

# Specification

**Item No.13: Providing TMT Bar FE 500D reinforcement for R.C.C. work including bending, binding and placing in position complete upto floor two level.**

## GENERAL

This work shall consist of furnishing and placing **TMT Fe 500 Conforming to IS 1786 2008** reinforcement, bars (intentioned) of the shape and dimensions shown on the drawings and conforming to these Specifications or as approved by the Engineer in charge.

## MATERIAL

### TMT Bars

Reinforcements shall be **TMT Fe 500** steel bars. They may be uncoated or coated 'with epoxy or with approved protective coatings.

TMT bars reinforcement for RCC work shall conform to IS 1786 FE-500 and shall be of tested quality. It shall also comply with relevant part of IS 456-1966.

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

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

### Pitch

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.

### Binding wire

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 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.

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.

## PROTECTION OF REINFORCEMENT

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.

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.

## Workmanship

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.

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

## BENDING OF REINFORCEMENT

Bar bending schedule shall be furnished by the Contractor and got approved by the Engineer before start of work. Reinforcing steel shall conform to the dimensions and shapes given in the approved bar bending Schedules.

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.

## PLACING OF REINFORCEMENT

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. 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.

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.

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.

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.

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

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

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.

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

### Lapping

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  $1\frac{1}{4}$  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. Welding

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.

While welding may be permitted for TMT. 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 500D 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:  $CE = C + Mn + Cr + Mg + V + Ni + Cu$  6 5 15 is 0.4 or less.

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

Unless otherwise specified a 'U' type hook at the end of each bar shall invariably be provided to main reinforcement. The radius of the bane 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 spiting of the concrete.

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 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. 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 not 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.

Whenever indicated on drawing or desired the Engineer in charge bars shall be joined 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.

10.8. When permitted or specified on the drawings joints of reinforcement bars shall be 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, 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.

### MODE OF MEASUREMENTS & 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

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.	40 mm	9.86 Kg./Rmt.

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

Reinforcement shall be measured in length including overlaps, no steel shall be given for lap but work may be carried out as per detailed drawings. Where welding or coupling is resorted to, in place lap joints, such joints shall be measured for payment as equivalent length of overlap as per design requirement. From the length so measured, the weight of reinforcement shall be calculated in tones on the same basis of as per table given above even though steel is supplied to the contractor by the department on actual weight. Length shall include hooks at the ends. Wastage and annealed steel wire for binding shall not be measured and the cost of these items shall be deemed to be included in the rate for reinforcement.

The rate for reinforcement includes cost of steel binding wires including lap, it's carting with all lead lifts, cutting, bending, placing in position, binding and fixing in position as shown on the drawings and as directed. It shall also include all devices for keeping reinforcement in approved position, cost of joining as per approved method and all wastage and spacer bars. No Payment shall be given for Lap.

#### **Made of Payment:**

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

**Item No.18: Providing and laying broken chine mosaic flooring for terrace using 12 mm to 20 mm broken pieces of glazed tiles to be laid over cement mortar 1:3 to plain or slope and to be tempered to bring mortar creme out upto surface using white cement including rounding off junctions and extending them upto 15 cm along the wall,clearing with water and oxalic acid etc. as directed.**

#### Material WATER

Water shall not be salty brackish and shall be clean reasonably clear and free objectionable quantities of silt and traces of oil j\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 RCC container for transport storage and huddling of water shall be clean, Water shall confirm to the standard specified in I S455 -1978 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 S269- 1976 Any indication of unsoundness charge 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. Water for curing mortar concrete or masonry should not be too acidic or too alkaline.

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 Hard and bitter water shall not be used for curing

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

#### CEMENT

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

#### SAND

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.

**FINE SAND:** The fineness module shall not exceed 1.0 the sieve analysis of fine sand be as under: 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.

#### Water proofing compound

Water proofing compound shall be of approved quality and make as approved by Engineer in charge.

#### Brick bats

Brick bat aggregates shall be broken form well burnt or slightly over burnt and dense bricks it shall be homogeneous in texture roughly cubical in shape clean and free from dirt or any other foreign material brick bats shall be of 40 to 50 mm nominal size unless otherwise specified in the item the under burnt or over burnt bricks bats shall not be used.

#### China mosaic tile pieces

China mosaic tiles pieces shall be of 50 mm to 90 mm nominal size. Tile pieces shall be made from hard and good quality of tiles.

#### WHITE CEMENT

White cement shall be of approved make it shall confirm definition of I S 8042 –E- 1978 the sample of white cement shall be approved by Engineer in charge

#### WORKMANSHIP

First of all surface of the entire terrace shall be cleaned by thoroughly brooming and then by wire brushes All the loose material dust and debris shall be removed thoroughly for the entire surface of the terrace All joints and cracks shall be raked off and cut in v trench which shall be filled by neat cement slurry admixed with water proofing compound The joints with parapet shall be raked up to 30 cm height and shall be applied by neat cement slurry admixed with water proofing compound Neat cement slurry shall be prepared and a water proofing compound of approved make shall be mixed with the slurry in proportion specified by the manufacturer of the compound and shall be laid throughout the surface of the terrace by the use of brushes mala etc Cement slurry shall be prepared by adding adequate quantity of water so as to spread it uniformly on the surface.



cement concrete 1:5:10 (using 50% of cement mortar 1:5 1part of cement and 5part of coarse sand by volume admixed with water proofing compound of approved make in specified proportion) of specified thickness shall be laid (specification of cc1:5:10 shall be followed for the execution of this layer) all over the surface of the terrace in true level and required slope including rounding of junctions of walls and slab After two days of proper curing applying a second coat of cement slurry on entire surface of the terrace D. the entire surface shall be finished with 20 mm thick C M 1:4 and china mosaic tilling in true level and slope as directed by Engineer in charge & finally finishing the surface with trowel with white cement slurry (specification of white glaze tiles flooring shall be followed for the execution of this item.) Finishing the surface with 20 mm thick C M 1:4 and china mosaic tilling & finally finishing the surface with trowel with white cement slurry After two days proper curing the terrace shall be flooded for 15 days.

