification for Building work booklet It.No.5.8.2.(C) P.No.47 except that using for including the cost of form work for G.FLOOR instead of excluding the cost of form work.

For form work use the relevant specification shall be followed as per General Technical specification for Building work booklet It.No.9.1 (B)(I) P.No.64

Consolidated item shall be measured and paid for actual size of RCC member casted on Cubic meter basis.

Item No:- 29

Providing and laying controlled cement concrete M.200 and curing complete including the cost of formwork and excluding reinforcement for reinforced concrete work in (C) First Floor slab

The relevant specification shall be followed as per General Technical specification for Building work booklet It.No.5.8.2.(C) P.No.47 + 5.4.13 P.46 except that using for including the cost of form work for F.FLOOR instead of excluding the cost of form work.

For form work use the relevant specification shall be followed as per General Technical specification for Building work booklet It.No.9.1 (B)(I) P.No.64

Consolidated item shall be measured and paid for actual size of RCC member casted on Cubic meter basis.

Item No:- 30

Providing and laying controlled cement concrete M.200 and curing complete including the cost of formwork and excluding reinforcement for reinforced concrete work in (C) Second Floor slab

The relevant specification shall be followed as per General Technical specification for Building work booklet It.No.5.8.2.(C) P.No.47 + 5.4.13 P.46 except that using for including the cost of form work for S.FLOOR instead of excluding the cost of form work.

For form work use the relevant specification shall be followed as per General Technical specification for Building work booklet It.No.9.1 (B)(I) P.No.64

Consolidated item shall be measured and paid for actual size of RCC member casted on Cubic meter basis.

Item No:- 31

Providing and laying controlled cement concrete M.200 and curing complete including the cost of formwork and excluding reinforcement for reinforced concrete work in (C) Third Floor slab

The relevant specification shall be followed as per General Technical specification for Building work booklet It.No.5.8.2.(C) P.No.47 + 5.4.13 P.46 except that using for including the cost of form work for T.FLOOR instead of excluding the cost of form work.

For form work use the relevant specification shall be followed as per General Technical specification for Building work booklet It.No.9.1 (B)(I) P.No.64

Consolidated item shall be measured and paid for actual size of RCC member casted on Cubic meter basis.

Item No:- 32

Providing and laying controlled cement concrete M-200 and curing etc. complete including the cost of form work and excluding the cost of reinforcement etc. complete in (E) Stair case for Ground Floor to first floor

The relevant specification shall be followed as per General Technical specification for Building work booklet It.No.5.8.2.(E) P.No.47 including the cost of form work for Ground Floor to first floor instead of excluding the cost of form work .

For form work use the relevant specification shall be followed as per General Technical specification for Building work booklet It.No.9.1 (M) P.No.66

Consolidated item shall be measured and paid for actual size of RCC member casted on Cubic meter basis.

Item No:- 33

Providing and laying controlled cement concrete M-200 and curing etc. complete including the cost of form work and excluding the cost of reinforcement etc. complete in (E) Stair case for First Floor to Second floor

The relevant specification shall be followed as per General Technical specification for Building work booklet It.No.5.8.2. (E) P.No.47 + 5.4.13 P.46 including the cost of form work for First Floor to Second floor.

For form work use the relevant specification shall be followed as per General Technical specification for Building work booklet It.No.9.1 (M) P.No.66

Consolidated item shall be measured and paid for actual size of RCC member casted on Cubic meter basis.

Item No:- 34

Providing and laying controlled cement concrete M-200 and curing etc. complete including the cost of form work and excluding the cost of reinforcement etc. complete in (E) Stair case for Second floor to Third floor

The relevant specification shall be followed as per General Technical specification for Building work booklet It.No.5.8.2. (E) P.No.47 + 5.4.13 P.46 including the cost of form work for Second floor to Third floor.

For form work use the relevant specification shall be followed as per General Technical specification for Building work booklet It.No.9.1 (M) P.No.66

Consolidated item shall be measured and paid for actual size of RCC member casted on Cubic meter basis.

Item No:- 35

Providing and laying controlled cement concrete M-200 and curing etc. complete including the cost of form work and excluding the cost of reinforcement etc. complete in RCC Vertical and horizontal wall for Ground floor

The relevant specification shall be followed as per General Technical specification for Building work booklet It.No.5.8.2. (F) P.No.47 + 5.4.13 P.46 including the cost of form work for Ground floor.

For form work use the relevant specification shall be followed as per General Technical specification for Building work booklet It.No.9.1 (Q) P.No.66

Consolidated item shall be measured and paid for actual size of RCC member casted on Cubic meter basis.

Item No:- 36

Providing and laying controlled cement concrete M-200 and curing etc. complete including the cost of form work and excluding the cost of reinforcement etc. complete in RCC Vertical and horizontal wall for First floor

The relevant specification shall be followed as per General Technical specification for Building work booklet It.No.5.8.2. (F) P.No.47 + 5.4.13 P.46 including the cost of form work for First floor.

For form work use the relevant specification shall be followed as per General Technical specification for Building work booklet It.No.9.1 (Q) P.No.66

Consolidated item shall be measured and paid for actual size of RCC member casted on Cubic meter basis.

Item No:- 37

Providing and laying controlled cement concrete M-200 and curing etc. complete including the cost of form work and excluding the cost of reinforcement etc. complete in RCC Vertical and horizontal wall for Second floor

The relevant specification shall be followed as per General Technical specification for Building work booklet It.No.5.8.2. (F) P.No.47 + 5.4.13 P.46 including the cost of form work for Second floor.

For form work use the relevant specification shall be followed as per General Technical specification for Building work booklet It.No.9.1 (Q) P.No.66

Consolidated item shall be measured and paid for actual size of RCC member casted on Cubic meter basis.

Item No:- 38

Providing and laying controlled cement concrete M-200 and curing etc. complete including the cost of form work and excluding the cost of reinforcement etc. complete in RCC Vertical and horizontal wall for Third floor

The relevant specification shall be followed as per General Technical specification for Building work booklet It.No.5.8.2. (F) P.No.47 + 5.4.13 P.46 including the cost of form work for Third floor.

For form work use the relevant specification shall be followed as per General Technical specification for Building work booklet It.No.9.1 (Q) P.No.66

Consolidated item shall be measured and paid for actual size of RCC member casted on Cubic meter basis.

Item No:- 39

Providing and laying controlled cement concrete M-200 for RCC work and curing complete including the cost of form work but excluding the cost of reinforced concrete work in coping on Ground Floor

The relevant specification shall be followed as per General Technical specification for Building work booklet It.No.5.8.2.(C) P.No.47 + 5.4.13 P.46 including the cost of form work for coping on G. Floor instead of excluding the cost of form work.

For form work use the relevant specification shall be followed as per General Technical specification for Building work booklet It.No.9.1 (H)(1) P.No.65

Consolidated item shall be measured and paid for actual size of RCC member casted on Cubic meter basis on Ground floor

Item No:- 40

Providing and laying controlled cement concrete M-200 for RCC work and curing complete including the cost of form work but excluding the cost of reinforced concrete work in coping on First Floor

The relevant specification shall be followed as per General Technical specification for Building work booklet It.No.5.8.2.(C) P.No.47 + 5.4.13 P.46 including the cost of form work for coping on F. Floor instead of excluding the cost of form work.

For form work use the relevant specification shall be followed as per General Technical specification for Building work booklet It.No.9.1 (H)(1) P.No.65

Consolidated item shall be measured and paid for actual size of RCC member casted on Cubic meter basis on First floor

Item No:- 41

Providing and laying controlled cement concrete M-200 for RCC work and curing complete including the cost of form work but excluding the cost of reinforced concrete work in coping on Second Floor

The relevant specification shall be followed as per General Technical specification for Building work booklet It.No.5.8.2.(C) P.No.47 + 5.4.13 P.46 including the cost of form work for coping on Second Floor instead of excluding the cost of form work.

For form work use the relevant specification shall be followed as per General Technical specification for Building work booklet It.No.9.1(H)(1) P.No.65

Consolidated item shall be measured and paid for actual size of RCC member casted on Cubic meter basis for second floor

Item No:- 42

Providing and laying controlled cement concrete M-200 for RCC work and curing complete including the cost of form work but excluding the cost of reinforced concrete work in coping on Third Floor

The relevant specification shall be followed as per General Technical specification for Building work booklet It.No.5.8.2.(C) P.No.47 + 5.4.13 P.46 including the cost of form work for coping on Third Floor instead of excluding the cost of form work.

For form work use the relevant specification shall be followed as per General Technical specification for Building work booklet It.No.9.1(H)(1) P.No.65

Consolidated item shall be measured and paid for actual size of RCC member casted on Cubic meter basis.

Item No:- 43

Providing IS Mark TMT FE 500D bar reinforcement for RCC work including bending & placing in position complete up to All floor Level

1.0. GENERAL

This work shall consist of furnishing and placing TMT Fe-500 Conforming to IS 1786 2008 reinforcement Providing and applying anticorrosive treatment with polymer base materials to the steel reinforcement including descaling the dust and applying the preventive coating of approved make etc. complete, bars (intentioned) of the shape and dimensions shown on the drawings and conforming to these Specifications or as approved by the Engineer in charge.

2.0. MATERIAL

2.1. TMT Bars

Reinforcements may be either **TMT Fe-500** tensile steel, high strength deformed bars. They may be uncoated or coated with epoxy or with approved protective coatings.

2.2. T.M.T. bars reinforcement for R C C work shall conform IS 432 (Part II) 1966 and shall be of tested quality. It shall also comply with relevant part of IS 456-1966

2.3. All reinforcement shall be clean and free from dirt, paint, grease or oil, all scale or loose or thick rust at the time of placing

2.4. All steel shall be procured from original producers no re-rolled steel shall be incorporated in the work

2.5. Only new steel shall be delivered to the site every bar shall be inspected before placing to its position and defective brittle or burnt bar shall be discarded cracked ends of bars shall be discarded

3.0. Pitch

3.1. Distance between bars shall be as specified in drawings and as directed by the Engineer in Charge all bars shall be placed at an accurate distance from each other and shall be bind tightly to maintain the desired pitch Suitable means shall be provided for holding bars securely in position

4.0. Binding wire

4.1. Mild steel binding wire shall be of 1.63 mm or 1.22 mm (16 to 18 gauge diameter and shall conform IS 280-1972

4.2. The use of black wire will be permitted for binding reinforcement bars. It shall be free from dirt, paint, grease or oil, oil scale or loose or thick rust and any other undesirable coating which may prevent adhesion of cement mortar at the time of binding

4.3. Only new binding wire shall be delivered to the site all binding wire shall be inspected before binding to its position and defective brittle, rusted, used wire, shall be discarded

5.0. PROTECTION OF REINFORCEMENT

5.1. Uncoated reinforcing steel shall be protected from rusting or chloride contamination. Reinforcements shall be free from rust, mortar, loose mill scale, grease, oil or paints. This may be ensured either by using reinforcement fresh from the factory or thoroughly cleaning all reinforcement to remove rust using any suitable method such as sand blasting, mechanical wire brushing, etc. as directed by the Engineer. Reinforcements shall be stored on bricks, racks or platforms and above the

ground in a clean and dry condition and shall be suitably marked to facilitate inspection and identification.

5.2. Portions of uncoated reinforcing steel and dowels projecting from concrete shall be protected within one week after initial placing of concrete with a brush coat of neat cement mixed with water to a consistency, of thick paint. This coating shall be removed by lightly tapping with a hammer or other tool not more than one week before placing of the adjacent pour of concrete. Coated reinforcing steel shall be protected against damage to the coating. If the coating on the bars is damaged during transportation or handling and cannot be repaired, the same shall be rejected.

6.0. Workmanship

6.1. The work shall consist of furnishing and placing reinforcement to the shape and dimensions shown as on the drawings or as directed by The Engineer in charge.

6.2. Reinforcing steel shall conform accurate to the dimensions given in the bar bending schedules shown on relevant drawing

7.0. BENDING OF REINFORCEMENT

7.1. Bar bend g schedule shall be furnished by the Contractor and got approved by the Engineer before start of work.

7.2. Reinforcing steel shall conform to the dimensions and shapes given in the approved bar bending Schedules.

7.3. Bars shall be bent cold to the specified shape and dimensions or directed by the Engineer using a proper bar bender operated by hand power to obtain the correct radius of bends and shape.

Bars shall not be bent or straightened in a manner that will damage parent material or the coating bars bent during transport or handling shall, be straightened before being used on work and shall not be heated to facilitate straightening.

8.0. PLACING OF REINFORCEMENT

8.1. The reinforcement cage should generally be fabricated in the yard at ground level, and then shifted and placed in position. The reinforcement shall be placed strictly, in accordance with the drawings and shall be assembled in position, only when structure is otherwise ready for placing of concrete. Prolonged time gap, between assembling of reinforcements and casting of concrete, which may result in rust formation on the surface, shall not be permitted.

8.2. Reinforcement bars shall be placed accurately in position as shown on the drawings. The bars, crossing one another shall be tied together at every intersection with binding wire (annealed), conforming to IS 280 to make the skeleton of the reinforcement rigid such that the reinforcement does not get displaced during placing of concrete, or any other operation. The diameter of binding wire shall not be less than 1 mm.

8.3. Bars shall be kept in position usually by the following methods

In case of beam and slab construction, industrially produced polymer cover blocks of thickness equal to the specified cover shall be placed between the bars and formwork subject to Satisfactory evidence that the polymer composition is not harmful to concrete and reinforcement. Cover blocks made of concrete may be permitted by the Engineer, provided they have the same strength and specification as those of the member.

8.4. In case of dowels for Columns and walls the vertical reinforcement shall be kept in position by means of timber templates with slots in them accurately, or with cover blocks tied to the

Reinforcement Timber templates shall be removed after the concreting has progressed up to a level just below their location.

8.5. Layers of reinforcements shall be separated by spacer bars at approximately One meter intervals. The minimum diameter of spacer bars shall be 12 mm or equal to maximum size of main reinforcement or maximum size of coarse aggregate, whichever is greater. Horizontal reinforcement shall not be, allowed to sag between supports.

8.6. Necessary stays, blocks, metal chairs, spacers, metal hangers supporting wires etc, or other subsidiary, reinforcement shall be provided to fix the reinforcements firmly in its correct position.

8.7. Use of pebbles, broken stone, metal pipe, brick, mortar or wooden blocks etc as devices for positioning reinforcement shall not be permitted.

8.8. Bars coated with epoxy or any other approved protective coating shall be placed on supports that do not damage the coating. Supports shall be installed in a manner such that planes of weakness are not created in hardened concrete. The coated reinforcing steel shall be held in place by use of plastic or plastic coated binding wires especially manufactured for the purpose.

8.9. Placing and fixing of reinforcement shall be inspected and approved by the Engineer before concrete is deposited.

9.0. Lapping

9.1. All reinforcement shall be furnished in full lengths as indicated on the drawing. No splicing of bars, except where shown on the drawing; will be permitted without approval of the Engineer. The lengths of the splice shall be as indicated on drawing or as approved by the Engineer. Where practicable, overlapping bars shall not touch each other, and shall be kept apart by 25 mm or 1 1 1 4 times the maximum size of coarse aggregate, whichever is greater, If this is not feasible, overlapping bars shall be bound with annealed steel binding wire, not less than 1 mm diameter and twisted tight in such a manner as to maintain minimum clear cover to the reinforcement from the concrete surface. Lapped splices shall be staggered or located at points, along the span where stresses are low.

10.0. Welding

10.1 Splicing by welding of reinforcement will be permitted only if detailed on the drawing or approved by the Engineer. Weld shall develop an ultimate strength equal to or greater than that of the bars connected.

10.2. While welding may be permitted for T.M.T. reinforcing bars conforming to IS 432, welding of deformed bars conforming to IS 1786 shall in general be prohibited. Welding may be permitted in case of bars of other than S 240 grade including special. Welding grade of S 415 grade bars conforming to IS 1786, for which necessary chemical analysis has been secured and the carbon equivalent (CE) calculated from the chemical composition using the formula

$$CE = C + \frac{Mn}{6} + \frac{Cr + Mg + V}{5} + \frac{Ni + Cu}{15}$$

is 0.4 or less.

10.3. The method of welding shall conform to IS 2751 and IS 9417 and to any supplemental specifications to the satisfaction of the Engineer

10.4. Bars shall be bent cold to the specified shape and dimensions or as directed by Engineer in charge using the proper bender tool, operated by hand or power to attain proper radius of bends. Bars shall

not be bent or straightened in a manner that will injure the material. Bars bent during transport or handling shall be straightened before being used in the work. Bars shall not be heated to facilitate bending

10.5. Unless otherwise specified a 'U' type hook at the end of each bar shall invariably be provided to main reinforcement. The radius of the bend shall not be less than twice the diameter of the round bar and the length of the straight part of the bar beyond the end of the curve shall be at least four times the diameter of the round bar. In case of bars which are not round and in case of deformed bars, the diameter shall be taken as the diameter of circle having an equivalent effective area. The hooks shall be suitably encased to prevent any spalling of the concrete

10.6. All reinforcement bars shall be accurately placed in exact position shown on the drawings and shall be securely held in position during placing of concrete by annealed binding wire not less than 1 mm in size and by using say blocks or metal chairs spacers, metal hangers, supporting wires or other approved devices at sufficiently close intervals, Bars shall not be allowed to sag between supports not displaced during concreting or any other operations of the work All devices used for positioning shall be of non-corrodible material wooden and metal supports shall not extend to the surface of the concrete, except where shown in drawings. Placing bars on layers of freshly laid concrete as the work progresses for adjusting bar spacing shall not be allowed. Pieces of broken stone or brick and wooden blocks shall not be used Layers of bars shall be separated by spacer bars pre-cast mortar blocks or other approved devices. Reinforcement after bending placed in position shall be maintained in a clean condition until completely embedded in concrete, Special care shall be exercised to prevent any displacement of reinforcement in concrete already placed. To prevent reinforcement from corrosion, concrete cover shall be provided as indicated on drawings. All bars protruding from concrete and to which other bars are to be lapped and which are likely to be exposed for a period exceeding 10 days shall be protected by a thick coat of neat cement grout

10.7. Bars crossing each other where required shall be secured by binding wire (annealed) of size not less than 1 mm in such a manner that they do not slip over at the time of fixing and concreting.

As far possible bars of full length shall be used in case this is not possible, overlapping of bars shall be done as directed by the Engineer in charge When practicable overlapping bars shall not touch each other, but be kept apart by 25 mm Where no feasible overlapping bars shall be bound with annealed wires not less than 1 mm thick twisted tight The overlaps shall be staggered for different bars and located at points along the span where neither shear nor bending moments is maximum.

10.8. Whenever indicated on drawing or desired the Engineer in charge bars shall be jointed by coupling which shall have a cross section sufficient to transmit the full stresses of bars The end of the bars that are jointed by coupling shall be upset for sufficient length so that the effective cross section at the base of threads is not less than the normal cross section of the bar. Threads shall be standard threads Steel for coupling shall conform to IS 226

10.9. When permitted or specified on the drawings joints of reinforcement bars shall butt-welded so as to transmit their full stresses Welded joints shall preferably be located at points when steel will not be subject to more than 75 percent of the maximum permissible stresses and welds so staggered that at any one section not more than 20 percent of the rods are welded Only electric arc welding using a process which excludes air from the molten metal and conforms to any or other special provisions for the work shall be accepted Suitable means shall be provided for holding bars securely in position during welding It shall be ensured that no voids are left in welding and when welding is done in two or three stages previous surface shall be cleaned properly Ends of bars shall be cleaned of all loose scale rust stains paint and other foreign matter before welding Only competent welders shall be employed on the work. The M S electrodes used for welding shall conform IS 814 Welded

pieces of reinforcement shall be tested. Specimen shall be taken from the actual site and their number shall frequency to test shall be as directed by the Engineer in charge

11.0 MODE OF MEASUREMENTS and PAYMENT

For the purpose of payment the bar shall be measured correct up to 10 mm length and weight payable works out at the rate specified below

Sr. No	Diameter of steel	weight of steel per running meter	Sr. No	Diameter of steel	weight of steel per running meter
1	6 mm	0.22 Kg Rmt	8	20 mm	2.47 Kg Rmt
2	8 mm	0.39 Kg Rmt	9	22 mm	2.98 Kg Rmt
3	10 mm	0.62 Kg Rmt	10	25 mm	3.85 Kg Rmt
4	12 mm	0.89 Kg Rmt	11	28 mm	4.83 Kg Rmt
5	14 mm	1.21 Kg Rmt	12	32 mm	6.31 Kg Rmt
6	16 mm	1.58 Kg Rmt	13	36 mm	7.99 Kg Rmt
7	18 mm	2.00 Kg Rmt	14	40mm	9.86 Kg Rmt

Excess consumption over 5% will be charged at penal rate.

Reinforcement shall be measured in length including hooks, if any, separately for different diameters as actually used in work, excluding overlaps. From the length so measured, the weight of reinforcement shall be calculated in tonnes on the basis of IS 1732. Wastage, overlaps, couplings, welded joints, spacer bars, chairs, stays, hangers and annealed steel wire or other methods for binding and placing shall not be measured and cost of these items shall be deemed to be included in the rates for reinforcement..

The contract unit rate for coated uncoated reinforcement shall cover the cost of material, fabricating, transporting, storing, bending, placing, binding and fixing in position as shown on the drawings as per these specifications and as directed by the Engineer, including all labour, equipment, supplies, incidentals, sampling, testing and supervision.

The unit Rate for coated reinforcement shall be deemed to also include cost of all material, labour, tools and plant, royalty, transportation and expertise required to carry out the work. The rate shall also cover sampling, testing and supervision required for the work. **No Payment shall be given for Lap.**

The rate shall be for a unit of **One Kg.**

Item No:- 44

Providing and fixing 90 cm Height Stainless Steel Railing made from anticorroive 316 grade S S pipe of 50 mm dia (16 Gauge) as hand rail with S S 316 grade Baluster of 38 mm dia Box pipe (16 Gauge) as a vertical support fixed in RCC slab at 1.2m c/c including three horizontal S S pipes of 25 mm dia (16 Gauge) at eqal distance fixed by 18.75 mm dia (16 Gauge) S S pipe with baluster including accessories as per detailed drawing as directed etc. complete.

