

NAME OF WORK: - SR to Rest House Bilimora, Dist-Navsari (Providing Compound wall East side)

ITEM WISE SPECIFICATION

Item No:- 1

Demolition of Brick work and stone masonry including stacking of serviceable materials and disposal of unserviceable materials with all lead and lift.(ii) In Cement Mortar.

The relevant specification shall be followed as per General Technical specification for Building work booklet It.No.20.11. (II). P.No.148.

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

Item No:- 2

Demolition including stacking of serviceable materials and disposal of unserviceable materials with all lead and lift. (i) R.C.C. work

The relevant specification shall be followed as per General Technical specification for Building work booklet It.No.20.3. P.No.147.

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

Item No:- 3

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.

The Item shall be measured as finished work in one Cum.

Item No:- 4

Providing and laying cement concrete 1:4:8 (1- Cement : 4- coarse sand : 8- hand broken 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. 5.3.3. (A) P.No.38 except that using for including the cost of form work for Foundation and Plinth 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:- 5

Providing TMT Bar FE 500D reinforcement for R.C.C. work including bending, binding and placing in position complete upto floor two 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 steelbinding 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 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 of 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 spitting 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 not corrodible material wooden and metal supports shall not extended 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 blocs 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 form corrosion, concrete cover shall be provided as indicated on drawings. All bars protruding from concrete and to which other bars are to be sliced 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 sheer not 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 standards 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 stages 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:- 6

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

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 Foundations, footings and Mass concrete. footing 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:- 7

Providing and laying controlled cement concrete M.250 exposed work with curing etc. complete including the cost of formwork but excluding the cost of reinforcement for R.C.C. work in (A) BEAMS :(i) Having cross-sectional area 0.05 to 0.08 Sq.M

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 Ground & Plinth BEAMS 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:- 8

Providing and laying controlled cement concrete M.250 exposed work with curing etc. complete including the cost of formwork but excluding the cost of reinforcement for R.C.C. work in (B) COLUMNS:(i) Having cross-sectional area 0.05 to 0.08 Sq.M

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 Floor Two Level 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:- 9

Filling available excavated earth (excluding rock) in trenches. plinth, sides of foundations etc. in layers not exceeding 20 cm. in depth consolidating each disposed layer by ramming and watering

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

The Item shall be measured as finished work in one Cum.

Item No:- 10

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 1:6 (1- Cement : 6 -fine sand)(B) Conventional

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 Floor Two Level instead cement mortar 1 5 (1cement 5 fine sand)

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

Item No:- 11

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.

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 Floor Two Level

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

Item No:- 12

Finishing wall with weather proof exterior emulsion paint on wall surface (two coats) to give an required shape even shade after thoroughly brushing the surface to remove all dirt, and remains of loose powdered materials.etc complete

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:- 13

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:- 14

Providing and fixing MS iron compound gate including using the frame of G.I. pipe 40mm dia (Medium grade) and using 12mm square bar at 7.50 cms c/c including painting two coats with one coat of priming coat including fixture and fastening (i.e. aldrop, Narmada Khunta, Long Stopper etc.) welding charges and fixing etc. complete.

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 square meter.

Signature of Contractor

**Deputy Executive Engineer
Navsari (R&B) Sub Division
Navsari**