#### Mode of Payment:

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 & placing stones in position, compacting, finishing, curing mirror polishing, providing treatment of 30 cm high all over the length of parapets and corners and sill of doors etc, 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 plastering shall include the cost of all labour, materials tools and plant scaffolding and all incidental expenses as described herein above. The plaster 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.

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

**Item No.22: Providing and Fixing Windows with 40 X 40 X 5 mm. iron angle & frame 30 X 30 X 4 mm. size in Double Shutter with 1 mm thick MS plate with hold fasts, iron hinges, handles, stopper, locking arrangement etc. comp. Steel welded is built up section cutting hoisting, finishing in two coats of oil painting over coat of prime coat etc. complete.**

**Materials:**

**2.1 Frame**

Main frame: Iron angle 40×40×5 mm hot-rolled, cut, mitred, fully welded at corners.

Sub-frame or shutter stile: Iron angle 30×30×4 mm, fully welded to shutter edges to form robust built-up section.

B.G. sheet (20 gauge ≈ 0.9 mm thick mild steel sheet) fabricating double-leaf shutter panels.

Hold-fasts: heavy-duty mild steel, embedded/set into masonry, welded to frame.

Hinges: Iron butt/strap hinges, sized appropriately, attached to sub-frame.

Handles & stoppers: Mild steel components including locking arrangements (padlock hasp or mortise lock as per drawing).

Locking mechanism: As specified in the design; mortise or shoot-bolt type.

All frame sections and shutter components fabricated per approved shop drawings.

Angles mitred and welded with full-penetration welds, ground and dressed smooth.

Shutter panels securely welded to sub-frames.

After assembly, ensure all frames are square, flat and true in alignment.

Apply one coat of red-oxide primer on all iron surfaces after fabrication and grinding.

Followed by two coats of oil paint of approved enamel color.

All welds, scratches and exposed areas to be touched up before final acceptance.

Fix window frames plumb, level, and square using hold-fasts set in masonry or concrete.

Align shutters to operate smoothly; ensure clearance, stopper engagement, and lock alignment.

Fill joints between frame and masonry with backing rod and neutral silicone sealant for weather-proofing.

**Mode of Payment:**

The payment shall be made on Sqm basis of work done.

**Item No.24: Providing and fixing 30mm thick FACTORY MADE SOLID PANEL PVC DOOR SHUTTER** consisting of frame made out of M.S. tubes of 19 gauge thickness and size of 19mm x 19mm for stiles and 15mm x 15 mm for top and bottom rails. M.S. frame shall have a coat of steel primers of approved make and manufacture, M.S. frame shall be covered with 5 mm thick heat moulded PVC 'C' channel of size 30 x 50 mm forming stiles, and 5mm thick 75mm wide PVC sheets for top rail, lock rail and bottom rail on either side, and 10mm (5mm x 2) thick, 20mm wide cross PVC sheet as gap insert for top rail and bottom rail, Panelling of 5 stiles and rails with 30mm wide x 5mm thick PVC sheet beading on either side, and joined together with solvent cement adhesive,. An additional 5mm thick PVC strip of 20mm width is to be stulk on the interior side of the 'c' channel using PVC solvent cement adhesive etc. complete as per direction of Engineer in charge, manufacture's specification and drawing.

### **Material**

Providing approved quality factory made solid panel PVC door shutter of 30 mm thickness manufactured from rigid PVC profiles of approved make and shade. The shutter shall consist of internal reinforcement frame made out of M.S. tubes of 19 gauge thickness having size 19 mm × 19 mm for vertical stiles and 15 mm × 15 mm for top and bottom rails. All M.S. sections shall be thoroughly cleaned and coated with one coat of approved anti-corrosive steel primer before assembly.

The reinforced M.S. frame shall be fully covered with 5 mm thick heat moulded rigid PVC 'C' channel of size 30 mm × 50 mm for stiles and with 5 mm thick, 75 mm wide rigid PVC sheets for top rail, lock rail and bottom rail fixed on both sides. The top and bottom rails shall be provided with 10 mm thick (5 mm × 2) and 20 mm wide cross PVC sheet gap insert to maintain rigidity and proper profile shape.

The shutter panelling shall be made with rigid PVC multi-panel arrangement comprising PVC stiles and rails, fixed with 30 mm wide × 5 mm thick PVC sheet beading on both faces. All PVC members shall be joined with approved quality PVC solvent cement adhesive to obtain proper bonding and watertight joints. Additional 5 mm thick and 20 mm wide PVC strip shall be fixed on the inner side of the PVC 'C' channel using approved PVC solvent adhesive for additional strength and finishing.

The item shall also include all required PVC sections, reinforcement members, solvent adhesive, screws, nails, cleats, fixing accessories, hardware supporting members, protective coatings and all materials necessary for proper completion of shutter work as per approved drawing, detailed specifications and manufacturer's recommendations.