General

Providing and fixing 90 cm Height Stainless Steel Railing made from anticorrosive 316 grade S S pipe of 50 mm dia (16 Gauge) as hand rail with S S 316 grade Baluster of 38 mm dia Box pipe (16 Gauge) as a vertical support fixed in RCC slab at 1.2m c/c including three horizontal S S pipes of 25 mm dia (16 Gauge) at equal distance fixed by 18.75 mm dia (16 Gauge) S S pipe with baluster including accessories as per detailed drawing as directed etc. complete.

Material

anticorrosive 316 grade S S pipe of 50 mm dia (16Gauge) as hand rail

S S 316 grade Baluster of 38 mm dia Box pipe (16 Gauge) as a vertical support fixed

RCC slab at 1.2m c/c including three horizontal S S pipes of 25 mm dia (16 Gauge) at equal distance fixed

18.75 mm dia (16 Gauge) S S pipe with baluster and including accessories as per detailed drawing as directed etc. complete.

The material shall be free from loose miles scale rust piles or other affective strength and durability.

Workmanship

Fixing 90 cm Height Stainless Steel Railing made from anticorrosive 316 grade S S pipe of 50 mm dia (16 Gauge) as hand rail with S S 316 grade Baluster of 38 mm dia Box pipe (16 Gauge) as a vertical support fixed in RCC slab at 1.2m c/c including three horizontal S S pipes of 25 mm dia (16 Gauge) at equal distance fixed by 18.75 mm dia (16 Gauge) S S pipe with baluster including accessories as per detailed drawing as directed etc. complete.

If stainless tell wall brackets of required size fixed in wall including providing and fixing the same with stainless steel wall brackets of approved type design and quality as directed by engineering in- charged

Mode of measurement and payment

The item shall be measured for its length limiting dimensions to those specified on place of directed. The rat shall be for a unit of one square meter.

The Payment will be made on Running meter basis of the finished work.

The rate s hall be for all consolidate item of unit of one running meters

Item No:- 45

Providing and fixing 30 cm Height Stainless Steel Railing made from anticorrosive 316 grade S S pipe of 50 mm dia (16 Gauge) as hand rail with S S 316 grade Baluster of 38 mm dia Box pipe (16 Gauge) as a vertical support fixed in RCC slab at 1.2m c/c including three horizontal S S pipes of 25 mm dia (16 Gauge) at equal distance fixed by 18.75 mm dia (16 Gauge) S S pipe with baluster including accessories as per detailed drawing as directed etc. complete.

General

Providing and fixing 30 cm Height Stainless Steel Railing made from anticorrosive 316 grade S S pipe of 50 mm dia (16 Gauge) as hand rail with S S 316 grade Baluster of 38 mm dia Box pipe (16 Gauge) as a vertical support fixed in RCC slab at 1.2m c/c including three horizontal S S pipes of 25 mm dia (16 Gauge) at equal distance fixed by 18.75 mm dia (16 Gauge) S S pipe with baluster including accessories as per detailed drawing as directed etc. complete.

Material

Anticorrosive 316 grade S S pipe of 50 mm dia (16 Gauge) as hand rail

S S 316 grade Baluster of 38 mm dia Box pipe (16 Gauge) as a vertical support fixed

RCC slab at 1.2m c/c including three horizontal S S pipes of 25 mm dia (16 Gauge) at equal distance fixed

18.75 mm dia (16 Gauge) S S pipe with baluster and including accessories as per detailed drawing as directed etc. complete.

The material shall be free from loose miles scale rust piles or other affective strength and durability.

Workmanship

Fixing 30 cm Height Stainless Steel Railing made from anticorrosive 316 grade S S pipe of 50 mm dia (16 Gauge) as hand rail with S S 316 grade Baluster of 38 mm dia Box pipe (16 Gauge) as a vertical support fixed in RCC slab at 1.2m c/c including three horizontal S S pipes of 25 mm dia (16 Gauge) at equal distance fixed by 18.75 mm dia (16 Gauge) S S pipe with baluster including accessories as per detailed drawing as directed etc. complete.. For All Floor

Mode of measurement and payment

The item shall be measured for its length limiting dimensions to those specified on place of directed. The rat shall be for a unit of one square meter.

The Payment will be made on Running meter basis of the finished work.

The rate s hall be for all consolidate item of unit of one running meters

Item No:- 46

Brick work using common burnt clay building bricks having crushing strength not less than 35 kg./Sq.Cm. in foundation and plinth in Cement Mortar 1:5. (1- Cement : 5 -fine sand) (B) Conventional below plinth

The relevant specification shall be followed as per General Technical specification for Building work booklet It.No.6.13.(B)/P.No.51

The rate shall before a unit of one cubic meter.

Item No:- 47

Brick work using common burnt clay building bricks having crushing strength not less than 35 kg./Sq.Cm. in foundation and plinth in Cement Mortar 1:5. (1- Cement : 5 -fine sand)(B) Conventional Ground Floor

The relevant specification shall be followed as per General Technical specification for Building work booklet It.No.6.19. (B) P.No.53 except that using for cement mortar 1 6 (1cement 6 fine sand) for Ground Floor instead cement mortar 1 5 (1cement 5 fine sand)

The rate shall before a unit of one cubic meter.

Item No:- 48

Brick work using common burnt clay building bricks having crushing strength not less than 35 kg./Sq.Cm. in super structure in Cement Mortar 1:5. (1- Cement : 5 -fine sand)(B) Conventional First Floor

The relevant specification shall be followed as per General Technical specification for Building work booklet It.No.6.19.(B) P.No.53 + 6.20 P.54 except that using for cement mortar 1 6 (1cement 6 fine sand) for First Floor instead cement mortar 1 5 (1cement 5 fine sand)

The rate shall be for a unit of one cubic meter on first floor

Item No:- 49

Brick work using common burnt clay building bricks having crushing strength not less than 35 kg./Sq.Cm. in super structure in Cement Mortar 1:5. (1- Cement : 5 -fine sand) (B) Conventional Second Floor

The relevant specification shall be followed as per General Technical specification for Building work booklet It.No.6.19.(B) P.No.53 + 6.20 P.54 except that using for cement mortar 1 6 (1cement 6 fine sand) for second Floor instead cement mortar 1 5 (1cement 5 fine sand)

The rate shall be for a unit of one cubic meter on Second floor

Item No:- 50

Brick work using common burnt clay building bricks having crushing strength not less than 35 kg./Sq.Cm. in super structure in Cement Mortar 1:5. (1- Cement : 5 -fine sand)(B) Conventional Third Floor

The relevant specification shall be followed as per General Technical specification for Building work booklet It.No.6.19.(B) P.No.53 + 6.20 P.54 except that using for cement mortar 1 6 (1cement 6 fine sand) for Third Floor instead cement mortar 1 5 (1cement 5 fine sand)

The rate shall be for a unit of one cubic meter on Third floor

Item No:- 51

Half brick masonry in common burnt clay building bricks having crushing strength not less than 35 Kg/Sq.Cm. in Cement mortar 1:4 (1- Cement: 4 -coarse sand) in foundation and plinth (B) Conventional in super structure. for Ground floor.

The relevant specification shall be followed as per General Technical specification for Building work booklet It.No.6.30.(i)(B) P.No.54 for ground floor.

The rate shall be for a unit of one square meter

Item No:- 52

Half brick masonry in common burnt clay building bricks having crushing strength not less than 35 Kg/Sq.Cm. in Cement mortar 1:4 (1- Cement : 4 -coarse sand) in foundation and plinth (B) Conventional in super structure. for First floor.

The relevant specification shall be followed as per General Technical specification for Building work booklet It.No.6.30.(i)(B) P.No.54 + 6.33 (B), P. No-56 for First floor.

The rate shall be before a unit of one square meter.

Item No:- 53

Half brick masonry in common burnt clay building bricks having crushing strength not less than 35 Kg/Sq.Cm. in Cement mortar 1:4 (1- Cement : 4 -coarse sand) in foundation and plinth (B) Conventional in super structure. for Second floor.

The relevant specification shall be followed as per General Technical specification for Building work booklet It.No.6.30.(i)(B) P.No.54 + 6.33 (B), P. No-56 for Second floor.

The rate shall be before a unit of one square meter.

Item No:- 54

Providing and fixing 150 mm wide, approved quality chicken wire mesh at junction of brick work and RCC work or two dissimilar surfaces, at all heights fixed by nails, rowal plugs or tag by cement mortar 1:3 before applying the plaster, including curing, scaffolding all complete as directed.

In general the work shall be carried out as per the standard specifications of P.W.D. / C.P.W.D. / GWSSB relevant drawings and as per the instructions of Engineer in Charge. The work shall be carried out as per item description.

Material, Workmanship and Fixtures & Fastening etc. :

The chicken wire mesh shall be provided to prevent cracks appearing between junctions of column / beams and walls, 150 mm wide chicken wire mesh fixed with U nails, 150 mm centre to centre before plastering the junction. The plastering of walls and beam/column in one vertical plane should be carried out in one go.

Mode of measurement & payment:

The rates include all materials, labour, tools and plants in satisfactory completion of work as specified above.

The rates shall be for unit of one Sq.mt. for actual work done.

Item No:- 55

Providing 20 mm thick double coat mala cement plaster on interior brick / concrete work for plastering comprising of base coat of 12 mm thick cement plaster in cement mortar (1 Cement : 4 coarse sand) in rough finishing and 8 mm thick top coat of cement mortar 1:2 (1 Cement : 2 Coarse sand) finished with trowel including scaffolding curing etc. complete. with 10mm grooves at junction of structural members etc. comp. For Ground Floor

The relevant specification shall be followed as per General Technical specification for Building work booklet It.No.17.95 P.No.122 with 20 mm thick double coat mala cement plaster on interior brick / concrete work with 10mm grooves at junction of structural members etc. complete. For Ground Floor

The rate shall be for a unit of **one square meter**.

Item No:- 56

Providing 20 mm thick double coat mala cement plaster on interior brick / concrete work for plastering comprising of base coat of 12 mm thick cement plaster in cement mortar (1 Cement : 4 coarse sand) in rough finishing and 8 mm thick top coat of cement mortar 1:2 (1 Cement : 2 Coarse sand) finished with trowel including scaffolding curing etc. complete. with 10mm grooves at junction of structural members etc. comp. For First Floor

The relevant specification shall be followed as per General Technical specification for Building work booklet It.No.17.95 P.No.122 with 20 mm thick double coat mala cement plaster on interior brick / concrete work with 10mm grooves at junction of structural members etc. complete. For First Floor

The rate shall be for a unit of **one square meter**.

Item No:- 57

Providing 20 mm thick double coat mala cement plaster on interior brick / concrete work for plastering comprising of base coat of 12 mm thick cement plaster in cement mortar (1 Cement : 4 coarse sand) in rough finishing and 8 mm thick top coat of cement mortar 1:2 (1 Cement : 2 Coarse sand) finished with trowel including scaffolding curing etc. complete. with 10mm grooves at junction of structural members etc. comp. For Second Floor

The relevant specification shall be followed as per General Technical specification for Building work booklet It.No.17.95 P.No.122 with 20 mm thick double coat mala cement plaster on interior brick / concrete work with 10mm grooves at junction of structural members etc. complete. For Second Floor

The rate shall be for a unit of **one square meter**.

Item No:- 58

Providing 20 mm thick double coat mala cement plaster on interior brick / concrete work for plastering comprising of base coat of 12 mm thick cement plaster in cement mortar (1 Cement : 4 coarse sand) in rough finishing and 8 mm thick top coat of cement mortar 1:2 (1 Cement : 2 Coarse sand) finished with trowel including scaffolding curing etc. complete. with 10mm grooves at junction of structural members etc. comp. For Third Floor

The relevant specification shall be followed as per General Technical specification for Building work booklet It.No.17.95 P.No.122 with 20 mm thick double coat mala cement plaster on interior brick / concrete work with 10mm grooves at junction of structural members etc. complete. For Third Floor

The rate shall be for a unit of **one square meter**.

Item No:- 59

Providing 10 mm. Thick cement plaster in single coat for plastering on ceiling and soffits of stairs and finished even and smooth in : (I) Cement mortar 1:4 (1 cement : 4 sand) including Mala troveled finish etc. complete. Ground Floor

The relevant specification shall be followed as per General Technical specification for Building work booklet It.No.17.58.(ii)/P.120 +17.69&17.91/ P.121 with Mala troveled finish etc. complete. Ground Floor

The rate shall be for a unit of **one square meter**

Item No:- 60

Providing 10 mm. Thick cement plaster in single coat for plastering on ceiling and soffits of stairs and finished even and smooth in : (I) Cement mortar 1:4 (1 cement : 4 sand) including Mala troveled finish etc. complete. First Floor

The relevant specification shall be followed as per General Technical specification for Building work booklet It.No.17.58.(ii)/P.120 +17.69&17.91/ P.121 +17.94(II)/ P.122 with Mala troveled finish etc. complete. First Floor

The rate shall be for a unit of **one square meter**

Item No:- 61

Providing 10 mm. Thick cement plaster in single coat for plastering on ceiling and soffits of stairs and finished even and smooth in : (I) Cement mortar 1:4 (1 cement : 4 sand) including Mala troveled finish etc. complete. complete. Second Floor

The relevant specification shall be followed as per General Technical specification for Building work booklet It.No.17.58.(ii)/P.120 +17.69&17.91/ P.121 +17.94(II)/ P.122 with Mala troveled finish etc. complete. Second Floor

The rate shall be for a unit of **one square meter**

Item No:- 62

Providing 10 mm. Thick cement plaster in single coat for plastering on ceiling and soffits of stairs and finished even and smooth in : (I) Cement mortar 1:4 (1 cement : 4 sand) including Mala troveled finish etc. complete. Third Floor

The relevant specification shall be followed as per General Technical specification for Building work booklet It.No.17.58.(ii)/P.120 +17.69&17.91/ P.121 +17.94(II)/ P.122 with Mala troveled finish etc. complete. Third Floor

The rate shall be for a unit of **one square meter**

Item No:- 63

20 mm thick Sand faced cement plaster with 18x8 mm grooves as suggested by this office consisting of 12 mm thick backing coat of C.M. 1:3 (1 cement : 3 coarse sand) and 8 mm thick

finishing coat of C.M. 1:1 (1 cement : 1 coarse sand) for all heights as directed etc. complete. and as per pattern sample approved by the architect or directed engineer in-charge

The relevant specification shall be followed as per General Technical specification for Building work booklet It.No.17.95 P.No.122 with sand faced cement Gutka plaster 18x8 mm Groves at junction of structure member etc. complete.

The rate shall be for a unit of **one square meter**.

Item No:- 64

Providing throating or plaster drip and moulding to R.C.C. Chhajja.

The relevant specification shall be followed as per General Technical specification for Building work booklet It.No.5.4.18. P.No.39

The rate shall be for a unit of **one running meter**.

Item No:- 65

Applying two coats of acrylic lapy (putty) & two coats of primer of approved brand and manufacture on new wall surface to give an even shade including thoroughly brushing the surface free from mortar dropping and other foreign matter and sand papered smooth.

The relevant specification shall be followed as per General Technical specification for Building work booklet It.No.18.17. P.No.127 except that using for two coats of Birla (White cement based) or Asian (acrylic lapy-putty) or equivalent and two coats of primer of approved brand and manufacture on new wall surface instead of color washing of undecorative wall.

The rate shall be for a unit of **one square meter**.

Item No:- 66

Wall painting (Three coats) with plastic emulsion paint of approved brand and manufacture on undecorated wall with WITH ONE WALL TO HIGHLIGHT IN SPECIAL EFFECT (ROYALE PLAY) COLOUR surface to give an even shade including thoroughly brushing the surface free from mortar droppings and other foreign matter and sand papered smooth.

The relevant specification shall be followed as per General Technical specification for Building work booklet It.No.18.57 / P.No.136 except using of Wall painting (Three coats) with plastic emulsion paint of approved brand and manufacture on undecorated wall with WITH ONE WALL TO HIGHLIGHT IN SPECIAL EFFECT (ROYALE PLAY) COLOUR surface to give an even shade including thoroughly brushing the surface free from mortar droppings and other foreign matter and sand papered smooth.

The rate shall be for a unit of **one square meter**.

Item No:- 67

Painting (two coats) with plastic emulsion paint of approved brand and manufacture on undecorated ceiling surface to give an even shade including thoroughly brushing the surface free from mortar droppings and other foreign matter and sand papered smooth.

The relevant specification shall be followed as per General Technical specification for Building work booklet It.No.18.57 / P.No.136 + It.No.18.60 / P.No.137

The rate shall be for a unit of **one square meter**.

Item No:- 68

Wall Painting (Two coats) with weather proof 100 % acrylic emulsion paint of approved brand and manufacture and of required shade on exterior wall surface to give an even shade over and including primery coat with Alkaly resistance primer of approved brand after thoroughly brushing surface to remove all dust and remains of loose powdered material etc. copm. for all height

The relevant specification shall be followed as per General Technical specification for Building work booklet It.No.18.51 P.No.135 and It.No.18.53 P.No.136. For weather proof exterior 100% acrylic emulsion paint.

The rate shall be for a unit of **one square meter**.

Item No:- 69

Providing And filling with good quality cinder(steam coal) as directed by engineer in charge in sunks in layers of 15 cm thick,including watering,placing ,ramming well etc as directed, for all floor.

The sinder (steam coal) should be good quality or check by directed engineer in charge

In general the work shall be carried out as per the standard specifications of P.W.D. / C.P.W.D. / GWSSB relevant drawings and as per the instructions of Engineer in Charge. The work shall be carried out as per item description.

Mode of Measurement and Payment

The payment will be made on **Cubic Meter** basis of the finished work.

All necessary labour materials Equipment tools and plant, conveyance including loading and unloading etc shall be provided by the Contractor as directed by the Engineer in charge

The rate shall be for a unit of **one cubic meter**

Item No:- 70

Providing Water proofing Treatment on Sunk Slab including cement concrete flooring 1:2:4 (1-cement : 2-coarse sand : 4-graded stone aggregate 20mm nominal size) laid in one layer and finished with a floating coat of neat cement average 50mm thick to Prepare slope including water proofing chemical etc. Complete for Sunk Slab All Floor.

In general the work shall be carried out as per the standard specifications of P.W.D. / C.P.W.D./ GWSSB relevant drawings and as per the instructions of Engineer in Charge. The work shall be carried out as per item description.

Materials: Water shall conform to M-1, Cement shall conform to M-3, Sand shall conform to M-6, Cement mortar shall conform to M – 11, Waterproofing compound/ admixture shall conform to approved make & specifications.

PROCEDURE:

Surface preparation and application:

1. Concrete surfaces will be cleaned and made free of contaminants and laitance.
2. Concrete must be sound.
3. Surfaces to be treated will be pro-soaked with clean water to a saturated surface dry (SSD) condition. Do not leave any standing water.
4. Prepare waterproofing compound/ admixture to a slurry consistency (5 parts power to 2 part clean water) or as recommended by manufacturer. Mix only enough material that can be placed in 15 minutes to 20 minutes.
5. Apply slurry to the concrete surface with a brush in circular, scrubbing motion so as to achieve maximum adhesion and penetration. Apply the slurry to the entire concrete slab.
6. Protect the area from rapidly drying out due to heat, damage by rain, excessive wind and freezing temperatures for 48 hours.
7. Testing with pounding to be done after 7 days.

After testing with ponding after 7 days, a layer of plaster with waterproofing compound/ admixture about 25 mm thick in the floor / depression and about 18 mm on the sidewalls / depression upto the floor level shall be provided over the surface treated with approved waterproofing powder. The waterproof plaster about 18 mm thick to be continued on the walls above the floor level for full height with surface suitable to receive further finishing treatment all complete as per companies specifications and instructions and as directed for all heights and floors. The round vata shall be included in this in sqmt and shall be taken upto top of round on wall.

Mode of Measurement and payment:

The rate includes all materials, labour, tools and plants in satisfactory completion of work as specified above.

The round vata shall be included in this in sq.m and shall be taken upto top of round on wall.

The rates shall be for unit of one Sq.mt. for actual work done.

Item No:- 71

Providing and laying water proofing treatment with china mosaic tiles flooring over avg 50 mm C.C. 1:2:4 bedding for maintaining slope for plain and curve surface & 12 mm to 20 mm of broken piece not more than 2.5CM of ceramic / glazed tiles (one for more colour as directed) to be laid over cement mortar bedding of C M 1:3 (1 cement : 3 sand) contain water proofing materials per bag of cement useas specified by manufactured and slops to be tempered to bring mortar up to surface with using white cement and colour pigment including rounding of junctions and extending them up to 15 cm along the wall and curing with bends any patens or design as per drawing and cleaning by using oxalic acid etc. complete.

1.0 Material

Water shall confirm Material Specification no M- 1

Cement shall confirm Material Specification no M- 3

Sand shall confirm Material Specification no M- 6

Crushed stone aggregates shall confirm Material Specification no M- 12

Brick aggregates shall confirm Material Specification no M- 14

White Cement Shall confirm Material Specification no M- 4

Water proofing compound shall be done as per Specification no 17.70 Page No. 121

Chemicals and compounds of approved shall be of approved quality and make. The proportion of the compound shall be of specified proportion as specified by the manufacturer

2.0 Workmanship

Cleaning the slab surface by mechanical means or wire brush to remove old paint, dust, dirt and all loose material

(a) Providing first layer of C.M. 1 4 of 40 mm thickness mixed with water proofing compound at rate prescribed by manufacturer, including putting of brick bats of average thickness 40 mm Well immersed in water laid uniformly on first layer of mortar including applying cement slurry @ rate of 0.08 bag sqm. on fixed layer of brick bats including maintaining necessary slope

(B) providing second layer 40 mm thick C.M 1 4 mixed with water proofing compound as directed, including finishing smooth with cement slurry as directed complete.

(C) after finishing the whole terrace shall be flooded with water for a period of two weeks as directed

The waterproofing material of approved quality shall be mixed with the cement slurry as per specified proportion as directed by the manufacturer of the compound and as directed by The engineer in charge the mixture shall be applied uniformly to the surface in required coats as directed by the engineer in charge

A guarantee bond on appropriately stamped paper shall be given by the contractor to the department in the manner and form prescribed below

FORM OF GUARANTEE BOND

I We (Contractor) hereby guarantee that water proofing work will remain leakage proof for period of 3 years after completion of the work of water proofing treatment as per the terms and conditions of the contract and leakage that might be caused in building where the water proofing treatment is done we hereby Guarantees to make good any loss of damages suffered by the Government of Gujarat and further grantee to redo effective work without claiming any extra cost

2.1 This guarantee shall remain in force for the period of 5 years from the completion of the work under the contract and it shall remain binding to the contractor for period of 5 Years.