**Workmanship**

Providing and fixing the factory made solid panel PVC door shutter in true line, level and plumb complete in all respects. The work shall include cutting, assembling and fabricating all PVC and M.S. reinforcement members to required dimensions, proper alignment of stiles, rails and panels, application of approved steel primer on M.S. members before encapsulation, and accurate fixing of PVC 'C' channels, PVC sheets and beading members.

All joints shall be neatly finished and firmly bonded using approved PVC solvent cement adhesive as per manufacturer's specifications. The shutter shall be properly assembled ensuring rigidity, smooth surface finish and dimensional stability. Necessary drilling, grooving, edge preparation, fixing of inserts and placement of additional PVC strengthening strips shall be carried out carefully without damaging profiles.

The shutter shall be fixed in position with approved fixtures and fasteners complete with necessary adjustments for smooth operation. The rate shall include cost of all labour, skilled and unskilled manpower, tools and plants, scaffolding, staging, loading, unloading, transportation, handling at site, cutting wastage, consumables, finishing, cleaning and all incidental charges required for satisfactory completion of work as directed by the Engineer-in-Charge.

The completed work shall conform to approved drawings, detailed tender specifications, manufacturer's recommendations and directions of Engineer-in-Charge.

### **Item No.38: Providing and fixing in position cowel went to pipes.(C) 100mm dia**

#### **Material:**

The low density polyethylene Cowel went of working pressure shall conform to I.S. 3076-1968. The specials and fittings required shall be of best quality.

#### **Workmanship:**

Closet support spacing shall be provided, if recommended by the manufacturer.

The guide line indicated by the manufacturer regarding handling, transportation, storing, laying and jointing of Cowelvant shall be kept in view during execution.

#### **Jointing the Cowel went:**

The cowl went shall be accurately fixing on pipe with standard approval sealing adhesive material. The outside surface of the pipe and inside of cowelvant surface shall be properly matched before fixing and pushed home joint. Since solvent cement is aggressive to PVC care must be taken to avoid applying excessive adhesive to the inside of cowelvant socket as any surplus adhesive cannot be wiped off after jointing.

If any manufacture recommends its own method of jointing the same shall be adopted after necessary approval from the Engineer in charge.

#### **Mode of Payment:**

The rate shall be for unit of **Number**.

**Item No.43: Providing erecting and fixing double coated ISI water tank of required capacity each with all necessary fittings and connection etc. complete on terrace.**

**Materials:**

Polyethylene water storage tank shall be of as per ID marked and IS 12701, this materials should be light weight, nontoxic all fitting materials shall be H.D.P.E. / Brass 1.2 The P.V.C. tank shall be of I.S.I. mark and approved quality and brand like infra or Syntax or equivalent. It shall be approved by Engineer in charge.

The thickness of P.V.C. materials shall be as per Company's specification. The size of tank shall be decided by Engineer in charge.

**Workmanship:**

Water tank shall be installed on perfectly planed and smooth surface. Outlet pipe shall be 7.5 cm high then bottom surface.

Diameter of overflow pipe shall be bigger than inlet pipe diameter. Unions shall be used in inlet and outlet pipe.

For connection in water tank required vicer, and check-nuts shall be used.

Fitting shall be done by G.I. / P.V.C. pipes as per instruction of Engineer in charge in each tank. All joints shall be leak proof.

**Mode of Measurement and Payment:**

This shall be measured in one liter basis and rates are as per liter basis for the volumetric capacity of the water tank.

Rate shall be inclusive of placing, lifting, storing and making connection for inlet, outlet, overflow pipe, out pipe with all necessary plumbing work and material. For complete work.

Payment shall be made on **Liter** basis.

**Item No.44: Providing , Painting ,Lettering Nandghar Logo Board As Per Design Specified And Providing Two Direction Side Of the Building Photograph Copies -4 Of Each In Postcard size of the Completed Work As Directed 23Cm x 45 Cm.**

Providing approved quality materials for preparation and installation of Nandghar Logo Board including suitable base board, primer, paint, enamel/acrylic colours, lettering materials, fixing accessories, screws, fasteners and all allied materials complete as per approved design, size, colour scheme and specifications. The item shall also include supply of printed colour photograph copies of completed work in postcard size measuring 23 cm × 45 cm, four copies for each direction side of the building, on good quality photographic paper complete as directed.

**Workmanship**

Providing, painting, writing and fixing Nandghar Logo Board complete with approved lettering, logo, graphics and colour pattern as per specified design and direction of Engineer-in-Charge/Authority. The work shall include surface preparation, priming, painting, lettering, finishing and proper fixing of board in position with all labour, tools, scaffolding, transportation and incidental charges complete. The item shall also include taking photographs of completed work from two directional sides of the building and supplying four postcard size colour photograph copies (23 cm × 45 cm) of each view complete as directed by Engineer Incharge.

**Item No.46: Providing and Fixing FIRE EXTINGUISHER 6 KG ABC including cost of labour complete with providing 1 year guarantee for each bottle including testing and commissioning.**

The ABC Powder Based Fire Extinguishers are effective against A B & C classis of fire.

<b>Capacity</b>	6 kg
<b>Operating Temperature</b>	-20 C to +55 C
<b>Working pressure</b>	15 bar
<b>Maximum Service Pressure</b>	1.8 MPa
<b>Test Pressure</b>	35 bar
<b>Average Discharge Time</b>	20
<b>Discharge Range</b>	<4
<b>Fire Rating Approval Pressure</b>	3A,21B  BIS MarkedStored type

**Labour:**

The Labouring work shall be included with transporting, loading, unloading and installing etc with all lead & Lift. The all required testing shall be done on site of work.

**Mode of Payment:**

The payment shall be made on **one number** base.



**Item No.64: 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.**

#### 1504.1. Scope

Interlocking Concrete Block Pavement (ICBP) shall consist of a surface layer of appropriate sized concrete paving blocks paved and compacted over a thin bedding sand layer of specified grading, which is spread over a properly constructed and profiled base course and is bounded by properly installed edge restraints. The joints shall be filled by fine sand of specified grading. The work shall include supplying laying and paving of blocks including all materials, labour and equipment and performing all operations in connection with the laying of ICBP as per these Specifications.

#### 1504.2. Materials

1504.2.1. The Concrete Paving Block shall conform to the relevant IS standard.

1504.2.2. Bedding sand : Bedding sand shall conform to the grading given in Table 1500.6.

1504.2.3. Joint filling sand : Joint filling sand shall conform to grading given in Table 1500.6.

**TABLE 1500.6 : GRADINGS FOR BEDDING AND JOINT FILLING SAND**

<b>IS Sieve Size (mm)</b>	<b>Per cent Passing</b>	
	<b>For Bedding Sand</b>	<b>For Joint Filling Sand</b>
10.00	100	100
4.75	90-100	90-100
2.36	60-95	75-100
1.18	15-34	55-90
0.60	25-60	35-59
0.30	5-20	8-30
0.15	0-10	0-10
0.075	0-5	0-5

#### 1504.3. Buffer

Buffer of specified quantity of paving blocks (of the same shape, size and thickness) required for normal maintenance of paved area as specified by the Engineer, shall be supplied and stored for replacement as and when needed. Normally this will be 5 per cent of the blocks used in the paved area.

#### 1504.4. Block Thickness

For rural roads catering to heavy vehicles, the minimum thickness of paving blocks shall be 60 mm for traffic up to 100 vehicles per day, and 80 mm for projected traffic from 100 to 250 vehicles per day.

#### 1504.5. Dimensions and Tolerances

The dimensions and tolerances of paving blocks shall conform to the Specifications given in Table 1500.7. Aspect ratio is the ratio of length to thickness of blocks. Chamfer is the bevelled edge, provided on the top surface of a block. Plan area is the horizontal area bounded by the vertical faces. Wearing surface area is the horizontal area bounded by the vertical faces, minus the area reduced due to the presence of chamfer.

TABLE 1500.7 : DIMENSIONS AND TOLERANCES FOR PAVING BLOCKS

S. No.	Dimension	Recommended Values	Tolerance Limit
(1)	Width W	To be specified by Manufacturer	±2 mm
(2)	Length L	To be specified by Manufacturer	±2 mm
(3)	Thickness T	60 to 80 mm	±3 mm
(4)	Aspect Ratio L/T	Maximum : 4.0	±0.2
(5)	Chamfer (Arris)	Maximum : 5 mm Maximum : 7 mm	±1 mm
(6)	Plan Area	Maximum : 0.03 m <sup>2</sup>	+0.001 m <sup>2</sup>
(7)	Wearing Face Area	Minimum 75% of Plan Area	-1%
(8)	Squareness	Nil	±2 mm

#### 1504.6. Compressive Strength

1504.6.1. The average 28 days compressive strength of 8 blocks shall be 30 MPa and strength of individual block shall not be less than 26 MPa.

1504.6.2. The 28 days compressive strength of paving blocks tested as per relevant IS specification shall be determined as explained hereinafter.

1504.6.2.1. Compression testing machine of adequate capacity shall be used for testing of blocks. The steel bearing plates shall have a minimum thickness of 25 mm. The surface area of the bearing side of the plate should be such that no edge of the bearing plate is less than 10 mm from the outer edge of the paving block being tested.

1504.6.2.2. In case the testing surface of the paving block departs from a plain surface by more than 0.05 mm, capping using suitable materials shall be adopted for testing as per IS:516.

1504.6.2.3. The blocks shall be stored for  $24 \pm 4$  hours in water maintained at a temperature of  $(20 \pm 5)^{\circ}\text{C}$  before testing. The dimensions and plan areas of the block shall be determined. The bearing plates of the testing machine shall be wiped clean. The specimen shall be clamped between the plates in such a way that the axes of the specimen are vertically aligned with those of the bearing plates.

1504.6.2.4. The load shall be applied without shock and increased continuously at a rate of  $15 \pm 3 \text{ N/mm}^2/\text{minute}$  until no greater load can be sustained by the specimen or delamination occurs. The maximum load applied to the specimen shall be noted.

1504.6.2.5. The apparent compressive strength of individual block shall be calculated by dividing the maximum load (N) by the plan area ( $\text{mm}^2$ ). The corrected compressive strength shall be calculated by multiplying the apparent compressive strength by the appropriate correction factor from Table 1500.8. The strength shall be expressed to the nearest  $0.1 \text{ N/mm}^2$ .

TABLE 1500.8 : CORRECTION FACTORS FOR THICKNESS AND CHAMFER OF PAVING BLOCK FOR CALCULATION OF COMPRESSIVE STRENGTH

Paving Block Thickness (mm)	Correction Factor for	
	Plain Block	Chamfered Block
60	1.00	1.06
80	1.12	1.18

1504.6.2.6. Water Absorption: The water absorption being the average of five blocks shall be not more than 6 per cent by mass.

1504.7. Edge Blocks

The edge blocks shall have equivalent cube compressive strength not less than 30 MPa. The road kerbs provided on the edges of the road also serve the purpose of edge blocks. In case the end kerbs are not provided, 300 mm x 300 mm x 150 mm of M30 grade concrete edge blocks or other suitable size as per drawings or direction of the Engineer shall be provided.