2.2 The deposit at the rate of 50% of the cost of this item the running and final bills shall be recovered and retained for the first one years after completion of the guarantee period balance of guarantee period and shall be refunded only after the completion of the guarantee period.

3.0 MODE OF MEASUREMENT and PAYMENT

3.1 The unit rate of water proofing treatment shall include the cost of all materials, tools and plant chemicals and compounds required for water proofing, Applying the same to specified surface as per drawings, finishing, painting with three coats, etc, and all other incidental expenses for producing water proofing work to complete the structure or its components as shown on the drawings and according to these specifications. They shall also include the cost of making, fixing and removing of all scaffolding and forms required for the work.

The rate of water proofing shall include the cost of all labour, materials chemicals and compounds tools and plant scaffolding and all incidental expenses as described herein above.

3.2 The water proofing work shall be measured for its length and width, limiting dimensions to those specified on plan or as directed. The rate shall be for a unit of one sq. Meter

3.3 The payment will be made on sq. meter basis of the finished work.

Item No:- 72

Providing & fixing in position standard extruded Aluminum Three track (3 shutter + 1 Mosquito net shutter) with Standard Extruded Colour Anodied Alluminium Section Equivalent to Jindal Series E (30mm) Section Numbered: Frame -Bottom with Weep Holes -20928, Frame Top & Side-20837 ,Shutter Top & Bottom 20993, Shutter Inter Lock -20550 ,Shutter Side (handle) -20549 With 5mm thick Transparent Tinted Float Glass With EPDM Rubber Gasket, Air Lock Stirip dd another shutter fitted with SS wire mosquito mesh jali in the same Aluminium shutter section and Finishing , Joint With Section Sealant, With Power Coated Standard Alluminium Fitting.with as per window size including all required materials labours and equipments as per detailed drwg. as directed.

GENERAL

Providing & fixing in position standard extruded Aluminum Three track (3 shutter + 1 Mosquito net shutter) with Standard Extruded Colour Anodied Alluminium Section Equivalent to Jindal Series E (30mm) Section Numbered: Frame -Bottom with Weep Holes -20928, Frame Top & Side-20837 ,Shutter Top & Bottom 20993, Shutter Inter Lock -20550 ,Shutter Side (handle) -20549 With 5mm thick Transparent Tinted Float Glass With EPDM Rubber Gasket, Air Lock Stirip dd another shutter fitted with SS wire mosquito mesh jali in the same Aluminium shutter section and Finishing , Joint With Section Sealant, With Power Coated Standard Alluminium Fitting.with as per window size including all required materials labours and equipments as per detailed drwg. as directed.

MATERIAL

Aluminium standard section

Specification no M-31 from specification booklet for Building works

The size of the bottom member shall be as mentioned in description of the item

Outer frame sections shall be of three track

Transparent bronze colour tinted float glass

Specification no M-38 from specification booklet for Building works for Glass shall be applied for this item except the glass shall be transparent bronze colour tinted float glass of approved brand and colour and thickness

The glass shall be of approved make having thickness of 5 mm the glass shall be transparent bronze colour tinted and free from scratches and cracks the glass shall be provided on the top

Glassing clips

Glazing clips shall be of specified size and shall be Free from any scratches or holes or any damages on surface. All section shall have finished luster surface on all sides

Rubber Gasket

Rubber gasket shall be of approved make. Shall be Free from any scratches or holes or any damages on surface. And shall have finished luster surface on all sides

Fixtures

Specification no M-43 from specification booklet for Building works for fixture and fastening shall be applied for this item

Handles

Handles shall be of approved make. Shall be Free from any scratches or holes or any damages on surface. And shall have finished luster surface on all sides

Bolts

All bolts shall be of approved make. Shall be Free from any scratches or holes or any damages on surface. And shall have finished luster surface on all sides

WORKMANSHIP

The Work of aluminium Window shall be done with extreme finishing. The Glass shall be fixed in shutters as directed by Engineer in charge using glazing clips and rubber gaskets as required all the fixtures and fastenings shall be fitted at right place and as directed by Engineer in charge

Mode of Measurement and Payment

The payment will be made on square Meter basis of the finished work.

All necessary labour materials Equipment tools and plant, conveyance including loading and unloading etc. shall be provided by the Contractor as directed by the Engineer in charge

The item shall be measured for its length and width limiting dimensions to those specified on plan or as directed.

The rate shall be for a unit of **one square meter**

Item No:- 73

Providing and fixing in position standard extruded Aluminium three-track sliding window (2 shutters + 1 mosquito net shutter) made of colour anodized extruded Aluminium sections equivalent to Jindal Series E (30 mm), comprising: Frame Bottom with weep holes – Section No. 20928, Frame Top & Side – Section No. 20837, Shutter Top & Bottom – Section No. 20993, Shutter Interlock – Section No. 20550, and Shutter Side (handle) – Section No. 20549. The shutters shall be fitted with 5 mm thick transparent tinted float glass fixed with EPDM rubber gasket, and one shutter provided with SS wire mosquito mesh jali in the same Aluminium shutter section. The system shall include air lock strip, joint sealing with approved sealant, and finishing with powder-coated standard Aluminium fittings, complete as per window size and detailed drawings. The rate shall be inclusive of all materials, fittings, fixtures, labour, equipment, and accessories, and the work shall be carried out as directed by the Engineer-in-Charge.

GENERAL

Providing and fixing in position standard extruded Aluminium three-track sliding window (2 shutters + 1 mosquito net shutter) made of colour anodized extruded Aluminium sections equivalent to Jindal Series E (30 mm), comprising: Frame Bottom with weep holes – Section No. 20928, Frame Top & Side – Section No. 20837, Shutter Top & Bottom – Section No. 20993, Shutter Interlock – Section No. 20550, and Shutter Side (handle) – Section No. 20549. The shutters shall be fitted with 5 mm thick transparent tinted float glass fixed with EPDM rubber gasket, and one shutter provided with SS wire mosquito mesh jali in the same Aluminium shutter section. The system shall include air lock strip, joint sealing with approved sealant, and finishing with powder-coated standard Aluminium fittings, complete as per window size and detailed drawings. The rate shall be inclusive of all materials, fittings, fixtures, labour, equipment, and accessories, and the work shall be carried out as directed by the Engineer-in-Charge.

MATERIAL

Aluminium standard section

Specification no M-31 from specification booklet for Building works

The size of the bottom member shall be as mentioned in description of the item

Outer frame sections shall be of three track

Transparent bronze colour tinted float glass

Specification no M-38 from specification booklet for Building works for Glass shall be applied for this item except the glass shall be transparent bronze colour tinted float glass of approved brand and colour and thickness

The glass shall be of approved make having thickness of 5 mm the glass shall be transparent bronze colour tinted and free from scratches and cracks the glass shall be provided on the top

Glassing clips

Glazing clips shall be of specified size and shall be Free from any scratches or holes or any damages on surface. All section shall have finished luster surface on all sides

Rubber Gasket

Rubber gasket shall be of approved make. Shall be Free from any scratches or holes or any damages on surface. And shall have finished luster surface on all sides

Fixtures

Specification no M-43 from specification booklet for Building works for fixture and fastening shall be applied for this item

Handles

Handles shall be of approved make. Shall be Free from any scratches or holes or any damages on surface. And shall have finished luster surface on all sides

Bolts

All bolts shall be of approved make. Shall be Free from any scratches or holes or any damages on surface. And shall have finished luster surface on all sides

WORKMANSHIP

The Work of aluminium Window shall be done with extreme finishing. The Glass shall be fixed in shutters as directed by Engineer in charge using glazing clips and rubber gaskets as required all the fixtures and fastenings shall be fitted at right place and as directed by Engineer in charge

Mode of Measurement and Payment

The payment will be made on square Meter basis of the finished work.

All necessary labour materials Equipment tools and plant, conveyance including loading and unloading etc. shall be provided by the Contractor as directed by the Engineer in charge

The item shall be measured for its length and width limiting dimensions to those specified on plan or as directed.

The rate shall be for a unit of **one square meter**

Item No:- 74

Providing & Fixing in position standard extruded approved colour anodised Aluminum Ventilator with outer frame (of Jindal Section No.21458,@ Wt0.650 kg/Rmt) with 5mm thick Bajari figure adgesteble tinted louvers glass fixed to alluminium strip blade including fixtures, fastenning, labours and equipments as per detailed drawing as directed. For Ventilators

GENERAL

This work shall consist of furnishing and placing providing and fixing Aluminium Ventilator for with frame of the shape and dimensions shown on the drawings and conforming to these Specifications or as approved by the Engineer in charge.

MATERIAL

Aluminium standard section

Specification no M-31 from specification booklet for Building works.

The size of the bottom member shall be as mentioned in description of the item.

The frosted lovers glass should be 4mm thick louvers & 5 mm thick transparent bronze colour tinted float fixed glass fixed to aluminium strip blade it should be confirm with m-38 from specification booklet for building work.

The 5 mm thick frosted lovers glass and transparent bronze colour tinted float glass should be free form scratches and cracks

All section should be of good quality of brand and manufacture. It should be of size described in item description as directed by Engineer in charge. All sections should be colour anodized.

Fixtures

Specification no M-43 from specification booklet for Building works for fixture and fastening shall be applied for this item.

Bolts

All bolts shall be of approved make. Shall be Free from any scratches or holes or any damages on surface. And shall have finished luster surface on all sides.

WORKMANSHIP

Aluminium Section No.21458,@ Wt0.650 kg/Rmt) with 5mm thick with colour shall be fitted at right place and as directed by Engineer in charge.

The Work of ventilation shall be done with extreme finishing. The Glass shall be fixed in frame for ventilation as directed by Engineer in charge. Required all the fixtures and fastenings shall be fitted at right place and as directed by Engineer in charge.

Mode of Measurement and Payment

The payment will be made on square Meter basis of the finished work.

All necessary labour materials Equipment tools and plant, conveyance including loading and unloading etc shall be provided by the Contractor as directed by the Engineer in charge.

The consolidated item shall be measured for its length and width limiting dimensions to opening of window.

The rate shall be for a unit of one square meter.

Item No:- 75

Providing and fixing 35 mm thick flush single door shutter, solid core type, conforming to IS:2202 and ISI approved, mounted in a wooden frame of size 100 mm × 50 mm for durable grip of hinges. The shutter shall be finished with 1 mm thick decorative laminate on both sides, with machine-glued PVC banding on the periphery. The work shall include providing and fixing 600 mm long stainless steel handles on both sides, stainless steel fixtures, locking arrangement of approved standard make, and fixing of 4 nos. 150 mm long stainless steel hinges per shutter. All fittings, fasteners, accessories, labour, and materials shall be included, with sample and shade approved by the Engineer-in-Charge.

GENERAL

Providing and fixing 35 mm thick flush single door shutter, solid core type, conforming to IS:2202 and ISI approved, mounted in a wooden frame of size 100 mm × 50 mm for durable grip of hinges. The shutter shall be finished with 1 mm thick decorative laminate on both sides, with machine-glued PVC banding on the periphery. The work shall include providing and fixing 600 mm long stainless steel handles on both sides, stainless steel fixtures, locking arrangement of approved standard make, and fixing of 4 nos. 150 mm long stainless steel hinges per shutter. All fittings, fasteners, accessories, labour, and materials shall be included, with sample and shade approved by the Engineer-in-Charge.

Flush door shutter

The relevant specification shall be followed as per General Technical specification for Building work booklet It.No.10.30 P.No.72 except that using 35 mm thick flush single door shutter, solid core type, conforming to IS:2202 and ISI approved, mounted in a wooden frame of size 100 mm × 50 mm for durable grip of hinges. The shutter shall be finished with 1 mm thick decorative laminate on both sides, with machine-glued PVC banding on the periphery. The work shall include providing and fixing 600 mm long stainless steel handles on both sides, stainless steel fixtures, locking arrangement of approved standard make, and fixing of 4 nos. 150 mm long stainless steel hinges per shutter. All

fittings, fasteners, accessories, labour, and materials shall be included, with sample and shade approved by the Engineer-in-Charge.

For colour The relevant specification shall be followed as per General Technical specification for Building work booklet It.No.19.71 P.No.142

Aluminium shall be confirm with Specification no M-31 from specification booklet for Building works

Aluminium section

Aluminium standard section

Specification no M-31 from specification booklet for Building works.

The size of the bottom member shall be as mentioned in description of the item.

All section should be of good quality of brand and manufacture like Zindal. It should be of size described in item description as directed by Engineer in charge. All sections should be colour anodized.

Fixtures

Specification no M-43 from specification booklet for Building works for fixture and fastening shall be applied for this item.

Bolts

All bolts shall be of approved make. Shall be Free from any scratches or holes or any damages on surface. And shall have finished lustre surface on all sides.

Workmanship

The non-teak wood frame inserted into the hallow aluminium section frame

The Work shall be done with extreme finishing, required all the fixtures and fastenings shall be fitted at right place and as directed by Engineer in charge.

Mode of measurement

The consolidated Item shall be measured and paid on its breadth and height limiting dimensions to those specified in estimate plan or as directed.

The payment will be made on square meter basis of the finished work.

Consolidation of all Item shall be measured and paid based **on Sqmt**

Item No:- 76

Providing and laying 60 x 60 cm Machine polished Machine cut Blue Kota Stone slab flooring over 20 mm (average)thick base of cement mortar 1:6 (1-cement 6-coarse sand) or L.M 1:1.5 (1 Lime putty : 1.5 coarse sand laid over and jointed with grey cement slurry mixed with pigment to match the shade of slab including rubbing and polishing etc. complete (A) 30mm thick

The relevant specification shall be followed as per General Technical specification for Building work booklet It.No.14.43 (A) / P.No.98

The payment shall be made on **square Meter** basis of the finished work.

Item No:- 77

Providing and laying Vitrified tiles 8 to 10 mm thick , 24" x 24" in flooring treads of steps and landing laid on a bed of 12mm thick cement mortar 1:3 (1-cement : 3-coarse sand) finishing with flush pointing in white cement.

The relevant specifications of Building Booklet It. No.14.29/ Page No.96 shall be followed expect use Vitrified tiles 8 to 10 mm thick , 24" x 24" in flooring treads of steps and landing laid on a bed of 12mm thick cement mortar 1:3 (1-cement : 3-coarse sand) finishing with flush pointing in white cement.

The Item shall be measured as finished work in Sqm.

The rate shall be for a unit of one **square meter**.

Item No:- 78

P & L 24" x 24" Soluble salt vitrified 8 mm thick tile flooring over 20 mm (average) base of cement mortar 1:6 (1 cement: 6 coarse sand) on new surface or fixing on existing flooring by adhesive material including dismantling of existing flooring and jointed with color cement slurry including finised with flush pointing & cleaning the surface etc. complete for DARK shade

The Item shall be executed as per the relevant specifications of general technical specification for building work booklet Item No.14.43 (A)/ page No. 98 except that 24" x 24" Soluble salt vitrified 8 mm thick tile flooring over 20 mm (average) base of cement mortar 1:6 (1 cement: 6 coarse sand) on new surface or fixing on existing flooring by adhesive material including dismantling of existing flooring and jointed with color cement slurry including finised with flush pointing & cleaning the surface etc. complete for DARK shade

For Dismantling of existing flooring use the Item shall be executed as per the relevant specifications of general technical specification for building work booklet Item No. 20.23. / page No. 148

The Item shall be measured as finished work in Sqm.

The payment shall be made on **square Meter** basis of the finished work.

Item No:- 79

Providing and laying antiskid ceramic tiles 30 x 30 cm size 6 mm thick in flooring treads of steps and landing laid on a bed of 12 mm thick cement mortar 1:3(1-cement:3-coarse sand)finishing with flush pointing in white cement

The relevant specifications of Building Booklet It. No. 14.29 Page No. 96 shall be followed expect Use ceramic tiles 30 x 30 cm size 6 mm thick instead of white glazed tiles 6mm. thick.

The payment shall be made on **square Meter** basis of the finished work.

Item No:- 80

Providing and laying glazed tiles size 60 x 30 cm 6 mm thick in skirting risers of steps and dedo on 10 mm thick cement plaster 1:3 (1-cement:3coarse sand) and jointed with colour cement slurry

The relevant specification shall be followed as per General Technical specification for Building work booklet It.No.14.29. / P.No.167 except that using for coloured glazed tiles of the size 600 mm x 300 mm x 6 mm of approved brand or any equivalent brand and quality as per directed by Engineer-in-charge instead of white glazed tiles 6mm thick.

The payment shall be made on **square Meter** basis of the finished work.

Item No:- 81

Providing and fixing staircase riser with 600x600x10 mm thick Soluble Salt Vitrified Tiles projecting, nozing rounded moulding in tread laid over 12 mm (av.) thick bases of cement mortar 1:6 (1-cement : 6-coarse sand) jointed with grey or colour cement slurry including rubbing and polishing incl. making Three No.s of grooves of size 3mm X 3mm along the length of treads etc. complete

The Item shall be executed as per the relevant specifications of general technical specification for building work booklet Item No.14.43 (A)/ page No. 98 except that staircase riser with 600x600x10 mm thick Soluble Salt Vitrified Tiles projecting, nozing rounded moulding in tread laid over 12 mm (av.) thick bases of cement mortar 1:6 (1-cement : 6-coarse sand) jointed with grey or colour cement slurry including rubbing and polishing incl. making Three No.s of grooves of size 3mm X 3mm along the length of treads etc. complete

The Item shall be measured as finished work in Sqm.

The payment shall be made on **square Meter** basis of the finished work.

Item No:- 82

Providing and fixing polished 18 mm thick black granite Shelves with full round edge and double side polished of approved quality fixing with cement slurry & adhesive including moulding of both exposed edges as directed by engineering in charge etc. complete.

The relevant specification shall be followed as per General Technical specification for Building work booklet It.No.14.44 / P.No.99 except using of polished 18 mm thick black granite Shelves with full round edge and double side polished of approved quality fixing with cement slurry & adhesive including moulding of both exposed edges as directed by engineering in charge etc. complete.

The payment shall be made on **square Meter** basis of the finished work.

Item No:- 83

Providing and fixing mirror polished 18-20 mm thick Granite stone with full round edge and polished of approved quality in clading on sill and around the doors/ windows/ ventilation with 12 mm thick cement mortor CM (1:4) and fixing with cement slurry & adhesive including moulding of exposed edges as directed by engineering in charge etc. complete.

The relevant specification shall be followed as per General Technical specification for Building work booklet It.No.14.44 / P.No.99 except using of mirror polished 18-20 mm thick Granite stone with full

round edge and polished of approved quality in cladding on sill and around the doors/ windows/ ventilation with 12 mm thick cement mortar CM (1:4) and fixing with cement slurry & adhesive including moulding of exposed edges as directed by engineering in charge etc. complete.

The payment shall be made on **square Meter** basis of the finished work.

Item No:- 84

Providing and fixing pre-cast Rubber Dye / steel Dye inter locking concrete block 60mm thick with grade of concrete M300 pneumatic compressed / vibrated mechanically and as per approved design Confirming to IS 15658 : 2006 including 35 mm Sand layer for levelling and filling the joint with sand in proper line and level as per guidelines of IRC : SP 63-2018 etc. Complete

Materials

1.1 Water shall not be salty brackish and shall be clean reasonably clear and free objectionable quantities of silt and traces of oil \injurious alkalis salts organic matter and other deleterious material which will either weaken the mortar of concrete or cause efflorescence or attack the steel in R C C container for transport storage and huddling of water shall be clean, Water shall confirm to the standard specified in I S 455 -1978

1.2 If required by the Engineer in charge it shall be tested by comparison with distilled water compression shall be made by means of standard cement tests for soundness time of setting and mortar strength as specified in I S 269-1976 Any indication of unsoundness change in time of setting by 30 minutes or more or decrease of more than 10 percent strength of mortar prepared with distilled water sample when compared with the result obtained with mortar prepared with distilled water shall be sufficient cause for rejection of water under test.

1.3 Water for curing mortar concrete or masonry should not be too acidic or too alkaline

1.4 It shall be free of elements which significantly affect the hydration reaction or otherwise interface with the hardening of mortar or concrete during curing or those which produce objectionable stains or other unsightly deposits on concrete or mortar surfaces

1.5 Hard and bitter water shall not be used for curing

1.6 Potable water will generally found suitable for curing mortar or concrete

2.0 CEMENT

2.1 Cement shall be ordinary Portland slag cement as per IS 1624 -1974 or Portland slag cement as per IS 455-1976

2.2 Cement shall be stored above the ground level in perfectly dry and water tight sheds. Wherever bulk storage containers are used, their capacity should be sufficient to cater to the requirements at site and should be cleaned at least once every 3 to 4 months. The aggregate shall be stored in such a way as to prevent admixture of foreign materials. Different size of fine or coarse aggregate shall be stored in separate stock-piles sufficiently away from the each other to prevent intermixing the materials.

3.0 SAND

3.1 Sand shall be natural sand, clean well graded, hard strong durable and gritty particular free from immures amounts of dust, clay, kankar modules, soft or flaky particles shall alkali salts, organic matter, learn mica or other deleterious substance and shall be got approved from the Engineer-in-

charge. The sand shall not contain more than 8 percent of slit as determined by field test. if necessary the sand.

Coarse Sand

The fineness modules of coarse sand shall not be less than 2.5 and shall not exceed 3.0. The sieve analysis of coarse sand be as under –

I. S. Sieve Designation	% by wt. passing
4.75 mm	100
2.36mm	90 to 100
1.18 mm	70 to 100
600 MC	30 to 100
300 MC	85 to 70
150 MC	00 to 50

3.2 FINE SAND

The fineness module shall not exceed 1.0 the sieve analysis of fine sand be as under

IS. Sieve Designation	% by wt. passing
4.75 mm	100
2.3 6mm	100
1.18 mm	75 to 100
600 MC	40 to 85
300 MC	05 to 50
150 MC	00 to 10

3.3 Materials shall be stored as to prevent their deterioration of their quality and fitness for the work. Any material which has deteriorated or has been damaged or is otherwise considered defective by the Engineer-in-charge shall not be used in the work.

4.0 CEMENT CONCRETE INTERLOCKING BLOCKS

4.1 Ruber dye Interlocking cement concrete reberous reflective blocks (M-200) shall be hard even sound, and regular in shape and generally uniform in colour. The colour of the interlocking BLOCKS shall generally be uniform colour. Bracken BLOCKS or damaged blocks with cracks shall not be allowed for use. They shall be without any soft veins cracks of flaws

4.2 The size of the Interlocking cement concrete blocks to be used for flooring shall be of required size or as directed. However smaller sizes will be allowed to be used to the extent of maintaining required pattern. Thickness shall be 60 mm.

4.3 The edges of Interlocking cement concrete blocks shall in true shape of casting. All angles and edges of the Interlocking cement concrete blocks shall be true, square and free chipping and surface shall be true and plain.

4.4 The Interlocking cement concrete blocks shall have flat plain surface with rubourous reflective top finish in required pattern and colour. When brought on site, the Interlocking cement concrete blocks shall be in good condition. The Interlocking cement concrete blocks for paving shall generally be used in good condition

5.0 WORKMANSHIP

5.1 Interlocking cement concrete blocks of approved quality shall be laid evenly to level and slope as directed by Engineer in charge over a bed of a base layer consisting of 50mm to 60mm thick average sand bedding to maintain slope.

5.2 Joints shall be filled with a clean sharp sand by brooming.

5.3 The flooring work shall be finished by rubbing of flooring is set properly

5.4 The rate of flooring is inclusive of providing and laying in true line and level including filling the joints with finishing as directed by Engineer in charge

5.5 Protecting the open edges of paving with cement concrete as directed.

6.0 MODE OF MEASUREMENT and PAYMENT

6.1 The unit rate flooring shall include the cost of all materials, tools and plant required for mixing, laying of base layer in true level and slope as required applying and placing stones in position, compacting, finishing and all other incidental expenses for producing flooring work to complete the structure or its components as shown on the drawings and according to these specifications. They shall also include the cost of making, fixing and removing of all scaffolding and forms required for the work.

The rate of work shall include the cost of all labour, materials tools and plant scaffolding and all incidental expenses as described herein above.

6.2 The work shall be measured for its length and width, limiting dimensions to those specified on plan or as directed. The rate shall be for a unit of one square meter.

6.3 The payment shall be made on **square Meter** basis of the finished work.

Item No:- 85

Providinf and fixing Safty grills of required pattern for windows/ Door using necessary 12x12 mm M.S. Square bar, M.S flats and other structural steel at required spacing including cutting, welding and fabriction etc. including one coat of primer of approved quality and two coats of oil painting as per detail drawing etc complete.

This work shall consist of **Providing and fixing M.S.grill of required pattern** of the shape and dimensions shown on the drawings and conforming to these Specifications or as approved by the Engineer in charge.

1.0 MATERIAL

1.0. STRUCTURAL STEEL

1.1. M S flats & Square pipes

Specification No M-22 of specification of materials shall confirm for Mild steel

1.2. OIL PAINTS

Specification No M-44 of specification of materials shall confirm for Paint

2.0. WORKMAN SHIP

2.1. The grills shall be so welded that welding spots does not appear on the surface. All welding spots shall be grinded by a machine grinder to give a smooth surface

2.2. The grill shall be fabricated in true shape and angles meeting the shape of the location where it is to be fitted

2.3. When grills are supplied by the contractor test certificate of the manufacturers shall be obtained according to IS 226-1975 and other relevant Indian standards

2.4. When grills are supplied by the contractors its weight shall be recorded by weighing it on a standard weigh-bridge in presence of engineer in charge and contractor before it is fitted in specified location

3.0. PAINTING WITH COLOUR

3.1. Material required for work of painting work shall be obtained directly from approved manufacturers or approved dealer and brought to the site in maker's drums. Kegs.etc. in sealed and unbroken condition.

3.2. All materials not in actual use shall be kept properly protected lids of containers shall be kept in closed and surface of the paint in open or partially open containers covered with a thin layer of turpentine to prevent formation of skin

3.3. The material which have become state or flat due to improper and long storage shall not be used

3.4. the paint shall be stirred thoroughly in its container before purring into small containers

3.5. While applying also the paint shall be continuously stirred in smaller container,

4.6. No left over paint shall be put back into stock tins When not in use the container shall be kept properly closed

3.7. If for any reason thins is necessary the brand of thinner recommended by the manufacture shall be used

3.8. The surface to be painted shall be thoroughly cleaned and dusted All rust dirt and grease shall be thoroughly removed before painting is started No painting on exterior or other exposed part of the work shall be carried out in wet damp or otherwise unfavourable weather and all the surfaces shall be thoroughly dry before painting work is started.

3.9. Application of paint

3.9.1. Brushing operations are to be adjusted to the spreading capacity advised by the manufacturers of particular paint The paint shall be applied evenly and smoothly by means of crossing and laying off. The crossing and laying off consists of covering the area over with paint, brushing the surface hard for the first time over and then brushing alternatively in opposite direction two or three times and then finally brushing lightly in a direction at right angles to the same in this process no brush marks shall be left after the laying off is finished The full process of crossing and laying off will constitute one coat.

3.9.2. Each coat shall be allowed to dry completely and lightly rubbed with very fine grade of sand paper and loose particles brushed off before next coat is applied Each coat shall very slightly in shade and shall be got approved from Engineer in charge before next coat is started.

3.9.3. Each coat shall be lightly rubbed down with sand paper of fine pumice stone and cleaned of dust before the next coat is applied No hair marks from the brush or clogging of paint puddles in the corners of panels, angles of moldings etc.

3.9.4. Special care shall be taken while painting over bolts nuts rivets overlaps etc Approved best quality brushes shall be used for painting work

4.0 MODE OF MEASUREMENT & PAYMENT :

4.1. The unit rate of M S Grill shall include the cost of all materials, tools and plant required for fabrication, fitting the same to specified position as per drawings, finishing, painting with three coats including priming coat, etc, and all other incidental expenses for producing M S Grill work to complete the structure or its components as shown on the drawings and according to these specifications. They shall also include the cost of making, fixing and removing of all scaffolding and forms required for the work.

The rate of M S Grill shall include the cost of all labour, materials tools and plant scaffolding and all incidental expenses as described herein above.

4.2. The Grill work shall be measured for its **weight**, limiting dimensions to those specified on plan or as directed. The rate shall be for a unit of one Kilogram

4.3. The payment will be made **on Kilogram basis** of the finished work.

Item No:- 86

Providing erecting and fixing double coated Syntex PVC. (ISI) water tank of required capacity each with all necessary fittings and connection etc. complete on terrace.

1.0 MATERIAL

1.1.PVC Water tank

PVC double coated Water tank of specified capacity and of approved in liters of approved make and quality

Net capacity shall be net volume of water stored between the lowest level of overflow and lowest specified level.

1.2. Nipple

Galvanize pipe nipple shall be of approved make and of best quality

1.3. Ball valve

Ball valve shall be of approved make and of best quality

1.4. Connections

Connections shall be of approved make and of best quality

2.0 WORKMAN SHIP

2.1. Tank shall be approved quality and standard make. The material of tank and lead and fittings which may come in contact of water should be such that it does not impart any taste, colour or odour. It does not have any toxic effect and it does not contaminate the water. Thereby making it unpotable.

2.2. The tank shall be fixed properly in a level position and making all required necessary correction like inlet outlet flushing overflow and air vent. Tank shall be satisfying the standards of public health.

3.0 MODE OF MEASUREMENT and PAYMENT

3.1. The unit rate PVC tank shall include the cost of all materials, tools and plant required for lifting to required height with all lead and lift, placing and fixing in position, all required specials and jointing adhesive compound, finishing as per direction of the Engineer-in-charge, and all other incidental expenses for producing PVC water tank work of specified diameter to complete the structure or its components as shown on the drawings and according to these specifications. They shall also include the cost of making, fixing and removing of all scaffolding and forms required for the work.

3.2. The PVC water tank work shall be measured for its number limiting to specified capacity to those specified on plan or as directed. The rate shall be for a unit of one number.

3.3. The payment will be made **on litter basis** of the finished work.

Item No:- 87

Providing laying and jointing in true line and level 50mm dia. U.P.V.C. Pipe (SCH- 40) for cold water including fittings make approved brand or equivalent as approved by Engineer In Charge. Pipe shall be fixed on the wall with the help of clamp at every two metre C/C or shall be cancelled as directed including necessary fittings etc. including testing of pipe and joints and fixing the same with adhesive solvent, including cost of all materials.

The relevant specifications of Building Booklet It. No.23.8.(E) Page No.162 shall be followed expect use level 50mm dia. U.P.V.C. Pipe (SCH- 40) for cold water including fittings make PRINCE SUPREME ASTRAL FINOLEX or equivalent and Pipe shall be fixed on the wall with the help of clamp at every two metre C C or shall be concerned as directed as approved by Engineer In Charge and instead of 6 kgs sq.cm. Working pressure polythene pipes of 50mm dia

Item No:- 88

Providing laying and jointing in true line and level 40mm dia. U.P.V.C. Pipe (SCH- 40) for cold water including fittings make approved brand or equivalent as approved by Engineer In Charge. Pipe shall be fixed on the wall with the help of clamp at every two metre C/C or shall be cancelled as directed including necessary fittings etc. including testing of pipe and joints and fixing the same with adhesive solvent, including cost of all materials.

The relevant specifications of Building Booklet It. No.23.8.(D) Page No.162 shall be followed expect use level 40mm dia. U.P.V.C. Pipe (SCH- 40) for cold water including fittings make PRINCE SUPREME ASTRAL FINOLEX or equivalent and Pipe shall be fixed on the wall with the help of clamp at every two metre C C or shall be concerned as directed as approved by Engineer In Charge and instead of 6 kgs sq.cm. working pressure polythene pipes of 40mm dia

Item No:- 89

Providing laying and jointing in true line and level 25mm dia. U.P.V.C. Pipe (SCH- 40) for cold water including fittings make approved brand or equivalent as approved by Engineer In Charge. Pipe shall be fixed on the wall with the help of clamp at every two metre C/C or shall be cancelled as directed including necessary fittings etc. including testing of pipe and joints and fixing the same with adhesive solvent, including cost of all materials.

The relevant specifications of Building Booklet It. No.23.8.(B) Page No.162 shall be followed expect use level 25mm dia. U.P.V.C. Pipe (SCH- 40) for cold water including fittings make PRINCE SUPREME ASTRAL FINOLEX or equivalent and Pipe shall be fixed on the wall with the help of clamp at every two metre C C or shall be concerned as directed as approved by Engineer In Charge and instead of 6 kgs sq.cm. working pressure polythene pipes of 25mm dia.

Item No:- 90

Providing laying and jointing in true line and level 15mm dia. U.P.V.C. Pipe (SCH- 40) for cold water including fittings make approved brand or equivalent as approved by Engineer In Charge. Pipe shall be fixed on the wall with the help of clamp at every two metre C/C or shall be cancelled as directed including necessary fittings etc. including testing of pipe and joints and fixing the same with adhesive solvent, including cost of all materials.

The relevant specifications of Building Booklet It. No.23.8.(A) Page No.162 shall be followed expect use level 15mm dia. U.P.V.C. Pipe (SCH- 40) for cold water including fittings make PRINCE SUPREME ASTRAL FINOLEX or equivalent and Pipe shall be fixed on the wall with the help of clamp at every two metre C C or shall be concerned as directed as approved by Engineer In Charge and instead of 6 kgs sq.cm. working pressure polythene pipes of 15 mm dia.

Item No:- 91

Providing, laying and jointing in true line and level 160 diameter U.P.V.C (Type B) conforming to IS 13592-1992 with one end plain and other end socketed with rubber ring, & fittings conforming to ISI 14735-1999 of approved make for drainage system pipe line, pipe shall be jointed with each other with rubber lubricant, pipe shall be fixed on wall using of PVC clamp of the size 160 mm diameter x 210 mm length x 196 mm heigh at every 2000 mm center to center or shall be concealed in walls as directed including necessary fittings such as bends, shoes etc. including testing of pipes and joints and jointed with adhesive solvent cement including cost of all materials.

The relevant specifications of Building Booklet It. No.23.8. Page No.162 shall be followed expect use 160 diameter U.P.V.C (Type B) conforming to IS 13592-1992 with one end plain and other end socketed with rubber ring, and fittings conforming to ISI 14735-1999 of approved make for drainage system pipe line, pipe shall be jointed with each other with rubber lubricant, pipe shall be fixed on wall using of PVC clamp of the size 160 mm diameter x 210 mm length x 196 mm heigh at every 2000 mm center to center or shall be concealed instead of 6 kgs sq.cm. working pressure polythene pipe

Item No:- 92

Providing, laying and jointing in true line and level 110 diameter U.P.V.C (Type B) conforming to IS 13592-1992 with one end plain and other end socketed with rubber ring, & fittings conforming to ISI 14735-1999 of approved make for drainage system pipe line, pipe shall be jointed with each other with rubber lubricant, pipe shall be fixed on wall using of PVC clamp of the size 110 mm diameter x 149 mm length x 145 mm heigh at every 2000 mm center to center or shall be

concealed in walls as directed including necessary fittings such as bends, shoes etc. including testing of pipes and joints and jointed with adhesive solvent cement including cost of all materials.

The relevant specifications of Building Booklet It. No.23.8. Page No.162 shall be followed expect use 110 diameter U.P.V.C (Type B) conforming to IS 13592-1992 with one end plain and other end socketed with rubber ring, and fittings conforming to ISI 14735-1999 of approved make for drainage system pipe line, pipe shall be jointed with each other with rubber lubricant, pipe shall be fixed on wall using of PVC clamp of the size 160 mm diameter x 210 mm length x 196 mm height at every 2000 mm center to center or shall be concealed instead of 6 kgs sq.cm. working pressure polythene pipes.

Item No:- 93

Providing, laying and jointing in true line and level 75 mm dia. UPVC SWRType B pipe conforming to IS 13592-1992 with one end plain and other end socketed with rubbering and fitting conforming to ISI 14735-1999 of approved make for drainage system pipe line, pipe shall be jointed with each other with rubber lubricant, pipe shall be fixed on wall using of PVC clamp at every 2000 mm c/c or shall be concealed in walls as directed including necessary fittings such as bends, shoes etc. including testing of pipes and joints and jointed with adhesive solvent cement including cost of all materials.

The relevant specifications of Building Booklet It. No.23.8.(E) Page No.162 shall be followed expect use 75 mm diameter U.P.V.C (Type B) conforming to IS 13592-1992 with one end plain and other end socketed with rubber ring, and fittings conforming to ISI 14735-1999 of approved make for drainage system pipe line, pipe shall be jointed with each other with rubber lubricant, pipe shall be fixed on wall using of PVC clamp of the size 110 mm diameter x 149 mm length x 145 mm height at every 2000 mm centre to centre instead of 6 kgs sq.cm. working pressure polythene pipes of 50mm di

Item No:- 94

Providing and fixing in PVC SWR cowel vent 75mm dia to pipes.(B) 75mm dia.

Item referred for providing and fixing pvc cowel vent of 75mm dia. (above 3 inch) pvc cowel ventilator for 75mm dia shall conform to IS & shall be of best quality pvc cowel ventilator shall be fixed to pipe with joints. Item shall measured and paid on number basis.

Item No:- 95

Providing and fixing in PVC SWR cowel vent 110mm dia to pipes.(B) 110mm dia.

Item referred for providing and fixing pvc cowel vent of 110mm dia. (above 4 inch) pvc cowel ventilator for 110mm dia shall conform to IS & shall be of best quality pvc cowel ventilator shall be fixed to pipe with joints. Item shall measured and paid on number basis.

Item No:- 96

Providing and fixing PVC SWR Nahni trap IS 14735 for drain - 100 mm diameter with jali of the following nominal diameter of self cleansing design with C.I screed down or hinged grating including the cost of cutting and making good the walls.

The relevant specifications of Building Booklet It. No.23.87 Page No.164 shall be followed expect use PVC SWR Nahni trap IS 14735 for drain - 100 mm diameter with jail instead of cast iron (spun)nahni trap

Item No:- 97

Provision and fixing water closet squatting orissa type W.C. pan size 580mm integral footrest and 100 mm P or S trap and in cluding 25 mm dia CP brass flush valve and GI inlet connection etc. comp. (A) Vitreous china long pattern white or color

The relevant specifications of Building Booklet It. No.23.111 (A)(I) Page No.163 shall be followed

The item shall be measured and paid on Number basis of consolidated item of work

Item No:- 98

Providing and fixing brass screw down stop tap.(A) 15mm dia.

The relevant specification shall be followed as per General Technical specification for Building work booklet It.No.23.96 (A) / P.No.171

Item No:- 99

Providing and fixing ball cock of approved. quality as directed.(A) Copper Metal (ii) 50mm dia.

The relevant specification shall be followed as per General Technical specification for Building work booklet It.No.23.00.5 (A)(II) P.No.173 for 50 mm

Item No:- 100

Providing and fixing washbasin with single hole for pillar tap with C.I. or M.S. brackets painted white including Rubber plug, sutting holes and making good the same but excluding fittings and also including rate of C.P. brass waste for washbasin or sink (A) 32mm dia. and M.I. fisher union for washbasin or sink. (A) 32mm dia.; (A) Vitreous China:(ii) Flat Back washbasin 550 mm x v 400mm size. (i) In white colour.

The relevant specification shall be followed as per General Technical specification for Building work booklet It.No.23.127. / P.No.167 + It.No.23.135 (A) / P.No.168+It.No 23.136.(A)/ P.No.168 +It.No 23.96.(A)/ P.No.171+It.No.23.95 (A) / P.No.170

Item No:- 101

Providing and fixing 600mm x 450mm bevelled edge mirror of superior glass mounted on 6mm thick A.C. sheet or plywood sheet and fixing to wooden pluge with C.P. brass screws and washers.

The relevant specification shall be followed as per General Technical specification for Building work booklet It.No.23.143. P.No.169

Item No:- 102

Providing and fixing C.P. brass towel rail complete with C.P. brass brackets fixed to wooden plugs with C.P. brass screws (B) 600mm x 20mm size.

The relevant specification shall be followed as per General Technical specification for Building work booklet It.No.23.144 (B) P.No.169

Item No:- 103

Providing and fixing screw down bib taps of following size.(A) Brass screw down bib tap polished bright. (i) 20mm dia.

The relevant specification shall be followed as per General Technical specification for Building work booklet It.No.23.92 (A) II P.No.170

Item No:- 104

Providing and fixing pillar tap, capstan head, screw down high pressure with screws, shanks and back nuts. (i) 15mm dia.

The relevant specification shall be followed as per General Technical specification for Building work booklet It.No.23.95 (A) P.No.170

Item No:- 105

Providing laying (to level or slopes) and jointing reinforced concrete Light duty non-pressure pipes I.S. class NP2 of the following internal diameter with collars and butt ends prepared for collar joints including testing of joints complete.(D) 300

The relevant specification shall be followed as per General Technical specification for Building work booklet It.No.24.22.(D) P.No.177

Item No:- 106

Providing and laying (two level or slopes) and jointing with stiff mixture of Cement Mortar in proportion 1:1, Salt glazed stone ware pipes of pipes 150mm laying lime concrete 1:2:4 (1-Lime putty :2-Fine sand : 4-Graded brick aggregates 40mm nominal size) bedding for stoneware pipes of following internal diameters with necessary formwork and curing complete.

The relevant specification shall be followed as per General Technical specification for Building work booklet It.No.24.00.1. (B) + 24.27.(I) (B) P.No.181

Item No:- 107

Providing and fixing S.W. gully trap with C.I. grating brick masonry chamber and water tight C.I. cover with frame of 300mm x 300mm size (inside) with standard weight (i) Square mouth traps (B) 150mm x 100mm size P or R type

The relevant specification shall be followed as per General Technical specification for Building work booklet It.No.24.19.(I) P.No.176

Item No:- 108

Constructing brick masonry chamber for underground C.I. Inspection chamber and bends with briocks having croshing strength not less than 35Kg. Cm2 in C.M. 1:5 precast RCC cover 455mm x 610mm intenal dimensions with frame (R.C.C. top slabe with 1:2:4 mix (1-cement :2- coarse sand :4-graded stone aggregate 20mm size) foundation concrete 1:5:10 inside plaster 15mm thick with cement mortar 1:3 finished smooth with a floating coat of neat cement on walls and bed concrete etc. complete (i) Inside dimensions 455mmx 610mm and 450mm deep for single pipe line.

The relevant specification shall be followed as per General Technical specification for Building work booklet It.No. 24.44(i) P.No.183

Item No:- 109

Constructing brick masonry chamber for underground C.I. Inspection C.I. Inspection chamber and bends with briocks having croshing strength not less than 35Kg. Cm2 in C.M. 1:5 precast RCC cover 500mmx 700mm intenal dimensions with frame (R.C.C. top slabe with 1:2:4 mix (1-cement :2- coarse sand :4-graded stone aggregate 20mm size) foundation concrete 1:5:10 inside plaster 15mm thick with cement mortar 1:3 finished smooth with a floating coat of neat cement on walls and bed concrete etc. complete (i) Inside dimensions 500mmx 700mm and 450mm deep for single pipe line.

The relevant specification shall be followed as per General Technical specification for Building work booklet It.No. 24.44(ii) P.No.184

Item No:- 110

Constructing brick masonry chamber for underground C.I. Inspection chamber and bends with briocks having croshing strength not less than 35Kg. Cm2 in C.M. 1:5 precast RCC cover 455mm x 610mm intenal dimensions with frame (R.C.C. top slabe with 1:2:4 mix (1-cement :2- coarse sand :4-graded stone aggregate 20mm size) foundation concrete 1:5:10 inside plaster 15mm thick with cement mortar 1:3 finished smooth with a floating coat of neat cement on walls and bed concrete etc. complete (i) Inside dimensions 455mmx 610mm and 450mm deep for single pipe line.

Extra over items for every additional depth of 0.1M. of part thereof beyond 450mm depth for Brick masonry chamber.(i) for 455mm x 610mm size.