#### 1504.7.2. Subgrade

The Subgrade shall conform to Clause 1501.5.1 of these Specifications. The soaked CBR of subgrade soil shall not be less than 4 per cent.

#### 1504.10. Bedding Sand

Bedding sand conforming to Table 1500.6 shall be uniformly laid to a compacted thickness of 25 mm for 60 mm thick blocks and 30 mm for 80 mm thick blocks. Bedding sand shall be unloaded in small piles regularly placed over the base course and shall preferably have a moisture content of about 6 per cent which will facilitate its spreading and compaction. Bedding sand shall be screeded in a uniform layer over the base course. The screed can be guided to level by tensioned string lines set above the base course. At the time of screeding, the thickness of sand must allow for the amount by which it will be subsequently compacted which is normally about 25 per cent more than the compacted thickness. Screeding shall not proceed beyond about 1 m ahead of the planned end of block paving for the day. Sand shall preferably be compacted with a manual, fabricated plate compactor and the level shall be readjusted using the screed. The surface profile of the screeded bedding sand shall match that required for the completed pavement.

#### 1504.11. Paving Pattern

The pattern in which blocks are to be paved shall be decided in advance and got approved from the Engineer in charge.

1504.11.1. By and large, these patterns are the same as adopted for brick paving. All shapes of blocks are not amenable to the above paving patterns. For paving in trafficked areas, herringbone pattern shall be adopted for ensuring better performance. Paving shall commence and progress from one starting line only. Wherever possible, paving shall commence adjacent to or against edge restraint.

#### 1504.12. Paving and Compaction of Blocks

Blocks shall be placed at the correct angle to the start line to achieve the final orientation of the laying pattern. For curved or unfavourably oriented edge restraints, a string line shall be established to permit fast, easy laying such that it is not required to force a block between the blocks already paved. Control over alignment, laying pattern and joint width can be assisted by the use of chalked string lines set at about 5 m intervals. Nominal joint width of 2 to 4 mm shall be maintained by holding the paving unit lightly against the face of the adjacent block and allowing it to slide into position. Cutting paving units for filling

the paving gaps occurring against edge restraints etc. shall be deferred until sufficient work has progressed to allow reasonably continuous operation. When space does not permit the use of cut pieces of blocks, premixed or dry packed concrete shall be used. After a section has been paved, compaction shall be effected by using vibrating plate compactors in the following sequence of operations:

- (i) Vibrate the blocks with 3 passes of the plate vibrator of adequate capacity.
- (ii) Spread a thin layer of fine joint filing sand on top of the paved blocks and sweep it into the joints, using suitable brooms.
- (iii) Vibrate the sand into the joints by making 3 passes of the compactor.
- (iv) Sweep off the excess sand from top of blocks.

As a guide to the characteristics of typical vibrating plate compactors, standard compactors have a weight of 90 kg, a plate area of 0.3 m<sup>2</sup> and apply a centrifugal force of 1500 kg. Heavy duty compactors weigh between 300 to 600 kg, have a plate area of about 0.5 to 0.6 m<sup>2</sup> and apply a centrifugal force in the range of 2000-3000 kg. Use of heavy duty compactors is desirable for trafficked pavements.

1504.12.1. Trial length : The contractor shall lay a trial length of 30 m and get it inspected and approved by the Engineer before proceeding with the regular paving work. The trial length shall be rectified/relaid if found deficient in any respect. The procedure demonstrated in the laying of trial length shall be followed while executing the main construction work.

#### 1504.13. Opening to Traffic

The pavement can be opened to traffic as soon as the construction work is completed.

1504.14.1. Transverse profile : When measured by a camber template, the transverse profile shall not deviate by more than 10 mm from the design profile.

1504.14.2. Longitudinal profile : When measured by a 3 m straight edge, the longitudinal profile shall not deviate by more than 12 mm from the design profile.

#### 1504.15. Acceptance Criteria

From each lot of 500 blocks, 5 blocks shall be selected at random for water absorption and compressive strength tests. In case the number of blocks in the lot is less than 500, a minimum 1 per cent of the blocks delivered to site shall be tested for water absorption and strength. The blocks shall be first tested for water absorption and these shall meet the requirement of Clause 1504.5.2.6 of these Specifications. The same five blocks (or minimum 1 per cent) shall be tested for strength and shall conform to the strength as per Clause 1504.5.1 of these Specifications.

The paved surface shall meet the tolerances for lines, levels, and grades etc. as given in Section 1800 of these Specifications.

#### 1504.16. Measurements for Payment

The measurement of the paved area shall be in square metres measured from the inner edge of edge restraints on one side of the pavement to the inner edge of the edge restraints on the transverse side of the pavement. The measurement of the edge restraints shall be in number of units or in cubic metres.

#### 1504.17. Rate

The contract unit rate shall include the cost of blocks, cost of stacking, transportation to site and paving including supply and application of bedding sand and joint filling sand. The rate shall include full compensation for labour, tools, plant, equipment, testing and all incidentals to the work, including all royalties, taxes, storage rents wherever necessary, and all leads and lifts.

Payment shall be made on **Sqm.** Basis of work done.

**Item No.65: Providing and Placing IT wood writing table having size 1.50 X 0.75 X 0.75 mt with one side drawer with using of 19mm thick WP wood, top cover with 1 mm thick wood type Formica including using of all necessary material & labour etc completed as directed by Engineer incharge.**

**Material:**

- Frame: Frist class Indian Teak Wood shall be confirm as per M-29.
- Plywood: 19mm thick Water proof Plywood M-37.
- The code for waterproof plywood, according to Indian standards, is "IS 710"
- Formica: The code for formica HS code 5201. Thickness of Formica shall be of 1mm.
- Frame Size: 50mm X 50mm ( both horizotal and Vertical IT wood )
- French polish: French Polish shall be conform as per M-45.
- Fixtures and Fastening (hardware Material) shall be of Stainless Steel 316 grade.
- Lock : Godrej type lock of SS 316 grade.