The relevant specification shall be followed as per General Technical specification for Building work booklet It.No.24.46. P.No.184 except that using for 455mm x 610mm size

Item No:- 111

Constructing brick masonry chamber for underground C.I. Inspection C.I. Inspection chamber and bends with briocks having croshing strength not less than 35Kg. Cm2 in C.M. 1:5 precast RCC cover 500mmx 700mm intenal dimensions with frame (R.C.C. top slabe with 1:2:4 mix (1-cement :2- coarse sand :4-graded stone aggregate 20mm size) foundation concrete 1:5:10 inside plaster 15mm thick with cement mortar 1:3 finished smooth with a floating coat of neat cement on walls and bed concrete etc. complete (i) Inside dimensions 500mmx 700mm and 450mm deep for single pipe line.

Extra over items for every additional depth of 0.1M. of part thereof beyond 450mm depth for Brick masonry chamber.(i) for 500mm x 700mm size.

The relevant specification shall be followed as per General Technical specification for Building work booklet It.No.24.46. P.No.184 except that using for 500mm x 700mm size.

Item No:- 112

Providing and fixing GI Ladder of required pattern with GI flats(30x3mm) or round or square bars (12mm) at required spacing & with round headed bolts and nuts or screws or welding including primer coat of approved quality and two coats of oil paintas as directed by engineer in charge

The work shall be carried out as per item and as per the specification laid down in PWD hand book vol 1 and 2

The pipe and angle shall be of standard quality

M S sections shall be of best quality as per IS

The work shall be carried out in true line and level as directed by the Engineer in charge

Rates shall be inclusive of primer coat and two coat of oil painting etc complete

Payment shall be **made on KG basis**

Item No:- 113

Providing, fixing and construction of sandwich type 18 mm thick One Side polished Granite Stone of uniform size and colour for kitchen/pantry/countr/ laboratory,shelves etc. in floor, dedo or facia upto 100 mm wide including necessary cement mortar bedding in cement mortar 1:2 of required thickness. Granite Stone shall be fixed over 25 mm thick Polished Kota bottom, cement joints and pointing as specified with necessary making of edges, polishing curing daily mopping with water and kerosene as directed for atleast 15 days or upto the satisfaction of engineer-in-charge.

Material

Water shall confirm to M-1 P.No.9.

Cement shall confirm to M-3 P.No.9.

Sand shall confirm to M-6, P.No.9.

Bricks shall confirm to M-15 P.No.12.

Kota stone shall confirm to M-49 P.No.23.

Granite shall confirm to M-52, P.No.23.

Workmanship

Vertical sandwich two kota stone 25 mm th. support every 60 cm centre to centre or as required.

25mm thick Kota stone slab one side polished at bottom with cementing Materials / adhsvies including makeing necessary grooves in walls between two slab. 18 mm thick Polished Black Granite at top shall be fitted by using adhsvies including cutting square or round hole for sink. 18 mm thick

Polished Black Granite stone slab strips on front edge as border shall be fitted by using approved adhesives including rubbing and polishing.

Mode of Measurement

The consolidated item shall be measured and paid on its breadth and height limiting dimensions to those specified in estimate/plan or as directed.

The payment will be made on square meter basis of the finished work.

The rate shall be for a unit of one square meter.

Item No:- 114

Providing and fixing 25 mm thick polished kota stone Shelve with full round edge and double side polished of any required and fixing with cement slurry & adhesive including both exposed edges cut and Smooth Finished as directed by engineering in charge

This item is for providing and fixing both side polished Kota stone partition having thickness of 25 mm Kota slab including moulding, polishing, making grooves in walls. fitting etc. complete as directed by Engineer-in-charge.

(A) Kota stone shall conform to M-23.

(B) The work shall be for Kota stone partition having thickness of 25 mm kota slab including moulding, polishing, making grooves in walls fitting etc. complete as directed by Engineer-in-charge.

2.0. Workmanship:

2.1. The item covers the requirement of partitions for urinal & their supply and fixing.

2.2. Partition:

2.2.1. Slab for partition shall be exactly at right angles. The right angle shall be checked from inside surface of the respective members.

2.2.2. Slab for partition shall straight without any warp or bow and shall have smooth surface well planed on the three sides exposed at right angles to each other. The surface touching the wall may not be planed unless it is required in order to straighten up the member or to obtain the overall size within the tolerances specified.

2.2.3 The kota slab shall be cut in shape as directed by Engineer in Charge. The exposed edges shall be fully polished. It shall be fixed in walls using white cement slurry and wall shall be finished same.

3.0 Mode of Measurement and Payment:

The work shall be measured and paid on one Sq.Mt. basis for completed work. The rate includes the cost of all materials, labour, scaffolding and all accessories for making of kota frame. All works incidentals necessary for satisfactory completion of the work.

The rate shall be for a unit of one square meter.

Item No:- 115

Providing and fixing kitchen platform trolley having three drawers of SS (IS 304) of required size like thali, katleri, perforated, partition, cupsosar type in kitchen platform having drawer front side

and backside by using 19mm thick all proof plywood of ISI quality all side laminated etc. as directed. The size of SS (IS 304) basket of size 4" to 18" for thali, dish, katleri, perforated, partition, cupsosar type as directed including necessary S.S. fittings, handles, nobs, telescopic channels, etc. as directed

The item includes Providing and fixing kitchen platform trolley having three drawers of SS (IS 304) of required size like thali, katleri, perforated, partition, cupsosar type in kitchen platform having drawer front side and backside by using 19mm thick all proof plywood of ISI quality all side laminated etc. as directed. The size of SS (IS 304) basket of size 4" to 18" for thali, dish, katleri, perforated, partition, cupsosar type as directed including necessary S.S. fittings, handles, nobs, telescopic channels, etc. as directed

The work is to be carried out in existing platform and without disturbing/ damages shutters which are not to be converting in basket. The size of SS rod & trolley shall be as decided and directed by engineer-in-charge. The basket shall be of SS and as per AS IS-304 grade necessary drawer channel shall be of heavy quality. Necessary fittings such as handle, nobs, telescopic channels, shall be of SS and of heavy quality and got approved before brought to the site. The laminates shall be of 1 mm thick and of green or broom ISI brand. The ply shall be of IS quality of 19 mm thick and of green or century brand. Bidding patty shall be of Indian teak wood of size as directed. Polishing to the exposed faces shall be of melamine polish. Every material before brought to the site shall be got approved by engineer-in-charge. Measurement shall be paid in Square meter. Considering front width and height.

The rate shall be for a unit of one square meter.

Item No:- 116

Providing & fixing 25mm thick cupboards of plywood shutter including fixing 19 mm and 6mm thick back to back flush all proof plywood & including with Teak Wood frame 50 mm x 50 mm size as directed etc. complete including necessary both side lamination 1 mm thick outer side & 0.80mm thick inner side fixing by necessary SS hinges, handles, magnet, stoppers, etc. as directed including fevicol, and other hardware material required. Plywood and all fixture shall be of ISI quality and as approved by engineer-in-charge including cost of teak wood beading, one coat of primer and two coats of oil painting or polishing as directed.

GENERAL

Providing & fixing 25mm thick cupboards of plywood shutter including fixing 19 mm and 6mm thick back to back flush all proof plywood & including with Teak Wood frame 50 mm x 50 mm size as directed etc. complete including necessary both side lamination 1 mm thick outer side & 0.80mm thick inner side fixing by necessary SS hinges, handles, magnet, stoppers, etc. as directed including fevicol, and other hardware material required. Plywood and all fixture shall be of ISI quality and as approved by engineer-in-charge including cost of teak wood beading, one coat of primer and two coats of oil painting or polishing as directed.

Cupboards of plywood shutter

The relevant specification shall be followed as per General Technical specification for Building work booklet It.No.10.30 P.No.72 except that using 25mm thick cupboards of plywood shutter including fixing 19 mm and 6mm thick back to back flush all proof plywood & including with Teak Wood frame 50 mm x 50 mm size as directed etc. complete including necessary both side lamination 1 mm thick outer side & 0.80mm thick inner side fixing by necessary SS hinges, handles, magnet, stoppers, etc. as

directed including fevicol, and other hardware material required. Plywood and all fixture shall be of ISI quality and as approved by engineer-in-charge including cost of teak wood beading, one coat of primer and two coats of oil painting or polishing as directed.

For colour The relevant specification shall be followed as per General Technical specification for Building work booklet It.No.19.71 P.No.142

Fixtures

Specification no M-43 from specification booklet for Building works for fixture and fastening shall be applied for this item.

Bolts

All bolts shall be of approved make. Shall be Free from any scratches or holes or any damages on surface. And shall have finished lustre surface on all sides.

Workmanship

The non-teak wood frame inserted into the hollow aluminium section frame

The Work shall be done with extreme finishing, required all the fixtures and fastenings shall be fitted at right place and as directed by Engineer in charge.

Mode of measurement

The consolidated Item shall be measured and paid on its breadth and height limiting dimensions to those specified in estimate plan or as directed.

The payment will be made on square meter basis of the finished work.

Consolidation of all Item shall be measured and paid based **on Sqmt**

Item No:- 117

Providing and fixing Kitchen sink with C.I. or M.S. brackets, painted white including cutting holes in walls and making good the same but excluding fittings. © Vitreous China Sink.(i) 400x550 size

The relevant specification shall be followed as per General Technical specification for Building work booklet It.No.23.130 (C) P.No.167

The rate shall be for a unit of one number.

Item No:- 118

Providing and fixing in position 300 mm high, 150 mm wide English letters made from 1.0 mm thick stainless steel sheet as directed by Engineer in charge with all necessary tools & plants etc. complete.

MATERIAL

Stainless steel English letters

The Stainless steel English letters shall be of 150mm size in height The Stainless steel letters shall be made of approved quality of Stainless steel sheets of approved thickness the

With of letters shall be in proportion of its height and later shall be made in capital the spelling shall be grammatically true with reasonable spacing as directed

The Stainless steel English letters shall be free from any defect in surface and shall be glossy polished as directed

WORKMANSHIP

The English letters shall be firmly fitted in true line and level as and where directed. The English letters shall be fitted by wooden plugs

MODE OF MEASUREMENT & PAYMENT:

The payment will be made on Number basis of the finished work.

All necessary labour materials Equipment tools and plant, conveyance including loading and unloading etc shall be provided by the contractor as directed by the Engineer in charge

The item shall be measured for its Number limiting dimensions to those specified on plan or as directed.

The rate shall be for a **unit of one number**

Item No:- 119

Providing and fixing in position 150 mm high, English letters made from 1.0 mm thick stainless steel sheet as directed by Engineer in charge with all necessary tools & plants etc. complete.

GENERAL

This work shall consist of furnishing and placing providing and fixing in position 150 mm high 150 mm wide English letters of the shape and dimensions shown on the drawings and conforming to these specifications or as approved by the Engineer in charge.

MATERIAL

Stainless steel English letters

The Stainless steel English letters shall be of 150mm size in height The Stainless steel letters shall be made of approved quality of Stainless steel sheets of approved thickness the

With of letters shall be in proportion of its height and later shall be made in capital the spelling shall be grammatically true with reasonable spacing as directed

The Stainless steel English letters shall be free from any defect in surface and shall be glossy polished as directed

WORKMANSHIP

The English letters shall be firmly fitted in true line and level as and where directed. The English letters shall be fitted by wooden plugs

MODE OF MEASUREMENT & PAYMENT:

The payment will be made on Number basis of the finished work.

All necessary labour materials Equipment tools and plant, conveyance including loading and unloading etc shall be provided by the contractor as directed by the Engineer in charge

The item shall be measured for its Number limiting dimensions to those specified on plan or as directed.

The rate shall be for a **unit of one number**

Item No:- 120

Providing and fixing MS square hollow pipe Section 75 x 50 x 5mm section 8.424KG/RMT at every 100mm C/C into R.C.C/Brick structure horizontally/vertical with priming coat and two coat enamel paint including all material , labour charges and accessories as per requirement as directed by Engineer-in-charge etc. complete.

1. Material:

- Mild Steel Hollow Section (Rectangular Tube) of size 75 x 50 x 5 mm confirming to IS: 4923 – 2017 (Hot finished hollow sections of structural steel).
- Steel shall be of Grade YSt 310 or equivalent.
- Zinc chromate primer conforming to IS: 2074 – 1992 and synthetic enamel paint conforming to IS: 2932 – 2013.
- Necessary mild steel flats, cleats, clamps, anchor fasteners, and welding electrodes shall conform to IS: 814 – 2004.

2. Labour:

- Fabrication, cutting, and welding to required shape and length by skilled fabricators.
- Fixing in position using anchor bolts/clamps or welding into RCC/brick surface as per drawing.
- Painting work including surface cleaning, degreasing, application of primer and enamel paint in two coats by trained painters.

3. Workmanship:

- All members shall be straight, true to dimension, and free from rust, scale, or cracks.
- Fabrication shall ensure tight and firm joints using welding or suitable mechanical fastening.
- All welds to be ground smooth and cleaned before painting.
- One coat of zinc chromate primer shall be applied after cleaning, followed by two coats of enamel paint of approved shade.
- Alignment and spacing (100 mm c/c) shall be maintained as per drawing and checked for plumb and level before final painting.

4. Mode of Measurement:

- Measurement shall be taken in running metres (RMT) of MS hollow section actually fixed in position, including all wastage, welding, cutting, painting, and fittings complete.
- No separate measurement shall be taken for welding, primer, enamel paint, or fixing accessories.

Item No:- 121

Providing and fixing acrylic multilingual Braille (raised dots) DIRECTIONAL SIGNBOARDS of size 225 x 150mm designed as per accessibility standards and having 3.5mm thick acrylic base plate with Upper Case San Serif words made of white acrylic non glare cut out letters of height 15mm raised not less than 0.8mm above base plate and the equivalent word written in Hindi with Devanagari non glare acrylic letters of height 15mm raised not less than 0.8mm above base plate and having a non-glare acrylic cut arrow pointing in the required direction. Each signboard to be fixed as per manufacturers specifications on the wall at the approved location and at a height of 1200mm from FFL complete as per design / specifications and guidelines as per the entire satisfaction of the Engineer-in-charge

The item includes Providing and fixing acrylic multilingual Braille (raised dots) DIRECTIONAL SIGNBOARDS of size 225 x 150mm designed as per accessibility standards and having 3.5mm thick acrylic base plate with Upper Case San Serif words made of white acrylic non glare cut out letters of height 15mm raised not less than 0.8mm above base plate and the equivalent word written in Hindi with Devanagari non glare acrylic letters of height 15mm raised not less than 0.8mm above base plate and having a non-glare acrylic cut arrow pointing in the required direction. Each signboard to be fixed as per manufacturers specifications on the wall at the approved location and at a height of 1200mm from FFL complete as per design / specifications and guidelines as per the entire satisfaction of the Engineer-in-charge

The item shall be measured and paid on number basis.

Item No:- 122

Box cutting the road surface to proper slope and camber for making a base for road work including removing the excavated stuff and depositing on the road side slope as directed upto 50Mt.lead.

1. This work shall consist of excavation, removal and satisfactory disposal of all materials necessary for the construction of widening carriageway in accordance with requirements of these specifications and the lines, grades and cross sections shown in the drawings or as indicated by the Engineer.
2. After the site has been cleared the limits of excavation box cutting the road surface shall be set out true to lines, curves, slopes, grades and sections as shown on the drawings or as directed by the Engineer.
3. Box cutting shall be carried out in conformity with the directions laid here in under and in a manner approved by the Engineer. The work shall be so done that the suitable materials available from box cutting excavation are satisfactorily utilized as directed.
4. The contractor shall not excavate outside the limits of box cutting. Subject to the permitted tolerances, any excess depth width excavated beyond the specified levels dimensions on the drawings shall be made good at the cost of the contractor with suitable material of characteristics similar to that removed and compacted as directed.
5. Cutting shall be done in proper grade and camber as per measurements given. Care must be taken that all slopes are evenly and truly dressed. Cutting shall be done to the exact depth required and shall be as per formation level in proper grade and the camber. If extra depth of cutting is done due to negligence of contractor the same shall be refilled with approved quality of materials duly consolidated to the satisfaction of the Engineer-in-charge (without extra cost).

6. The bottom level of box cutting i.e. sub grade shall be watered and well compacted with vibratory roller at OMC to the desired density as directed by the Engineer in charge. Rolling and compaction shall be deemed to be incidental to the work and no extra cost shall be paid for compaction of box cutting base surface.
7. The stuff received from the cutting shall be used for filling and correcting side slopes of bank and earthwork for embankment as directed by the Engineer in charge with all lead and lift.
8. The measurement of box cutting shall be taken on level basis and level shall be taken at 30 mt. interval. Volume shall be computed in cubic meters by average area method.
9. The payment shall be made on Cmt. basis.
10. The rate includes cost of all labour, machineries required, cost of carting and spreading the cutting stuff with all lead and lift and leveling the dumping ground embankment, rolling and consolidation of subgrade level etc. complete.

Item No:- 123

Filling in plinth with sand under floors including watering ramming, consolidating and dressing complete for road work

The relevant specification shall be followed as per General Technical specification for Building work booklet It.No.4.004. P.No.35. except using of Filling in plinth with sand under floors including watering ramming, consolidating and dressing complete for road work

Item No:- 124

Construction of granular sub-base 150 mm thick by providing coarse graded machine crushed B.T. material satisfying MOST specification of grading I (B.T. stone aggregate 53 mm to 26.5 mm 35 %, 26.5 to 4.75 mm - 45 % and 2.36 mm below - 20 %) including spreading in uniform layer with motor grader on prepared surface, mixing by mix in place method with rotavator at OMC and compacting with vibratory roller to achieve the desired density etc. complete.

401.1 Scope:

This work shall consist of laying and compacting well graded material on prepared sub grade in accordance with the requirements of these specifications. The material shall be laid in one or more layers sub base and upper sub base (termed as sub base herein after) as necessary according to lines, grades and cross sections shown on the drawings or as directed by the Engineer.

401.2 Materials:

401.2.1 The materials to be used for the work shall be crushed stone of required grading. The material shall be free from organic or other deleterious constituents and conform to the grading I as mentioned below.

TABLE 400-2.

GRADING FOR COARSE GRADED GRANULAR SUB-BASE
MATERIALS.

IS sieve Designation	Percent by weight passing the IS sieve. Grading I
75.0 mm	100
53.0 mm	–
26.5 mm	55 – 75
9.5 mm	–
4.75 mm	10 – 30
2.365 mm	
0.425 mm	
0.075 mm	< 10
CBR Value (Minimum)	30

Material passing 425 micron (0.425 mm) sieve for all the three grading when tested according to IS : 2720 (Part 5) shall have liquid limit and plasticity index not more than 25 and 6 percent respectively.

401.2.2 Physical requirements:

The materials shall have a 10 percent fines value of 50 KN or more (for sample in soaked condition) when tested in compliance with B.S.: 812 (Part 111). The water absorption value of the coarse aggregate shall be determined as per IS : 2386 (Part 3) : if this value is greater than 2 percent, the soundness test shall be carried out on the material delivered to site as per IS : 383. For grading II and III materials, the CBR shall be determined at the density and moisture content likely to be developed in equilibrium conditions which shall be taken as being the density relating to a uniform air voids content of 5 percent.

401.3 Strength of sub-base.

It shall be ensured prior to actual execution that the material to be used in the sub base satisfies the requirements of CBR and other physical requirements when compacted and finished.

When directed by the Engineer, this shall be verified by performing CBR tests in the laboratory as required on specimens remolded at field dry density and moisture content and any other tests for the "Quality" of materials, as may be necessary.

401.4 Construction Operations:

401.4.1 Preparation of Sub grade:

Immediately prior to the laying of sub-base, the sub grade already finished to Clause 301 or 305 as applicable shall be prepared by removing all vegetation and other extraneous matter, lightly sprinkled with water, if necessary and rolled with two passes of 80-100 KN smooth wheeled roller.

401.4.2 Spreading and compacting:

The sub-base material of grading specified in the Contract shall be spread on the prepared sub grade with the help of a motor grader of adequate capacity, its blade having hydraulic controls suitable for initial adjustment and for maintaining the required slope and grade during the operation or other means as approved by the Engineer.

When the sub-base material consists of combination of materials mentioned in Clause 401.2.1, of this item mixing shall be done mechanically by the mix in place method.

Manual mixing shall be permitted only where the width of laying is not adequate for mechanical operations, as in small-sized jobs. The equipment used for mix-in-place construction shall be a rotavator or similar approved equipment capable of mixing the material to the desired degree. If so desired by the Engineer, trial runs with the equipment shall be carried out to establish its suitability for the work.

Moisture content of the loose material shall be checked in accordance with IS:2720 (Part 2) and suitably adjusted by sprinkling additional water from a truck mounted or trailer mounted water tank and suitable for applying water uniformly and at controlled quantities to variable widths of surface or other means approved by the Engineer so that, at the time of compaction, it is from 1 percent above to 2 percent below the optimum moisture content corresponding to IS:2720 (Part 8). While adding water, due allowance shall be made for evaporation losses. After water has been added, the material shall be processed by mechanical or other approved means like disc barrows, rotators until the layer is uniformly wet.

Immediately thereafter, rolling shall start. If the thickness of the compacted layer does not exceed 100 mm, a smooth wheeled roller of 80 to 100 KN weight may be used. For a compacted single layer upto 225 mm the compaction shall be done with help of a vibratory roller of minimum 80 to 100 KN static weight with plain drum or pad foot drum or heavy pneumatic tyred roller of minimum 200 to 300 KN weight having a minimum tyre pressure of 0.7 MN/ M² or equivalent capacity roller capable of achieving the required compaction. Rolling shall commence at the lower edge and proceed towards the upper edge longitudinally for portions having unidirectional cross fall and super elevation and shall commence at the edges and progress towards the centre for portions having cross fall on both sides each pass of the roller shall uniformly overlap not less than one third of the track made in the preceding pass. During rolling, the grade and cross fall (camber) shall be checked and any high spots or depressions, which become apparent, corrected by removing or adding fresh material. The speed of the roller shall not exceed 5 Km per hour. Rolling shall be continued till the density achieved is at least 98 percent of the maximum dry density for the material determined as per IS:2720 (Part 8). The surface of any layer of material on completion of compaction shall be well closed, free from movement under compaction equipment and from compaction planes, ridges, cracks or loose material. All loose, segregated or otherwise defective areas shall be made good to the full thickness of layer and re-compacted.

Surface Finish and Quality Control of work:

The surface finish of construction shall conform to the requirements of Clause 902 of MORT & H specifications. Control on the quality of materials and works shall be exercised by the Engineer in accordance with Section 900 of MORT & H specifications.

401.6 Arrangements for Traffic:

During the period of construction, arrangement of traffic shall be maintained in accordance with Clause 112 of MORT & H specifications.

401.7 Measurements for Payment: Granular sub base shall be paid as finished work in position on cross sectional measurements and computing the volume of GSB work in cubic meters by average area method.

The protection of edges of granular sub base extended over the full formation as shown in the drawing shall be considered incidental to the work of providing granular sub-base and as such no extra payment shall be made for the same.

401.8 Rate:

The Contract unit rate for granular sub base shall be payment in full for carrying out the required operations including full compensation for:

- [i] Making arrangements for traffic to Clause 112 as above except for initial treatment to verges, shoulders and construction of diversions.
- [ii] Furnishing all materials to be incorporated in the work including all royalties, fees, rents where necessary and all leads and lift.
- [iii] All labour, tools, equipment and incidentals to complete the work to the specifications.
- [iv] Carrying out the work in part widths of road where directed, and
- [v] Carrying out the required tests for quality control.

Item No:- 125

Providing and laying wet mix macadam base course 250 mm thick using machine crushed B.T. chips as per required gradation mixing with required optimum quantity of water, conveying the mix to site of work, spreading in to grade and camber with mechanical paver and consolidation each layer with vibratory roller including cost of material labour plant and equipment etc. complete.

406.1 SCOPE

This work shall consist of laying and compacting clean, crushed, graded aggregate and granular material, premixed with water, to a dense mass on a prepared subgrade sub base/ base or existing pavement as the case may be in accordance with the requirements of these specifications. The material shall be laid in two layers to lines, grades and cross-sections shown on the approved drawings or as directed by the Engineer.

The thickness of a single compacted Wet Mix Macadam layer shall not be less than 75mm. When vibrating or other approved types of compacting equipment are used, the compacted depth of a single layer of the sub-base course may be increased to 20cm upon approval of the Engineer.

406.2 MATERIALS

406.2.1 AGGREGATES

406.2.1.1 PHYSICAL REQUIREMENTS: Course aggregates shall be crushed stone. If crushed gravel / shingle is used, not less than 90 percent by weight of the gravel / shingle pieces retained on 4.75 mm sieve shall have at least two fractured faces. The aggregates shall conform to the physical requirements set forth in Table 400-10 below.

TABLE 40-10 PHYSICAL REQUIREMENT OF COARSE AGGREGATES FOR WET MIX MACADAM FOR SUB-BASE / BASE COURSES

Test	Test Method	Requirements
1.*Los Angeles Abrasion value	IS : 2386 (Part-4)	40 percent (Max)
Aggregate impact value	IS : 2386 (Part-4) or IS : 5640	30 percent (Max)

2. Combined Flakiness and Elongation indices (Total)**	IS : 2386(PART-1)	30 percent (Max)
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* Aggregates may satisfy requirements of either of the two tests.

** To determine this combined proportion, the flaky stone from a representative sample should first be separated out. Flakiness index is weight of flaky stone metal divided by weight of stone sample only the elongated particles be separated out from the remaining (non flaky stone metal. Elongation index is weight of elongated particles divided by total non flaky particles. The value of flakiness index and elongation index so found are added up.

If the water absorption value of the coarse aggregate greater than 2 percent, the soundness test shall carried out on the material delivered to site as per 2386 (Part – 5).

406.2.1.2 Grading requirements:

The aggregates shall conform to the grading given in Table 400-11

TABLE 400-11. GRADING REQUIREMENTS OF AGGREGATES FOR WET MIX MACADAM.

Is Sieve Designation	Percent by weight Passing the IS sieve
53.00 mm	100
45.00 mm	95-100
26.50 mm	-
22.40 mm	60-80
11.20 mm	40-60
4.75 mm	25-40
2.36 mm	15-30
600.00 micron	8-12
75.00 micron	0-8

Materials finer than 425 micron shall have plasticity index (P.I) not exceeding 6.

The final gradation approved within these limits shall be well graded from coarse to fine and shall not vary from the low limit on one sieve to the high limit on the adjacent sieve or vice- versa.

406.3 Construction Operation :

406.3.1 Preparation of base :Clause 404.3.1 as below shall apply.

404.3.1 Preparation of base: The surface of the subgrade/sub-base/base to receive the water bound macadam course shall be prepared to the specification lines and cross fall(camber) and made free of dust and other extraneous material. Any ruts or soft yielding places shall be corrected in an approved manner and rolled unit firm surface is obtained if necessary by sprinkling water. Any sub-base/base/surface irregularities, where predominant, shall be made good by proving appropriate type of profile corrective course(levelling course) to clause 501 of these specification.

As far as possible, laying water bound macadam course over an existing thick bituminous layer may be avoided since it will cause problems of internal drainage of the pavement at the interface of two course. It is desirable to completely pick out the existing thin bituminous wearing course where water bound macadam is proposed to be laid over it. However, where the intensity of rain is low and the interface drainage facility is efficient, water bound macadam can be laid over the existing thin bituminous surface by cutting 50 mm x 50 mm furrows at an angle of 45 degrees to the centre line of the pavement at one metre intervals in the existing road. The directions and depth of furrows shall be such that they provide adequate bondage and also serve to drain water to the existing granular base course beneath the existing thin bituminous surface.

406.3.2 Provision of lateral confinement of aggregates :

While constructing wet mix macadam arrangement shall be made for the lateral confinement of wet mix. This shall be done by laying materials in adjoining shoulders along with that of wet mix macadam layer and following the sequence of operations described in Clause 407.4.1 as below.

407.4 Construction Operations:

407.4.1 Shoulder: The sequence of operations shall be such that the construction of paved shoulder is done in layers each matching the thickness of adjoining pavement layer . Only after a layer of pavement and corresponding layers in paved and earth shoulder portion have been laid and compacted, the construction of next layer of pavement and shoulder shall be taken up.

Where the materials in adjacent layers are different ,these shall be laid together and the pavement layer shall be compacted first. The corresponding layer in paved shoulder portion shall be compacted thereafter, which shall be followed by compaction of earth shoulder layer. The adjacent layers having same material shall be laid and compacted together.

In all cases where paved shoulders have to be provided along side of existing carriageway, the existing shoulders shall be excavated in full width and to the required depth as per clause 301.3.7 under no circumstances, box cutting shall be done for construction of shoulders.

Compaction requirement of earthen shoulder shall be as per table 300-2 in the case of bituminous courses, work on shoulder(earthen/hard/paved), shall start only after the pavement course has been laid and compacted.

During all stages of shoulder (earth/hard/paved) construction, the required cross fall shall be maintained to drain off surface water

Regardless of the method of laying, all shoulder construction material shall be placed directly on the shoulder. Any spilled material dragged on to the pavement surface shall be immediately removed, without damage to the pavement, and the area so affected thoroughly cleaned.

406.3.4 Preparation of mix :

Wet Mix Macadam shall be prepared in an approved mixing plant of suitable capacity having provision for controlled addition of water and forced / positive mixing arrangement like pug-mil or pan type mixer or concrete batching plant.

Optimum moisture for mixing shall be determined in accordance with IS : 2720 (Part – 8) after replacing the aggregate fraction retained on 22.4 mm sieve with material of 4.75 micron to 22.4 mm size. While adding water, due allowance should be made for evaporation losses. However, at the time of compaction, water in the wet mix should not vary from the optimum value by more than agreed limits. The mixed material should be uniformly wet and so segregation should be permitted.

406.3.4 Spreading of mix :

Immediately after mixing, the aggregates shall be spread uniformly and evenly upon the prepared sub grade / sub-base / base in required quantities. In no case should these be dumped in heaps directly on the area where these are to be laid nor shall their hauling over a partly completed stretch be permitted.

The mix may be spread either by a paver finisher or motor grader. For portions where mechanical means cannot be used, manual means as approved by the Engineer shall be used. The motor grader shall be capable of spreading the material uniformly all over the surface. Its blade shall have hydraulic control suitable for initial adjustments and maintaining the same so as to achieve the specified slope and grade.

The paver finisher shall be self – propelled, having the following features :

- (i) Loading hoppers and suitable distribution mechanism
- (ii) The screed shall have tamping and vibrating arrangement for initial compaction to the layer as it is spread without rutting or otherwise marring the surface profile.
- (iii) The paver shall be equipped with necessary control mechanism so as to ensure that the finished surface is free from surface blemishes.

The surface of the aggregate shall be carefully checked with templates and all high or low spots remedied by removing or adding aggregate as may be tested by depth blocks during construction.

No segregation of larger and fine particles should be allowed. The aggregates as spread should be allowed. The aggregates as spread should be of uniform gradation with pockets of fine materials.

406.3.5 Compaction :-

After the mix has been laid to the required thickness, grade and camber the same shall be uniformly compacted, to the full depth with suitable roller. If the thickness of single compacted layer does not exceed 100mm, a smooth wheel roller of 80 to 100 KN weight may be used. For a compacted single layer up to 200mm, the compaction shall be done with the help of vibratory roller of minimum static weight of 80 to 100 KN or equivalent capacity roller. The speed of the roller shall not exceed 5 km/h. In portions having unidirectional cross fall / super elevation rolling shall commence from the lower edge and progress gradually towards the upper edge. Thereafter, roller should progress parallel to the center line of the road uniformly overlapping each preceding track by at least one fourth width until the entire surface has been rolled. Alternate trips of the roller shall be terminated in stops at least 1 m away from any preceding stop.

In portions in camber, rolling should be at the edge with the roller running forward and backward until the edges have been firmly compacted. The roller shall then progress gradually towards the center parallel to the center line of the road uniformly overlapping each of the preceding tracks by at least one – fourth width until the entire surface has been rolled.

Any displacement occurring as a result of reversing of the direction of a roller or from any other cause shall be corrected at once as specified and / or removed and made good.

Along forms, Kerbs, walls or other places not accessible to the roller, the mixture shall be thoroughly compacted with mechanical tampers or a plate compactor. Skin patching of an area without scarifying the surface to permit proper bonding of the added material shall not be permitted.

Rolling should not be done when the sub grade is soft or yielding or when it causes a wave-like motion in the sub – base/ base course or sub grade. If irregularities develop during rolling which exceed 12mm when tested with a 3 meter straight edge, the surface should be loosened and premixed material added or removed as required before rolling again so as to achieve a conforming

to the desired grade and cross fall. In no case should the use of unmixed material be permitted to make up the depressions.

Rolling shall be continued till the density achieved is at least 98 per cent of the maximum dry the material as determined by the method outlined in IS : 2720 (Part-8)

After completion, the surface of any finished layer shall be well-close, free from movement under compaction equipment or any compaction planes, ridges, cracks and loose material. All loose, segregated or otherwise defective areas shall be made good to the full thickness of the layer and re-compacted.

406.3.6 Setting and drying:

After final compaction of wet mix macadam course, the road shall be allowed to dry for 24 hours.

406.4 Opening to Traffic :

Preferably no vehicular traffic of any kind should be allowed on the finished wet mix macadam surface till it has dried and the wearing course laid.

406.5 Surface Finish and Quality control of work 406.5.1 Surface evenness :

The surface finish of construction shall conform to the requirements of Clause 902 of MORT & H specifications.

406.5.2 Quality Control :

Control on the quality of materials and works shall be exercised by the Engineer in accordance with section 901 of MORT & H specifications

406.6 Rectification of Surface Irregularity :

Where the surface irregularity of the wet mix macadam course exceeds the permissible tolerances or where the course is otherwise defective due to subgrade soil getting mixed with the aggregates, the full thickness of the layer shall scarified over the affected area. Reshaped with added premixed material or removed and replaced with fresh premixed material as applicable and recomputed in accordance with Clause 406.3 of this item . The area treated in the aforesaid manner shall not be less than 5m long and 2m wide. In no case shall depressions be filled up with unmixed and ungraded material or fines.

406.6.7 Arrangement for Traffic :

During the period of construction, arrangement of traffic shall be done as per Claus 112 of MORT & H specifications

406.8 Measurements for Payment :

Wet mix macadam shall be paid as finished work in position on cross sectional measurements and computing the volume of WMM work in cubic meters by average area method.

406.9 Rate: The Contract unit rate for wet mix macadam shall be payment in full for carrying out the required operations including full compensation for all components listed below.

- i) Making arrangement for traffic to Clause 112 as above Except for initial treatment to verges, shoulders and Construction of diversions :
- ii) Furnishing wet materials o be incorporated in the work including all royalties, fees, rents where necessary and all leads and lifts ;

- iii) All labour, tools, equipment and incidentals to complete the work to the specifications ;
- iv) Carrying out the work in part widths of road where directed ; and
- v) Carrying out the required tests for quality control.

Item No:- 126

Compaction and finishing of cement concrete road by trimix M.250 process providing extra Labour charges for the trimix vacume dewatering service process on cement concrete road surface by using vacuum dewatering pump floater surface vibrator including making groves and rough finish to surface including leveling etc complete.

Specification No. 5.8.2 Page No.47 of Specification Booklet for Building work shall be applied for this work.

2.1 Proportioning of materials for the mix

The mix shall be proportioned with a maximum aggregate cement ratio of 15 1. The water content shall be adjusted to the optimum as per Clause 600.1.3.3 for facilitating compaction by Surface floater.

2.2 Moisture content The right amount of water for the lean concrete in the main work shall be decided so as to ensure full compaction under rolling and shall be assessed at the time of rolling the trial strength. Too much water will cause the lean concrete to be heaving up before the wheels and picked up on the wheels of the roller and too little will lead inadequate compaction, a low in-situ and an open-textured surface.

2.3 The optimum water content shall be determined and demonstrated by floating the surface during trial length construction. While laying the mix in the main work, the lean concrete shall have a moisture content between the optimum and optimum +2 per cent, keeping in view the effectiveness of compaction achieved and to compensate for evaporation losses.

2.4 Cement content The minimum cement content in the concrete shall not be less than 150 kg cum of concrete. If this minimum cement content is not sufficient to produce concrete of the specified strength, it shall be increased as necessary without additional cost compensation to the Contractor.

2.5 Concrete strength The average compressive strength of each consecutive group of 5 cubes made in accordance with Clause 903.5.1.1 shall not be less than 10 MPa at 7 days. In addition, the minimum compressive strength of any individual cube shall not be less than 7.5 MPa at 7 days. The design mix complying with the above Clauses shall be got approved from the Engineer and demonstrated in the trial length construction.

3.0 Construction

3.1 General The pace and programme of the lean concrete sub-base construction shall be matching suitable with the programme of construction of the cement concrete pavement only after 7 days after sub-base construction.

3.2 Plasticizer Conplast p 211 @ 100ml per bag of cement water reducing concrete admixture at 100ml per bag of cement and Recron 3 S fiber (reliance product) shall be mixed at the rate of 125 gram per bag of cement including making channel 100mm X 50mm required to level and slope and thickness of the concrete road levelling of placed concrete with surface vibrator and finishing with

power floater shall be done floater and trowel light booming the surface shall be done expansion joints shall be cut as directed

4. MIXING

4.1 Dry coarse and fine aggregate and cement shall then be mixed thoroughly by turning over to get a mixture of uniform colour.

4.2 Enough water shall then be added gradually and the mass turned over till a mix of required consistency is obtained. In case of hand mixing quantity of cement shall be increased by 10 per cent above the specified. The quantity of water shall be just sufficient to produce a dense concrete of required workability for the purpose.

4.3 The concrete shall be mixed in a mechanical mixer. at the site of work hand mixing may however be allowed for smaller quantity of work if approved by Engineer in charge. When hand mixing is permitted by the engineer in charge in case of breakdown of machineries and in the interest of the work. Mixers which have been out of use for more than 30 minutes shall be thoroughly cleaned before putting a new batch. Unless otherwise agreed to be the Engineer in charge the first batch of concrete from the mixer shall contain only two thirds of normal quantity of coarse aggregate. Mixing paint shall be thoroughly cleaned before changing from one type of cement to another.

4.4 The method of transporting and placing concrete shall be approved by the Engineer in charge. Concrete shall be so transported and placed so that contamination segregations or loss of its constituent material takes place. All formwork and reinforcement contained in it shall be cleaned and made free from standing water dust snow or ice immediately before placing of concrete. No concrete shall be placed in any part of the structure until the approval of the Engineer in charge has been obtained.

4.5 Mixing shall be done on a smooth watertight platform large enough to allow efficient turning over the ingredients of concrete before and after adding water. Mixing platform shall be so arranged so that no foreign material shall get mixed with concrete nor does the mixing water flow out.

4.6 Cement in required number of bags be placed in a uniform layer on top of the measured quantity of fine and coarse aggregate which shall also be spread in a layer of uniform thickness on the mixing platform.

4.7 Unless otherwise agreed to by the engineer in charge concrete shall be dropped into place from a height exceeding 2 meters. When chutes are used they shall be kept clean and used in such a way as to avoid segregation. When concreting has to be resumed on a surface which has hardened it shall be roughened kept clean thoroughly wetted and covered with a 13mm thick layer of mortar composed of cement and sand in the same ratio as in the concrete mix itself. This 13mm layer of mortar shall be freshly mixed and placed immediately before placing of new concrete. Where concrete has not fully hardened all laitance shall be removed scrubbing the wet surface with wire or bristle brushes care being taken to avoid dislodgement of any particles of coarse aggregate. The surface shall then be thoroughly wetted all free water removed and coated with neat cement grout. The first layer of concrete to be placed on this surface shall not exceed 150mm in thickness and shall be well rammed against old work particular attention being given to corners and close spots.

4.58 If concreting is not started within 24 hours of the approval being given, it shall have to be obtained from the engineer in charge. Concreting being given it shall proceed continuously over the area between construction joints. Fresh concrete shall not be placed against concrete which has been in position for more than 30 minutes unless a proper construction joint is formed. Concrete shall be compacted in its final position within 30 minutes of its discharge from the mixer unless carried in properly design agitators operating continuously when this time shall be within 2 hours of

the addition of cement to the mix and within 30 minutes of its discharge from the agitator. Except where otherwise agreed to be the engineer in charge concrete shall be deposited in horizontal layers to a compacted depth of not more than 0.4 S meter when internal vibrators are used and not exceeding 0.3 meter in all other cases

4.9 In the case of reinforced concrete work workability shall be such that the concrete surrounds and properly grips all reinforcement. The degree of consistency which shall depend upon the nature of work and methods of vibration of concrete shall be determined by regular slump tests. Following slump shall be adopted for different types of works.

Type of work	vibrators used	slumps	
		Where vibrators are used	Where are not
Mass concrete in RCC foundation s footings and retaining walls		10 25 mm	80mm
Beams slabs and columns simply reinforced		25 40mm	100 120mm
Thin RCC section or section with mm congested steel		40 50mm	120 150mm

5.1. When concreting has to be resumed on a surface which has hardened, it shall be roughened, swept, clean, thoroughly wetted and covered with a 13 mm. thick layer of mortar shall be freshly mixed and placed immediately before placing of new concrete. Where concrete has not fully hardened, allegiance shall be removed by scrubbing the well surface with wire or bristle brushes, care being taken to avoid dislodgement of any particles of coarse aggregate. The surface shall then be thoroughly wetted, with neat cement grout. The first layer of concrete to be placed on the is surface shall not exceed 150mm.in thickness, and shall be well rammed against old work particular attention being given to corners and close spots.

6.0 Transporting and Placing the Concrete

6.1 The concrete shall be handed from the place of mixing to the final position in not more than 15 minutes by the method as directed and shall be placed into its final position compacted and finished within 30 minutes of mixing with water i.e. before the setting commences.

6.2 The concrete shall be laid in layers of 15 cms to 20 cms.

6.3 All concrete shall be compacted to produce a dense homogeneous mass with the assistance of vibrations, unless otherwise permitted by the Engineer in charge for exceptional cases , such as concreting under water, where vibrators can not be used. Sufficient vibrators in serviceable condition shall be kept at site so that spare equipment is always available in the event of break downs.

6.4 Placing Lean concrete shall be laid or placed by a paver with electronic sensor. The equipment shall be capable of laying the material in one layer in an even manner without segregation, so paving machine shall have high amplitude ramping bars to give good initial compaction to the sub-base.

At longitudinal or transverse construction joints, unless vertical forms are used, the edge of compacted material shall be cut back to a vertical face where the correct thickness of the properly compacted material has been obtained.

7.0 Curing

7.1 Immediately after compaction, concrete shall be protected against harmful effects of weather, including rain, running water , shocks vibrations traffic rapid temperature charges frost and driving out process shall be covered with wet jute bags or the similar absorbent material approved by the

Engineer in charge soon after the initial set, and shall be kept continuously wet for a period of not less than 14 days from the date of placement. Masonry work over the foundation concrete may be started after 48 hours of its laying but the curing of concrete shall be continued for a minimum period of 14 days.

7.2 After the final set, the concrete shall be kept continuously wet if required by pounding for a period of not less than 7 days from the date of placement. Hard and bitter water shall not be used for curing.

7.3 Traffic

No heavy commercial vehicles like trucks and buses shall be permitted on the lean concrete sub base after its construction. Light vehicles if unavoidable may however be allowed after 7 days of its construction with prior approval of the engineer.

8.0 Contraction joints

8.1 Contraction joints shall consist of a mechanical sawn joint groove 3x20 mm and $\frac{1}{4}$ to $\frac{1}{3}$ depth of the slab + 5 mm or -5 mm or as stipulated in the drawings and shall be cut by concrete cutter machine.

8.2 The contraction joint shall be cut as soon as the concrete has undergone initial hardening and is hard enough to take the load of joint sawing machine without causing damage to the slab.

8.3 The line of the joint within the tolerances given in clause 600.2.6.2.1 and at such depth below the surface as will not impede the passage of the finishing straight edges or oscillating beams of the paving machines. The adjacent slabs shall be completely separated from each other by providing joint filler board. Space around the dowel bars, between the sub base and the filler board shall be packed with a suitable compressible material to block the flow of cement slurry.

9.1 Longitudinal joint

The longitudinal joints shall be machine cut as per details of the joints shown in the drawing. The groove may be cut after the final set of the concrete. Joints should be sawn to at least $\frac{1}{3}$ the depth of the table +5mm or - 5 mm as indicated in the drawing.

10.0 Mode of Measurement and Payment

10.1 The payment shall be made on **SQMT** basis of the finished work

10.2 The necessities labour material Equipments tools and plant conveyance including loading And unloading etc shall be provided by the contractor as directed by engineer in charge.