**Design:**

- As per detailed drawing One Side Drawer
- Top of table with 19mm thick waterproof plywood and finished top with 1mm thick wood type Formica.
- Work should be completed according and as per directed by Engineer Incharge.

**Labour:**

- The Labouring work shall be in line and level, all members, right angle to each other. The edges of Plywood shall be covered with IT wooden Patti. The Surface of each member Finished smooth with sand paper. The IT Wood member shall be applying with French polish. The cost Included with transporting, loading, unloading and installing etc with all lead & Lift. The all finished work required testing shall be done on site of work.

**Mode of Payment:**

The Payment shall be made on **one number** base.

**Item No.66: Providing and Fixing pin cushion display board having size 1.20 X 0.75 mt including using of alluminum section frame, 18mm thick WB plywood, nevy blue Cushion cloth pin etc completed as directed by Engineer Incharge.**

**Material:**

- Aluminum frame section: 50mm, thickness 2mm (Tata, Jindal etc)
- Coating: Anodized aluminum coating.
- Board: 18mm thick water proof Plywood (Century, Sharda, Kitply etc).
- Cushion Fabric: Colour Navy blue. It shall be durable, sturdy fabric on polyester base with uniform texture.
- Size: Clear size of pin cushion board 1.20 mtr X 7.5 mtr (Excluding aluminum frame)
- Bracket and screw: SS 304 grade.

**Labour:**

- the board shall be prepared of water proof plywood of 18mm thick and cutting with smooth edges.
- It shall be fixing aluminum frame of 50mm size.
- The corners shall be covered with PVC article.
- The cushion fabric shall be tightly fix on plywood with stapple gun and adhesive along the edges.
- It shall be mounted on wall with required bracket and screw of SS 304 grade.

**Mode of Payment:**

The Payment shall be made on **one number** base.



**Item No.67: Providing and fixing of hook of 10mm or 12mm dia including drilling hole, fixing of male- female thrade fastner sealing the same with appoxy compound, finishing the same etc complete as directed by Engineer incharge.**

**Material:**

- MS Chromium plated hook: as per specification building booklet item no. M-18
- Chromium plating: 0.10 to 0.127mm
- Dia of hook bar: 10 to 12mm (as per requirement)

**Labour:**

- Drilling work: Drilling the over size hole as per requirement in concrete ceiling surface.
- The hole shall be clean and free of debris, dust etc and wash before fixing of fastner.
- Fixing of male-female thrade fastner with strong attachment by screwing into each other, secure and tight fitting.
- Hole shall be well jointed with approved epoxy compound to ensure a tight, water proof, and durable seal.
- The sufficient curing carried out for hardening of epoxy compound.
- After final setting of epoxy compound, ensure the area is smooth and free of any excess compound.
- It shall be well cheak and securely, it can be pulled out easy.
- Testing the hook to ensure it can support the intended load.

**Mode of Payment:**

The Payment shall be made on **one number** base.

**Item No.68: Providing and fixing medical device & equipment standio meter height measuring scale 2.10mt long including fixing in wall with using of all heavy SS screw, rail etc complete as directed by Engineer incharge.**

**Medical Equipment:**

- **Standio meter:** height upto 2.10mtr made of SS 304 grade.
- The scale shall have clear and precise measurements for accurate height measurements.
- If it is required to fixed to wall, using heavy SS screw other require necessary required material.
- 1mm graduation shall be provided on measuring scale.
- It shall be completed as directed by Engineer incharge.
- Brand: PAL, Hindustan, OEM etc.

**Mode of Payment:**

The Payment shall be made on **one number** base.

**Item No.69: Providing and fixing Pre writing board having size 30cm X 20cm with decorative acralic border etc completed as directed by Engineer incharge.**

**Material:**

- Board surface: Surface shall be white, smooth, durable having acrylic melamine material for writing and erasing.
- Border: The board should have a decorative acrylic border for an attractive and polished appearance. It is neatly attached around the board's edges, enhancing both functionality and aesthetics.
- Size: 30cm X 20cm
- 1 No of Marker Pan shall be provided.
- It shall be supply with hardboard box.

**Mode of Payment:**

The Payment shall be made on **one number** base.

**Item No.70: Providing and supplying standard PVC (Polyvinyl chloride) Chair with handle of approved design and make as directed by Engineer incharge.**

**Material:**

- PVC (Polyvinyl chloride): Confirm as per IS code 13713 (1993).
- Size: width : 38.30 cm
- Depth: 39.00 cm
- Height: 59.60 cm
- Supply of chair as per detailed drawing
- Brand: Nilkamal, cello etc

**Mode of Payment:**

The Payment shall be made on **one number** base.

**Item No.71: Providing and supplying standard PVC (Polyvinyl chloride) Stool having size 3.75 X 0.60 X 0.45mtr of approved make as directed by Engineer incharge.**

**Material:**

- PVC (Polyvinyl chloride): Confirm as per IS code 13713 (1993).
- Size: Length: 37.5 mtr
- Width: 0.60 mtr
- Height: 0.45 mtr
- Supply of stool as per detailed drawing (Foldable)
- Brand: Nilkamal, cello etc

**Mode of Payment:**

The Payment shall be made on **one number** base.