10.3 The item shall be measured for its **length and width** limiting damnation in this specified on this plan or as directed .

10.4 The rate shall be for a unit of one **SQMT** .

Item No:- 127

Providing and Laying homoginious Grey cement based concrete kerbing of size 30 cm x 30 cm x 10 cm size as per detailed drawing having grade of concrete M25 grade, including necessary excavation, BBCC 1:5:10 7.5 cm as per ddetailed drawing fixing in line and level, filling joints in CM 1:3 with smooth finished, white washing three coats etc. complete as directed by Engineer in charge.

Precast Concrete Kerb Stone

Precast concrete kerb stone shall be hard even sound, and regular in shape. Broken kerb stone or damaged one with cracks shall not be allowed for use.

The precast kerb stone shall be of size as specified or as approved by the Engineer. It shall be 30 cm x 30 cm x 10 cm size made from cement concrete M 250 grade. The precast kerb stone shall have flat plain surface. When brought on site, the precast kerb stone shall be in good condition.

WORKMANSHIP

Excavation for kerb block as required and as directed by the Engineer shall be carried out as per detailed relevant specifications of It. No. 1 of this contract. Bick bat cement concrete in proportion of 1:4:8 and 10 cm thick bedding shall be carried out as per the relevant specifications of general technical specification for building work booklet Item No.5.3.3/ page No. 39.

The kerb stone shall be erected in position in true line and level. The Joints between two blocks shall be filled with cement slurry and joint shall be flushed.

MODE OF MEASUREMENT & PAYMENT:

The unit rate shall include the cost of all material, labour charges for excavation & fixing, cost of BBCC, tools and plant required, placing blocks in position and all other incidental expenses required to complete the work.

The work shall be measured in running meter

The payment will be made on **running meter** basis.

Item No:- 128

Providing and fixing C.I. Manhole cover 0.60 M. x 0.45M. size having weight not less than 35Kg.

The relevant specification shall be followed as per General Technical specification for Building work booklet It.No.22.00.6 P.No.173

Item No:- 129

Providing & erecting open well horizontal mono block pump set with cast iron body, complete for three phase submersible motor having [H]For 15 H.P,3 phase open well horizontal mono block pump set suitable for 1600 LPM to 1025 LPM @ 33 to 42 MTR head suitable for 65/80 mm dia delivery pipe

This work shall consist of Supplying and installing of 15. H.P. Monoblock pumping machineryfor 1600 LPM to 1025 LPM @ 33 to 42 MTR head suitable for 65/80 mm dia delivery pipe having capacity as approved by the Engineer in charge..

Monoblock pump set

1.0 Monoblock pump set of specified capacity and of I.S.I. mark of approved brand and make and quality shall be supplied

1.1 Specification of item no 9.4.2 of Electrical S O R Item form specification booklet of Electrical work shall be followed for this item

2.0 WORKMAN SHIP

2.1. Monoblock pump set shall be of approved quality and as per IS standard make. Material used in manufacturing tank shall be confirming to relevant IS code.

2.2. The **Monoblock pump set** shall be fitted and installed properly in a desired position and making all required necessary connection as specified and as directed by the Engineer in charge.

3.0 MODE OF MEASUREMENT and PAYMENT

3.1. The unit rate of Monoblock pump set shall include the cost of all materials, tools and plant required for fitting, the same to specified position as per drawings, and as directed by Engineer in charge. It shall also include the cost of making, fixing and removing of all scaffolding and forms required for the work.

3.2. The Monoblock pump set shall be measured in **Number**.

3.3. The payment will be made on **number basis** of the finished work.

Item No:- 130

Supplying & erecting approved make 3 phase motor control cubical panel (Star-Delta) made from 16G.CRCA sheet duty painted with epoxy powder painted inside and outside with hinged doors and locking arrangement, consisting suitable size of ON-OFF isolator (AC- 3/23duty) main fuses, single phasing preventer cum water level, Guard (Compe unit), Toggle switch to by pass Single phase preventer cum WLG, indicating lamps for R-Y-B phases, over load relay. Automatic water level controller, Ammeter & Voltmeter each with two way selector switch incoming wires duty socket Crimped, Panel to be erected on angle iron frame grouted on wall as overload relay, thermal/Electronics star delta cutoff timer, start-stop push buttons. The isolator overload relay & contractors of L&T, Siemens or Cuttler Hamer make only. Panel to be erected on angle iron frame ground on wall (e) S/D upto 2.5 H.P.

Item including Supplying & erecting approved make 3 phase motor control cubical panel (Star-Delta) made from 16G.CRCA sheet duty painted with epoxy powder painted inside and outside with hinged doors and locking arrangement, consisting suitable size of ON-OFF isolator (AC- 3/23duty) main fuses, single phasing preventer cum water level, Guard (Compe unit), Toggle switch to by pass Single phase preventer cum WLG, indicating lamps for R-Y-B phases, over load relay. Automatic water level controller, Ammeter & Voltmeter each with two way selector switch incoming wires duty socket Crimped, Panel to be erected on angle iron frame grouted on wall as overload relay, thermal/Electronics star delta cutoff timer, start-stop push buttons. The isolator overload relay & contractors of L&T, Siemens or Cuttler Hamer make only. Panel to be erected on angle iron frame ground on wall (e) S/D upto 2.5 H.P.

All work should be carried out as per Electrical Booklet or as directed by Engineer in charge.

The rate shall be for a unit of one No.

Item No:- 131

Providing and fixing rolling shutters of approved make made of 80 mm wide M.S laths inter-locked together through their entire length and jointed together at the ends by end locks mounted on specially designed pipe shaft with bracket plates, guide channels and arrangement for inside and outside locking with push-pull operation including the cost of hood cover and sprig etc. complete (A) Shutters having width below 3.5M

General

The work shall consist of furnishing and placing Providing and fixing **rolling shutters** of approved make of the shape and dimension shown in figure and conforming to these specifications of as approved by engineer in charge.

Material & Workmanship

Rolling shutter shall conform to I.S. 6248-1979. Rolling shutters shall be supplied of specified type with accessories. The size of rolling shutter shall be specified in drawing. The shutter shall be constructed with interlocking lath section formed from cold rolled steel strip not less than 0.9 mm. wide for shutter up to 3.5m. width not less than 1.25mm. thick and 80mm wide for shutters 3.5m in width and above unless otherwise specified.

Guide channel shall be mild steel deep channel section and rolled pressed or built up (fabricated) jointless construction. The thickness of sheet used shall not be less than 3.15mm.

Hood covers shall be made of m.s sheet not less than 0.90mm thick for shutter having width 3.5 meter and above. The thickness of M.S sheet for the hood cover shall be not less than 1.25mm.

The spring shall be of best quality and shall be manufactured from tested high tensile steel wire of strip of adequate strength to balance the shutter in all position. The spring pipe shaft etc. shall be supported on strong M.S. of malleable C.I. brackets. The brackets shall be fixed on or under the lintel as specified with raw plunger and screw bolt etc.

The rolling shutter shall be self-rolling up to 8 sq. m. clear area without ball bearing and up to 12 Sq.m clear with ball bearing. If the rolling shutter area is larger, then gear operated type shutters shall be used.

The locking arrangement shall be provided at the bottom of shutter at both ends. The shutter shall be open from outside.

The shutter shall be completed with door suspension shaft locking arrangement, pulling hooks, handles and other accessories.

Mode of Measurement & Payment

The payment shall be made on **SQMT** basis of the finished work.

The necessary labour, material, equipments, tools and plant conveyance including loading

and unloading etc. shall be provided by the contractor as directed by engineer in charge.

The item shall be measured for its **length & width** limiting dimension as specified on this plan or as directed.

The rate shall be for a unit of one **SQMT**.

Item No:- 132

Providing and fixing decorative entrance gate made out of cast iron and various mild steel tabular section combination , the Ornamental entrance gate should be fixed at compound wall including pattern and die making , cutting , welding , grinding, fabrication , fixing in position at compound wall with necessary pedestal, bearing block and other locking arrangement. The entrance gate should be painted with two coats of priming coat of paint, and two coat of oil paint etc complete. As per detail design and instruction of architect.

Providing and fixing decorative entrance gate made out of cast iron and various mild steel tabular section combination.

Mild steel section shall be confirm to IS : 816-1956

The Ornamental entrance gate should be fixed at compound wall including pattern and die making, cutting, welding, grinding, fabrication, fixing in position at compound wall with necessary pedestal, bearing block and other locking arrangement. The entrance gate should be painted with two coats of priming coat of paint, and two coat of oil paint etc. complete. As per detail design and instruction of architect.

Mode of Measurement & Payment:

The Item shall be measured for its Square meter limiting dimensions to those specified on plan or as directed. The rate shall be for a unit of Kilogram.

The payment will be made on Kilogram basis of the finished work

Item No:- 133

Providing and fixing concertina coil fencing with punched tape concertina coil 600 mm dia 10 mt openable length having 50 no rounds per 6 mt length, upto 3mt height of wall with existing angle iron (50mm x50mm x5mm)requird shaped As per Directed Engeenier in charge. placed 2.4mt or 3.00mt apart and with 4 horizontal R.B.T. reinforced barbed wire(3 mm) , stud tied with G.I. staples and G.I. clips to retain horizontal, including necessary bolts or G.I.barbed wire tied to angle iron, all complete as per direction of Engineer-in-charge, with reinforced barbed tape (R.B.T.)/Spring core (2.5 mm thick) and weight 43.478 gm/meter at compound wall for ESR M4/ intakewell.

General:

Providing and fixing concertina coil fencing with punched tape concertina coil 600 mm dia 10 mt open able length having 50 no rounds per 6 mt length, up to 3mt height of wall with existing angle iron (50mm x50mm x5mm)required shaped As per Directed Engineer in charge. placed 2.4mt or 3.00mt apart and with 4 horizontal R.B.T. reinforced barbed wire(3 mm) , stud tied with G.I. staples and G.I. clips to retain horizontal, including necessary bolts or G.I.barbed wire tied to angle iron, all complete as per direction of Engineer-in-charge, with reinforced barbed tape (R.B.T.)/Spring core (2.5 mm thick) and weight 43.478 gm/meter at compound wall for ESR M4/ intake well

Material & Workmanship:

The contractor shall provide necessary labour, tools & plants required for making the alignment of fencing on ground as & when the site/land shall be made available as and when the possession of the same is handed over to the EPI by the state Government.

Nothing extra shall be payable for bailing out/pumping out sub-soil water, if any, and for laying concrete in or under water.

All steel fabrication work shall be done in a workshop well equipped for the required operations. Holes for bolts shall be properly matched and copper enriched M.S. fabricated posts & struts, M.S. flats with M.S. spikes duly welded shall be got approved in the workshop itself before taking the fabricated material to the site of work & nothing extra whatsoever, shall be payable on this account.

Coefficient and tolerance of angle iron in weight and section shall be as per I.S. 1852 – 1985.

2.5mm dia G.I. staple/clip for fixing barbed wire with angle iron posts shall be as per the drawing.

The intermediate copper enriched M.S. angle posts between two adjacent strutted posts shall be serially numbered so as to achieve the arrangement of fixing of tightening bolts shown in the drawings attached with the documents relating to this contract.

At the time of commencement of the work, the Contractor shall erect 30 meters length of fencing & get it approved by the Engineer-in-Charge before large-scale work is carried out.

Posts and struts shall be fabricated from single piece of copper enriched M.S. angles. However, butt-welding will be permitted for not more than one out of four posts/struts and only two pieces (smaller pieces to be not less than 600mm) of copper enriched M.S. angles shall be used to form any such posts/struts. Welded joints in the posts/struts shall neither be at the bends nor within a distance of 400mm from the bend. No welded joints shall be permitted in the slanting portion of the posts. Wherever welding is restored as per the condition of the contract, only visual inspection of welding shall be done as per I.S. code 822 and the decision of the Engineer-in-Charge for acceptance of the weld or otherwise shall be final. For butt-welding, the edges of the metal pieces shall be beveled to the required slope and the weld shall be continuous & cover the full cross-section of copper enriched M.S. angles. The welding work will be carried out as per sample approved by Engineer-in-Charge before large scale work is carried out.

The diagonals of barbed wire shall be continuous & stretched between adjacent posts from top horizontal row of barbed wire of one of post to the bottom horizontal row of the second post. For fixing diagonals of barbed wire, separate holes shall be drilled in the posts.

every diagonal barbed wire of security fencing shall be adequately tied with minimum six turns of G.I. wire of 16 gauge at least at five intersections with horizontal rows of barbed wire.

G.I. barbed wire at ends and at joints shall be given eight turns & either tied with G.I. wire of not less than 16 gauge at three places with at least six wraps at each place or clamped with two U-Bolts and nothing extra shall be paid on this account.

Wherever nuts & bolts are used for the assembly of steel sections, two G.I. washers of 3mm thickness and of appropriate size shall be used with each set of nut & bolt and nothing extra shall be paid on this account.

Concertina coil shall be laid only after stretching, tightening & fixing all the barbed wires in all the rows of security fencing and after applying final coat of paint on copper enriched M.S. angle posts & struts, M.S. flats & M.S. spikes etc.

The coat of anticorrosive paint over punched tape concertina coil, as specified, shall be applied before stretching the coil to its required length as per the conditions given in this tender document.

STRETCHING OF BARBED WIRE:

The barbed wire reels/rolls are placed on a wooden stand in such a fashion that the reels can revolve on a rod placed through the reel axis by just pulling one end of barbed wire. These stands are placed

on one end of the panel on which barbed wire to be stretched. The end of barbed wire is pulled to 30m of the next struted post and cut to proper size. The Separation is repeated for each row in that panel. For all rows of fencing alternate rows of barbed wire are firstly tied middle of the two struted posts of the panel to minimize the sagging. All the alternate rows are then stretched with the help of the tightening bolts. The tightening should be preferably done from bottom row to the top where as the stretching should commence top to bottom.

After all the alternate barbed wire rows are sufficiently tight the same are tied up with other intermediate vertical posts with the help of U-pins. After this the diagonals (two on the goose neck and two on the vertical) between each vertical posts are stretched over the already tightened alternate horizontal rows with the help of crowbars and tied with the help of U-pins.

When the diagonal in the panels are complete the remaining alternate rows of horizontal barbed wire are stretched/tightened over the cross in exactly the similar fashion as already done for the previous alternate rows of horizontal barbed wire.

CONCERTINA COILS:

The concertina coil is to be laid only when all the barbed wires are stretched on all the three rows of fencing. Before laying the concertina coils it is to be ensured that a final coat of paint is applied on the angle iron posts.

LAYING OF BARBED WIRE INSIDE CONCERTINA COIL:

Barbed wire is to be placed inside all four-concertina coils in inclined diagonal pattern and stretched and tied with the barbed wires of fencing.

For the purpose of measurement of barbed wire inside concertina coils as, both top and bottom layers of barbed wire inside one row shall constitute one unit and the total length of barbed wire in one row shall be taken equal to the horizontal length of fencing.

Unless otherwise specified, nothing extra shall be payable for executing the work as per the aforesaid conditions & specifications.

Mode of Measurement & Payment:

The Item shall be measured for its Square meter limiting dimensions to those specified on plan or as directed. The rate shall be for a unit of one running meter.

The payment will be made on Running meter basis of the finished work.

Item No:- 134

Constructing providing and fabricating cattle guard using channel section frame of size ISMC series 100 mm x 50 mm (Weight 9.20 kg/Rmt) and ISMC section 100 mm x 75mm (weight 11.50 kg/Rmt) intermediate support for welding G.I.pipe at 12 Cm C/C of size 50 mm in a frame made of Channel section size 100 mm x 50 mm all round including fixing the unit on prepared chamber of masonry wall using MS hold fast embeded in masonry wall top as directed by Engineer in charge and as per drawing and necessary required arrangement etc complete.

General

The item cover Providing and fixing of specified size cattle trap including fixing frame made of steel section and pile on it as directed by Engineer in charge.

Structural steel

Specification No M-22 of specification booklet for building work shall confirm for this Item. The

Workmanship

The I.S.M.B. 100 x 75 x 6 section and heavy duty G.I. Pipe 50 mm dia shall be welded to gather to form cattle trap as per detailed drawing and as directed by the Engineer in charge.

MODE OF MEASUREMENT and PAYMENT

The unit rate of cattle trap shall include the cost of all materials, tools and plant.

The item shall be measured and paid on square meter basis

Item No:- 135

Providing and fixing to wall ceiling and floor 10.0 Kg. F/Cm² working pressure poluthene pipes of the following outside Dia. Low density, complete with special falnge compression type fittings, wall clipsetc. including making good the wall ceiling and floor.(G)110 mm

The relevant specifications of Building Booklet It. No.23.8./ Page No.162 shall be followed expect use 110 mm Rain water pipe 10.00Kg F/CM² and other end socketed with rubber ring, & fittings conforming to ISI 14735-1999 of approved make for drainage system pipe line, pipe shall be jointed with each other with rubber lubricant, pipe shall be fixed shall be concealed instead of 1100mm dia & 6 kgs/sq.cm. working pressure polythene pipes

Item No:- 136

Providing and fixing to wall ceiling and floor 10.0 Kg. F/Cm² working pressure poluthene pipes of the following outside Dia. Low density, complete with special falnge compression type fittings, wall clipsetc. including making good the wall ceiling and floor.(G)160 mm

The relevant specifications of Building Booklet It. No.23.8./ Page No.162 shall be followed expect use 160 mm Rain water pipe 10.00Kg F/CM² and other end socketed with rubber ring, & fittings conforming to ISI 14735-1999 of approved make for drainage system pipe line, pipe shall be jointed with each other with rubber lubricant, pipe shall be fixed shall be concealed instead of 160mm dia & 6 kgs/sq.cm. working pressure polythene pipes

Item No:- 137

Providing junction for rain water juncton chamber of size 0.60x0.60x0.75m with excavation of size 1.96x1.96 m & 0.15m thick c.c.1:2:4 bed concrete including brick masonry wall in CM 1:6 of 0.75m height & 0.23m thick with 15mm thick cement plaster inside & outside & 1.06x1.06 RCC (1:2:4) slab of thickness 0.15m with CRS steel and 0.60mx0.45m cast iron manhole cover with frame weight not less than 35 kg as per directed by Engineer-in-charge

General

Item including Providing junction for rain water junction chamber of size 0.60x0.60x0.75m with excavation of size 1.96x1.96 m and 0.15m thick c.c.1 2 4 bed concrete including brick masonry wall in CM 1 6 of 0.75m height and 0.23m thick with 15mm thick cement plaster inside and outside and 1.06x1.06 RCC (1 2 4) slab of thickness 0.15m with CRS steel and 0.60mx0.45m cast iron manhole cover with frame weight not less than 35 kg as per directed by Engineer-in-charge

Material

Cement

Specification No M-3 of specification booklet for building work shall confirm for this Item

Sand

Specification No M-6 of specification booklet for building work shall confirm for this Item

Water

Specification No M-1 of specification booklet for building work shall confirm for this Item

Bricks

Specification No M-15 of specification booklet for building work shall confirm for this Item

Brick Bat aggregates

Specification No M-14 of specification booklet for building work shall confirm for this Item

4.0. WORKMANSHIP

Excavation

Specification Item No. 4.0.0 (A) Page 29 of specification booklet for building work shall confirm for this Item

Form Work

Specification Item No. 1.9.1 (B) Page 64 of specification booklet for building work shall confirm for this Item

Concrete

Specification Item No. 5.3.8. (A) Page 39 of specification booklet for building work shall confirm for this Item

Brick work

Specification Item No. 6.12(B) Page 51 of specification booklet for building work shall confirm for this Item

Graded Stone Aggregate

Specification Material Item No. M-13 Page 12 of specification booklet for building work shall confirm for this Item

Plaster

Specification Item No. 17.58 Page 119 of specification booklet for building work shall confirm for this Item

Manhole Cover

Specification Item No. 23.0.0.6 Page 173 of specification booklet for building work shall confirm for this Item

For filling Brick bats and sand layers in chamber as filter Brick bats and sand shall be specification of Item no M-14 and M-6 on page 12 and 9 of specification booklet of Building specification shall be followed

Mode of Measurement and Payment

The Item shall be measured for its Number limiting dimensions to those specified on plan or as directed. The rate shall be for a unit of one square meter.

The payment will be made on Number basis of the finished work.

The rate shall be for a unit of **one number**

Item No:- 138

Providing Filter chamber of Brick work in C:M 1:6 of size 2.06mx1.20m x1.20m & excavation dimension of 2.66mx 1.81x1.35m including C.C 1:2:4 bed concrete of 0.15m thick including brick work in c.m 1:6 for 23cm thick wall including 15mm thick cement plaster inside & outside with cement slurry & 10cm thick RCC 1:2:4 top cover with frame of minimum weight of 35 kg & filling filter material kapchi in layers (25-40mm & 10-20mm) & BT metal 40mm & sand as per directed by Engineer-in-charge

General

Providing Filter chamber of Brick work in C:M 1:6 of size 2.06mx1.20m x1.20m & excavation dimension of 2.66mx 1.81x1.35m including C.C 1:2:4 bed concrete of 0.15m thick including brick work in c.m 1:6 for 23cm thick wall including 15mm thick cement plaster inside & outside with cement slurry & 10cm thick RCC 1:2:4 top cover with frame of minimum weight of 35 kg & filling filter material kapchi in layers (25-40mm & 10-20mm) & BT metal 40mm & sand as per directed by Engineer-in-charge.

Material

Cement

Specification No M-3 of specification booklet for building work shall confirm for this Item

Sand

Specification No M-6 of specification booklet for building work shall confirm for this Item

Water

Specification No M-1 of specification booklet for building work shall confirm for this Item

Bricks

Specification No M-15 of specification booklet for building work shall confirm for this Item

Brick Bat aggregates

Specification No M-14 of specification booklet for building work shall confirm for this Item

4.0. WORKMANSHIP

Excavation

Specification Item No. 4.0.0 (A) Page 29 of specification booklet for building work shall confirm for this Item

Form Work

Specification Item No. Item. No. 1.9.1 (B) Page 64 of specification booklet for building work shall confirm for this Item

Concrete

Specification Item No. 5.3.8. (A) Page 39 of specification booklet for building work shall confirm for this Item

Brick work

Specification Item No. 6.12(B) Page 51 of specification booklet for building work shall confirm for this Item

Graded Stone Aggregate

Specification Material Item No. M-13 Page 12 of specification booklet for building work shall confirm for this Item

Plaster

Specification Item No.17.58 I Page 119 of specification booklet for building work shall confirm for this Item

Manhole Cover

Specification Item No. 23.0.0.6 Page 173 of specification booklet for building work shall confirm for this Item

For filling Brick bats and sand layers in chamber as filter Brick bats and sand shall be specification of Item no M-14 and M-6 on page 12 and 9 of specification booklet of Building specification shall be followed

Mode of Measurement and Payment

The Item shall be measured for its Number limiting dimensions to those specified on plan or as directed. The rate shall be for a unit of one square meter.

The payment will be made on Number basis of the finished work.

The rate shall be for a unit of **one number**

Item No:- 139

Providing Recharging pit of size 2.0m Dia.& 2.0m depth of water logging with excavation filling the pit with gravel & sand in layers including making 300mm dia bore depth of 4.5mt & above concrete with kapchi in layers (25-40mm & 10-20mm) & BT metal 40mm & filling brick as directed by Engineer-in-charge.

MATERIAL

Sand

Specification No M-6 of specification booklet for building work shall confirm for this Item

Gravel

Specification No M-12 of specification booklet for building work shall confirm for this Item

WORKMANSHIP

Excavation

Specification Item No. 4.0.0 (A) Page 29 of specification booklet for building work shall confirm for this Item

Drilling bore

Specification Item No. 4.27. (A) Page 36 of specification booklet for building work shall confirm for this Item

For filling Gravel and sand layers in pit shall be specification of Item no M-14 and M-6 on page 12 and 9 of specification booklet of Building specification shall be followed

MODE OF MEASUREMENT AND PAYMENT

The Item shall be measured for its Number limiting dimensions to those specified on plan or as directed. The rate shall be for a unit of one square meter.

The payment will be made on Number basis of the finished work.

The rate shall be for a unit of **one number**

Item No:- 140

Drilling pilot borehole of size 250/300 mm at above site by mud flush direct rotary rig.

Material

- No material supplied under this item except drilling consumables such as drilling mud, water, additives, etc.
- Drilling shall be carried out using mud flush direct rotary rig suitable for the specified diameter and depth.

Labour

- Skilled operators, helpers, rig operators, and supervisory staff.
- Labour for shifting, positioning, operating, and removing drilling rig.

Workmanship

- Drilling shall be carried out vertically or as specified.
- Borehole diameter shall be maintained true to size (250 / 300 mm).
- Continuous mud circulation shall be ensured to prevent collapse.
- Work shall be executed as per IS: 2800 (Part 1) and standard groundwater practices.

Mode of Measurement

- Measured in running metres (RM) of borehole drilled to the required diameter and depth.

Item No:- 141

Reaming of 250/300 mm dia. Pilot borehole to size 550 mm dia. Including assembling ,lowering housing ,casing strainerpipers with gravel packing and clayball packing etc.

Material

- Temporary casing pipes, strainers, gravel, clay balls, and drilling consumables.
- All materials required for gravel packing and sealing.

Labour

- Skilled drilling crew, helpers, and supervisory staff.

Workmanship

- Pilot borehole shall be reamed uniformly to 550 mm dia.
- Housing/casing/strainer pipes shall be lowered centrally.
- Gravel packing and clay ball packing shall be done zone-wise.
- Bore shall be protected against contamination.

Mode of Measurement

- Measured in running metres (RM) of bore reamed.

Item No:- 142

Development of each water bearing zone coming across the full depth of tubewell by lowering 100 mm dia. Dropline and 32 mm dia airline for each water bearing Zone with suitable capacity air compressor up to availability of sand free discharge.

Material

- Dropline (100 mm dia), airline (32 mm dia), compressed air.
- No permanent material remains under this item.

Labour

- Skilled and unskilled labour for compressor operation and monitoring.

Workmanship

- Development shall be done zone-wise until sand-free discharge is obtained.
- Proper surge and airlift method shall be adopted.
- Development shall continue till water clarity is acceptable.

Mode of Measurement

- Measured in running metres (RM) of developed bore length.

Item No:- 143

900 CFM /200 PSI capacity air compressor upto the availability of sand free discharge for upto 250 mtrs

Material

- Air compressor with accessories and fuel.

Labour

- Operator and helper for compressor operation.

Workmanship

- Compressor shall be operated continuously during development.
- Pressure and discharge shall be maintained as specified.

Mode of Measurement

- Measured in hours or running metres, as specified in BOQ.

Item No:- 144

Supply of M.S. E.R.W. plain end medium duty pipe confirming to IS 4270/2001 with latest amendments Of size 250 mm dia (minmum thicknes of 7.1 mm)

Material

- MS ERW medium duty pipes, plain end.
- Confirming to IS: 4270 / 2001 (or latest amendments).
- Minimum wall thickness: 7.1 mm.

Labour

- Loading, unloading, stacking at site.

Workmanship

- Pipes shall be straight, free from defects, and properly coated.
- Ends shall be square cut.

Mode of Measurement

- Measured in running metres (RM).

Item No:- 145

Screen Slotting of MS ERW balnce pipe with size of slot 6.75 cm X 6.35 cm X 3.12 mm for 250 mm dia pipe

Material

- MS ERW pipes as specified.
- Slot dimensions: 6.75 cm × 6.35 cm × 3.12 mm.

Labour

- Skilled labour for machine slotting.

Workmanship

- Slots shall be uniform, burr-free, and evenly spaced.

- Structural strength of pipe shall not be compromised.

Mode of Measurement

- Measured in running metres (RM) of slotted pipe.

Item No:- 146

Supply of miscellaneous bore material suitable to 250 mm dia pipes as following (A) MS Bore clamps made from M.S. plate with 3 holes on either side with nuts & bolts of std make of size 900X100X16 mm flat suitable for 250 mm dia pipe.

Material

- MS plate 900 × 100 × 16 mm, nuts & bolts of standard make.

Labour

- Fabrication and fixing labour.

Workmanship

- Holes shall be accurately drilled.
- Proper tightening with nuts, bolts, and washers.

Mode of Measurement

- Measured in numbers (Nos.).

Item No:- 147

Supply of miscellaneous bore material suitable to 250 mm dia pipes as following (B) MS Bore Plug having 100mm height made from M.S. plate with 3 holes at equal distance on circumference for nut-bolts type, locking arrangement with nuts-bolts & lock nuts of std make complete from 5 mm thick M.S. plate suitable for 250mm dia pipe.

Material

- 5 mm thick MS plate.
- Nut-bolt locking arrangement.

Labour

- Fabrication and installation labour.

Workmanship

- Bore plug shall fit perfectly and provide leak-proof sealing.

Mode of Measurement

- Measured in numbers (Nos.).

Item No:- 148

Supply of miscellaneous bore material suitable to 250 mm dia pipes as following (C) MS Bail Plug having length 0.45 mtr from medium class pipe as per I.S. suitable for 250 mm dia pipe.

Material

- MS pipe of medium class, 0.45 m length, IS standard.

Labour

- Fabrication and fixing labour.

Workmanship

- Plug shall be centrally aligned and securely fitted.

Mode of Measurement

- Measured in numbers (Nos.).

Item No:- 149

Supply of miscellaneous bore material suitable to 250 mm dia pipes as following (D) Steel bent plate suitable for ERW pipe for 250mm dia (size:200 X 150X6 mm)

Material

- Steel bent plate 200 × 150 × 6 mm suitable for ERW pipe.

Labour

- Fabrication and fixing labour.

Workmanship

- Proper bending and secure fixing ensured.

Mode of Measurement

- Measured in numbers (Nos.).

Item No:- 150

Supply of GRAVEL OF selected size 4 mm to 6mm

Material

- Clean, hard, rounded gravel free from dust and organic matter.

Labour

- Loading, unloading, placing.

Workmanship

- Gravel shall be evenly packed around strainer pipes.

Mode of Measurement

- Measured in cubic metres (m³).

Item No:- 151

Electrologging of Pilot bore hole with carting.

Material

- Logging equipment and consumables.

Labour

- Skilled technical personnel.

Workmanship

- Logging shall cover full depth of bore.
- Report shall be submitted with interpretation.

Mode of Measurement

- Measured in job (Lump sum).

Item No:- 152

Geohydrological ground water investigation including vehicle charges for three phase DTH bore/DR tube well including water sample testing & chemical analysis

Material

- Sampling tools, testing materials.

Labour

- Qualified geologist/hydrogeologist and assistants.

Workmanship

- Includes field investigation, water sampling, and lab testing.
- Report shall include chemical analysis and recommendations.

Mode of Measurement

- Measured in job (Lump sum).

Item No:- 153

Providing, supplying and commissioning ISI mark CI D/F Reflux Valves of following class and diameter including all taxes, insurance, transportation, freight charges, octroi, inspection charges, loading, unloading, conveyance to departmental stores stacking etc. complete. Reflux valves PN 1 IS 5312 with ISI mark size: 100 mm

Material

- CI D/F reflux valve PN 1, IS:5312, ISI marked.
- Gaskets, bolts, nuts.

Labour

- Installation, testing, and commissioning labour.

Workmanship

- Valve shall be installed in correct flow direction.
- Jointing shall be leak-proof.

Mode of Measurement

- Measured in numbers (Nos.).

Item No:- 154

Providing and laying in trenches galvanised mild steel tubes (Medium grade) of the following nominal bore, and tube fitting (Earthwork in trenches to be measured and paid for separately (H) 80mm

Material

- Galvanised MS tubes (Medium grade) conforming to IS: 1239.
- Fittings including bends, tees, couplings, etc.

Labour

- Labour for laying, jointing, testing.

Workmanship

- Pipes shall be laid true to line and level.
- Joints shall be threaded and leak-proof.
- Testing shall be done before backfilling.

Mode of Measurement

- Measured in running metres (RM).
- Earthwork measured separately.

Item No:- 155

Constructing brick masonry chamber for underground C.I. Inspection chamber and bends with bricks having crushing strength not less than 35Kg. Cm² in C.M. 1:5 C.I. cover with frame (Light duty) 455mm x 610mm internal dimensions, total weight of cover with frame to be not less than 38Kg. (Wt. of cover 23 Kg.) and Wt. of frame 15Kg.) (R.C.C. top slab with 1:2:4 mix (1-cement :2-coarse sand :4-graded stone aggregate 20mm size) foundation concrete 1:5:10 inside plaster 15mm thick with cement mortar 1:3 finished smooth with a floating coat of neat cement on walls and bed concrete etc. complete.(iii) Inside dimensions 600mm x 850 mm and 450mm deep for pipe lines with three or more inlets.

The relevant specification shall be followed as per General Technical specification for Building work booklet It.No. 24.44(iii) P.No.184

Item No:- 156

Clearing and grubbing road land including uprooting rank vegetation grass bushes, shrubs, sapling and trees girth up to 300 mm removal of stumps of trees cut earlier and disposal of unserviceable materials (C) By mechanical means in area of light jungle

1. Materials

- No new construction materials are required.
- Fuel, lubricants, and consumables required for operation of machinery such as excavators, bulldozers, tractors, chain saws, or similar equipment shall be provided by the contractor.
- Ropes, chains, cutting tools, and protective gear for labour.
- Temporary markers, flags, or barricades for safety, if required.

2. Labour

- Skilled operators for excavators, dozers, tractors, or other mechanical equipment.
- Semi-skilled and unskilled labour for manual assistance, cutting, stacking, segregation, loading, and disposal of debris.
- Supervisory staff for proper execution and safety compliance.

3. Workmanship / Execution

- The area shall be clearly demarcated before commencement of work.
- Clearing shall include:
 - Cutting and removal of grass, bushes, shrubs, and rank vegetation.
 - Removal of saplings and trees having girth up to **300 mm**, measured at 1.0 m above ground level.
 - Uprooting and removal of stumps of trees cut earlier, including associated roots to a minimum depth of **300 mm** below ground level or as directed.
- Work shall be carried out predominantly by **mechanical means**, supplemented by manual labour where necessary.
- Roots, stumps, and organic matter shall be removed so that no obstruction remains for subsequent earthwork or construction.
- Serviceable material, if any, shall be stacked separately at a place directed by the Engineer-in-Charge.
- Unserviceable material shall be disposed of outside the site at approved dumping locations, including all leads and lifts.
- The cleared surface shall be left reasonably level and free from loose roots, debris, and organic matter.
- Care shall be taken to avoid damage to existing utilities, structures, and trees marked for retention.
- All operations shall conform to relevant provisions of:
 - **MoRTH Specifications (latest revision)**

- **CPWD Specifications – Earthwork Section**
- Safety guidelines and environmental regulations in force.

4. Disposal

- Disposal of uprooted vegetation, stumps, and debris shall be carried out by loading, transportation, and dumping at locations approved by local authorities and the Engineer-in-Charge.
- Burning of vegetation shall not be permitted unless specifically approved by competent authority.

5. Mode of Measurement

- Measurement shall be made in **Hector (Hect)** of area cleared and grubbed.
- The area shall be measured on plan or actual site measurement as directed.
- Classification shall be as **“Light Jungle”**, where vegetation consists mainly of grass, bushes, shrubs, saplings, and small trees up to 300 mm girth.

Item No:- 157

Earthwork for embankment including breaking clods, dressing with all lead and lift (excluding watering and consolidation)(E) From Borrow area within all lead

The land on which the earth work is to be done shall be cleared of all trees having a girth of 30 cm and less, loose, stones, vegetation, bushes, stumps and all other objectionable materials. All the materials cleared will be the property of Government. Useful material shall be arranged in convenient stacks along the road boundary or as directed at places within 50 meters lead, and handed over to the department in convenient section. Unsuitable material shall be burnt or otherwise disposed off by the contractor at his own cost without causing any nuisance, inconvenience or damage to the works property or people in the neighbourhood. In all cases, the materials shall be disposed off in a neat manner.

After clearing the site, the alignment of the road shall be properly set out true to line, curves, slopes grades and sections as shown on the plan or directed by the Engineer-in-charge. The contractor shall provide all labours and materials such as lime, strings, pegs, nails, bamboos, stone, mortar, concrete etc. required for setting out, establishing. Bench Marks and giving profiles. The contractor shall be responsible for maintaining the B.Ms, profiles alignments and other marks as long as they are required for the work in the opinion of the Engineer-in-charge. If the contractor defaults in this respect they may be restored by the department at the cost of the contractor.

The soil to be used for embankment shall have CBR more than 5 % and shall be free from trees, stumps, roots, rubbish or any other objectionable materials. Only material considered suitable by the Engineer-in-charge shall be used for the construction and that considered unsuitable other disposed off as directed by him. The selection of the materials to be used in the construction of embankment shall be made after soil surveys and investigations are carried out by the Department.

Density requirement of embankment and sub-grade materials

Type of Work	Maximum laboratory dry unit weight when tested as per IS 2720 (Part-8)
Embankment up to 3 meter height, not subjected to extensive flooding.	Not less than 15.2 kN cum.

Embankment exceeding 3 meter height or embankments of any height subject to long periods of inundation.	Not less than 16.0 kN cum.
Sub-grade and earthen shoulders verges backfill.	Not less than 17.5 kN cum.

Note (1) This table is not applicable for lightweight fill material e.g. cinder, fly ash etc.

(2) The Engineer may relax these requirements at his discretion taking into account the availability of materials for construction and other relevant factors.

Field density shall be percentage of laboratory density as recommended by Gujarat Engineering Research Institute.

When permitted, the contractor shall use the soil for embankment work available from box cutting the road. The soil shall be used after approval from Engineer-in-charge. For this purpose the contractor shall make his own arrangement for loading, transporting and unloading the cutting stuff available from box cutting to required site with all lead and lift.

The embankment shall be constructed in uniform layers not exceeding 250 mm in loose thickness. The soil shall be spread uniformly over the entire width of the embankment, unless otherwise directed by the Engineer-in-charge. The operation of laying the successive layer of earth shall have to be suitably synchronized with the consolidation work. If the soil as delivered to the road bed is too wet, it shall be dried by exposure to the sun till the moisture content is acceptable for compaction. All clods of hard lumps of earth shall be broken to have maximum size of 15 cm. when being placed in the embankment and a maximum of size 5 cm when being placed in the top 45 cm of the embankment. The work of next layer shall be allowed only after the first layer below it has been thoroughly compacted to the density specified.

Where an embankment is to be placed on sloping ground, the surface of the ground shall be benched in the steps of trenches or broken up in such a manner that the new material shall have perfect bond with the existing surface.

To avoid interference with the construction work, the fill material shall not be placed against any wall unless permission has been given by the Engineer-in-charge but in any case not until the concrete or masonry has been in position for 14 days, (the embankment shall be brought up simultaneously in equal layers on each side of the structure to avoid displacement and unequal pressure. The sequence of work in this regard shall be got approved from the Engineer-in-charge. Where it may be impracticable to use power rollers or other heavy equipment, the compaction shall be carried out by mechanical tampers or other methods approved by the Engineer-in-charge. Care shall be taken to see that the compaction plant does not hit or come too close to any structural member so as to cause any damage to them.

The embankment shall be finished in conformity with the alignment, levels, cross sections and dimension shown on the plans or as directed by Engineer-in-charge.

Measurements for Payment

The compacted earthwork measurements shall be paid on cross sectional area method and computing the volume in cubic meter. The contractor shall maintain the embankment by filling in ruts, rain cuts, depression due to shrinkage etc. to proper formation and grade till this item is finally measured and accepted by the Department. The measurements shall be taken on compacted earth

work. No deduction for shrinkage shall be made from gross measured quantity of compacted earth work. However the contractor shall have to bear loss of quantity due to all settlements as well as other types of deformations etc. if any that might have taken place at the time of taking the final measurements of this item.

The rate of earthwork includes clearing jungles, dog belling, fixing profiles, excavating earth from borrow areas, breaking clods, conveying and spreading earth in layers with all lead and Lift, finishing the entire embankment and incidentals necessary to complete the work to the specifications. The cutting stuff of cutting in ordinary soil, soft murrum, soft rock, hard murrum and hard rock shall be utilized in embankment construction under this item within the lead specified in that particular item. No payment shall be made under this item for the cutting stuff used in the embankment but labour for cutting will be paid as per specifications in the particular item, and only balance quantity of earthwork brought from borrow areas will be paid in this item.

The rate shall be for a Unit of One Cubic meter.

Item No:- 158

Rolling of earthwork in layers with power roller including filling in depressions which occur during the process and Watering of earth work as directed.

1. Material:

- **Existing Earthwork:** The material to be rolled is the previously excavated or filled earthwork, conforming to the specifications for the type of earthwork (e.g., filling, embankment, subgrade). The properties of this earth (soil type, moisture content) are crucial for effective rolling. The contractor should ensure the moisture content is within the optimum range for compaction as per relevant Indian Standards (e.g., IS 2720 series). Water for adjusting moisture content, if required, shall be considered part of the contractor's responsibility.
- **Filling Material (for Depressions):** If depressions occur during the rolling process, they shall be filled with earth material of the same type and quality as the surrounding earthwork, conforming to the original fill specifications.

2. Labour:

- **Roller Operator:** Skilled in operating the power roller safely and effectively to achieve the required compaction.
- **Supervisor/Mate:** To guide the roller operator, check the rolled surface, and identify any depressions needing filling.
- **Unskilled Labour:** For assisting in spreading the earth for filling depressions and any other manual work required.

3. Workmanship:

- **Preparation of Layer:** The earthwork shall have been spread in uniform layers of the specified thickness (typically 150 mm to 300 mm compacted thickness, depending on the type of roller and soil). The surface of each layer shall be reasonably level before rolling commences.
- **Moisture Content:** The moisture content of the soil shall be checked and maintained within the optimum range for achieving the desired compaction, as determined by laboratory tests (e.g., Proctor test as per IS 2720 Part 7) and as directed by the Engineer-in-charge. Water shall be sprinkled uniformly if the soil is too dry, and the layer allowed to partially dry if it's too wet, before rolling.
- **Rolling Procedure:**

- Rolling shall be carried out with a power roller of the specified type and weight (e.g., smooth wheel roller, vibratory roller) as per the project specifications and the Engineer-in-charge's instructions.
- The roller shall pass uniformly over the entire surface of each layer, with controlled overlapping of successive passes (typically 25-50% of the roller width).
- The number of passes required to achieve the specified degree of compaction shall be determined by field trials and as directed by the Engineer-in-charge, based on density measurements (e.g., core cutter method as per IS 2720 Part 28 or sand replacement method as per IS 2720 Part 28).
- Rolling shall commence from the edges and progress towards the center, or as directed.
- The speed of the roller shall be controlled to ensure effective compaction.
- Rolling shall continue until the required compaction (usually expressed as a percentage of the maximum dry density obtained from the Proctor test) is achieved throughout the layer.
- **Filling Depressions:**
 - Any depressions or unevenness that occur during the rolling process shall be promptly filled with earth material of the same type and quality as the surrounding area.
 - The filled material shall be spread evenly and then rolled along with the surrounding area to ensure uniform compaction and a level surface.
 - Repeated filling and rolling may be necessary to eliminate depressions effectively.
- **Surface Finish:** After the final pass of the roller on the top layer, the surface shall be smooth, even, and free from loose material. It should conform to the levels and grades specified in the drawings.
- **Testing and Quality Control:** The degree of compaction achieved shall be checked at regular intervals as per the project specifications and relevant IS codes using approved methods. If the required compaction is not achieved, further rolling shall be carried out.

4. Mode of Measurement:

- The measurement shall be in **square meters (sq.m)** of the area of earthwork that has been rolled in layers to the specified compaction and finished to the required level and grade, including filling any depressions that occurred during the process.
- The area shall be measured on the surface that has been rolled. Overlaps at the edges will not be measured extra.
- No separate measurement or payment shall be made for filling minor depressions that occur during the rolling process; this is considered incidental to the rolling operation.
- The thickness of the layers rolled is a specification requirement for the workmanship but not a direct component of the measurement unit (which is area). However, compliance with the specified layer thickness is essential for achieving the required compaction.
- Payment shall be made for the area of earthwork rolled and accepted by the Engineer-in-charge as having achieved the specified compaction and surface finish.

ELECTRICAL SPECIFICATIONS

For all Item specifications shall be followed as per attached Specifications of Electrical work.

**Signature of Contractor
Engineer**

**Executive Engineer
Tapi (R & B) Division
Vyara**