**Item No.72: Supplying & erecting approved LED TV 32Inch ,230V,Resolution: 4K Ultra HD (3840 x 2160) | Refresh Rate: 60 hertz,1 TV Unit, 1 Remote, 2 Table Stand, 1 User Manual, 2 Batteries,1 Warranty Card Connectivity Technology Wi-Fi, USB, Ethernet, HD Connectivity: 3 HDMI ports to connect set top box (1HDMI port eARC supported) | 2 USB ports to connect hard drives and other USB devices | Built- in WiFi | Bluetooth | Ethernet RJ45 | 1 earphone Jack | 1 Optical digital audio output (SPDIF) | 1 RF- Radio frequency input | 1 AV input Sound: 24W Audio Output | Dobly Atmos | Audio equalizer | Dolby Digital | Lip-sync adjustment | Sound mode:Standard, Theatre, Sports, Music, Speech, Late Night Smart TV Features: Google TV | Google Assistant | Voice command | Screen mirroring: DLNA, Chromecast, Miracast, AirPlay | Sleep Timer | On/Off Timer | Supported Apps: Netflix, YouTube, Prime Video, Hotstar, SonyLiv, Hungama, JioCinema, Zee5, Eros Now Display: 178 drgrees wide viewing angle | VRR | ALLM | MEMC | HDR 10 | HLG | Dolby Vision | Multiple picture modes supported: Dynamic, Standard, Sports, PC/Game Energy Saving, Cinema, FILMMAKER MODE Warranty Information: 2 Year Comprehensive Warranty on product provided by Toshiba from date of purchase**

**Material**

Providing approved make 32 inch LED Smart TV suitable for operation on 230 Volt A.C. supply with 4K Ultra HD resolution (3840 × 2160) and refresh rate of 60 Hertz complete with 1 TV unit, remote control, 2 table stands, user manual, 2 batteries and warranty card. The TV shall be provided with built-in Wi-Fi, Bluetooth and Ethernet connectivity along with 3 HDMI ports including 1 eARC supported port, 2 USB ports, earphone jack, optical digital audio output (SPDIF), RF input and AV input. The television shall have 24W audio output with Dolby Atmos, Dolby Digital, audio equalizer, lip-sync adjustment and multiple sound modes. The Smart TV shall support Google TV, Google Assistant, voice command,

DLNA, Chromecast, Miracast and AirPlay along with applications such as Netflix, YouTube, Prime Video, Hotstar, SonyLiv, Hungama, JioCinema, Zee5 and Eros Now. The display shall support 178 degree viewing angle, VRR, ALLM, MEMC, HDR10, HLG, Dolby Vision and multiple picture modes. The item includes all accessories, connecting cables, mounting hardware and consumables complete with 2 years comprehensive manufacturer warranty.

### **Workmanship**

Supplying, erecting, fixing, testing and commissioning approved make 32 inch LED Smart TV complete in working condition at site including proper installation on table stand or approved mounting arrangement, connection of electrical supply, HDMI, USB, Wi-Fi, Bluetooth and other connectivity systems complete as required. The work shall include alignment, checking of display quality, audio performance, smart features and complete trial operation of the television system. The item includes all labour, tools and plants, transportation, loading, unloading, handling, fixing accessories, testing, demonstration to concerned authority and all incidental charges complete as per manufacturer's specifications and direction of Engineer-in-Charge.

**Item No.73: Supplying & erecting 5 stage single reverse osmosis water purification system with M.S. powder coated frame, prefilter housing with 'O' ring presediment filter GAC filter, carbon filter suitable buster DC pump capacity 80 psi, mention with 40 psi inline type post carbon filter auto low & high pressure switches with following size of storage tank & LPH capacity & erected as directed [A] 10 Ltr / Hr with 7 Ltr Storage Tank.**

### **Material**

Providing approved quality 5 stage single reverse osmosis (R.O.) water purification system.

Supplying M.S. powder coated supporting frame of approved design.

Providing pre-filter housing with 'O' ring arrangement.

Supplying pre-sediment filter unit.

Providing GAC (Granular Activated Carbon) filter.

Supplying carbon filter and inline post carbon filter.

Providing suitable booster D.C. pump having capacity of 80 PSI.

Supplying R.O. membrane suitable for purification system with 40 PSI inline arrangement.

Providing auto low pressure and high pressure switches.

Supplying all required PVC tubing, valves, fittings, clamps and accessories.

Providing storage tank of 7 litre capacity.

Providing purification capacity of 10 litres per hour (LPH).

Including all electrical accessories, connectors and consumables complete.

All materials shall conform to approved make, manufacturer's specifications and direction of Engineer-in-Charge.

### **Workmanship**

Supplying, assembling and erecting complete 5 stage single R.O. water purification system at site.

Fixing M.S. powder coated frame properly in position.

Installing pre-filter housing, sediment filter, GAC filter and carbon filter complete.

Fixing booster D.C. pump, membrane and post carbon filter with proper alignment.

Connecting inlet, outlet and drain piping complete with necessary fittings.

Providing electrical connections for operation of booster pump and pressure switches.

Fixing and connecting 7 litre storage tank complete in working condition.

Testing all joints, tubing and connections for leakage and proper functioning.

Carrying out trial run and commissioning of complete R.O. system.

Including all labour, tools and plants, transportation, loading, unloading, handling, testing and incidental charges complete.

Completing the work as per manufacturer's specifications and direction of Engineer-in-Charge.

**Item No.74: Providing and fixing PVC modular kitchen cabinet consisting of base and wall units, made from high quality rigid PVC boards (minimum 15-18 mm thick), including shutters, shelves, drawers, SS hinges, telescopic channels, handles, magnetic locks, necessary fittings, cutting, fixing, complete as direction of Engineer incharge.**

**Material:**

- Plywood: confirm as per specification building booklet item no. M-37 (Century, Sharda, Kitply etc).
- Particle Board: confirm as per specification building booklet item no. M-40 (Century, Sharda, Kitply etc).
- Drawer, Grill, Sliding roller, rail, hinges, handle, screw, nut bolts etc : SS 304 grade.
- Magnetic Latches: heavy duty type
- Acrylic melamine polish: Assian, Berger, Birla etc

**Labour:**

- The wooden members like plywood, particle board etc cutting line and level and jointing with each other in perpendicular and at right angle.
- The zero joint shall be maintain properly.
- The unit shall be clear with rubbing and finishing with sand paper.
- Fixing of drawer in proper manner and as per detailed drawig and as directed by Engineer incharge.
- Drawer, grill, sliding roller, handle, magnet latches shall be fix in line and level.
- Testing shall be done for easy and free opening of each drawer, shutter etc.
- Acrylic melamine polish should be apply with approved quality of acrylic melamine polish which gives looks of modular type furniture.

**Mode of Payment:**

The Payment shall be made on **Sqm** basis (Consider front elevation area)

**Item No.75 Providing and Fixing SS 304 Foldable Checking bed having size 1.50 X 0.60 X 0.75 mm including using of 25mm dia pipe, SS 2mm thick, matter of 25.4 (1") of 40 density, cover with regine cloth of approved quality etc completed as directed by Engineer.**

**Material Specifications:**

- SS 304: Stainless Steel 304 Grade material.
- 25mm diameter pipe stainless steel grade 304 Grade: The frame or structure of the checking bed will use a 25mm diameter pipe having 2 mm thick.
- Stainless sheet 304 Grade: 2mm thick.
- Matterss 25.4 (1")thick of 40 density: The bed's mattress or cushioning material should be made from a foam of 25.4mm thickness (1 inch), with High Grade density of 40Kg/m<sup>3</sup>, which indicates its firmness and durability. It should Neat and Clean, well finished appearance, Colour of form homogeneous grey air flow maximum 0.11 CBM/MIM , quality , free of any imperfection and/or defects, No damage like cracks or holes.
- Regine cloth: The cover for the mattress or the foam is to be made from high-quality regine cloth, which is a durable, waterproof fabric. It shall be have approve quality, excellent Thermal conducting, High Electric insulation character, Non toxic, low shrinkage, High adhesion, Good chemical and water resistance.

**Size and Dimensions:**

- The foldable checking bed will be sized 1.50 x 0.60 x 0.75 meters.
  - Length: 1.50 meters
  - Width: 0.60 meters
  - Height: 0.75 meters

**Foldable Design:**

- The bed should be designed to be foldable, likely for easy storage or transport.

**Completion and Installation:**

- The bed should be made according to detail drawing and as directed by Engineer in charge, which could include specific requirements related to assembly, structural integrity, or adjustments during installation.

**Mode of Payment:**

The Payment shall be made on **one number** base.

**Item No.76: Providing and fixing Fabric cloth Curtain having length 1.8 mtr for covering of checking area including using of alluminum sliding channel etc complete as directed by by Engineer Incharge.**

**Material:**

- Fabric cloth Curtain material shall be of GSM 250 & 100% Polyester Material.
- The length of Fabric cloth shall be 1.8mtr.
- Aluminum Cubical curtain railing track should be of high quality and with matt finish.
- The shape and type – Cubical Sliding channel
- Ring or Hook of SS 304.
- Polyester filament of fast colours, assorted colours and prints, beige, cream, light brown, light colour with soft and smooth textured, good drivability, doobby of approved quality as directed by Engineer incharge.
- Brand: KC Fabric, home, D'décor, Ariel etc.

**Labour:**

- The Aluminum Cubical sliding channel shall be hanging at a depth of 45cm below from ceiling level.
- The hanging rods shall be fix at require spacing with fixing in fastener in proper manner and line and level.
- The cubical aluminum curtain track of approve quality shall be fix in proper level with finished work.
- The curtain shall be well stiching of curtains shall be modern, functional with Eyelet, Platter, etc. for easy sliding and maintenance.
- The curtain will be stitched as per site requirement with necessary modification in stitchingas per site/size requirement.
- For fabricating drapery heading, permanent finish buckram shall be double-folded into the heading and sewn with either clear monofilament or triple-strand polyester thread, colour matched to the fabric used the bottom of the buckram shall be sewn to the face of the fabric.
- The edge of fabrics with hem to prevent Fraying.
- The curtain shall be attached with help of hook or ring with freely.
- It shall have ensure smooth operation for sliding of curtain

**Mode of Payment:**

The Payment shall be made on **Rmt** basis.



**Item No.77: Providing and Fixing of SS 304 Hanger for bag including using all necessary materials like SS rail, screw etc completed as directed by Engineer Incharge.**

**Material:**

- Wall mounted Hanger for bag of Stainless Steel 304 grade.
- Screw and other require article of SS 304 grade.
- Unit of one rail width size 40mm having length of 0.30mtr consisting of 3 hanger.
- The thickness of hanger shall be 5mm.
- Loading capacity for each hanger atleast 5 kg.

**Labour:**

- The hanger rail shall be fix on wall mounted in line and level and with well finish work as directed by Engineer incharge.

**Mode of Payment:**

The Payment shall be made on **one number** base.