

# **TECHNICAL SPECIFICATIONS**

# TECHNICAL SPECIFICATIONS

## 1.0 PREAMBLE:-

1.1 The Technical Specifications contained herein shall be read in conjunction with the other Bidding Documents as specified in this Volume.

## 1.2 Site Information:-

1.2.1 The information given here under provided elsewhere is given in good faith by the Employer but the Contractor shall satisfy himself regarding all aspects of site conditions and no claim will be entertained on the plea that the information supplied by the Employer is erroneous or insufficient.

## 2.0 GENERAL REQUIREMENTS:-

The technical specifications in accordance with which the entire work described herein after shall be constructed and completed by the Contractor shall comprise of the "SPECIFICATION"

2.1 Though "SPECIFICATION" for each item are attached with tender they are based on following.

(1) "SPECIFICATION FOR ROAD AND BRIDGE WORKS" (Fourth REVISION printed in year 2001) issued by the Ministry of Road Transport & Highways (MORT & H), Government of India and Published by the Indian Roads Congress, hereinafter to as MORT & H Specifications.

(2) The General Technical Specifications for Road works.

(3) The General Technical Specifications for Bridge works.

Note:- (2) To (3) are Conventional Specifications Booklets usually attached for (R&B) Works.

2.2 If, a particular clause (which is incorporated in "SPECIFICATION") of specification booklets (1) to (3) above is Amended / Modified/ Added upon then the Amendment/ Modification/Addition shall supersede the relevant clause incorporated in "SPECIFICATION"

2.3 In, so far as Amended / Modified / Added Clause may come in conflict or be inconsistent with any of the provisions of the MORT & H Specifications under reference, the Amended/Modified/ Added Clause and the additional specifications shall always prevail.

2.4 In the absence of any definite provisions on any particular issue in the aforesaid Specifications, reference may be made to the latest codes and specification, of IRC and BIS in that order. Where even these are silent, the construction and completion of the works shall conform to sound engineering practice as approved by the 'Engineer' and , in case of any dispute arising out of the interpretation of the above, the decision of the 'Engineer' shall be final and binding on the Contractor.

**Name of Work: - Construction of New Anganwadi Building In Bigri.  
Tal.Gandevi, Dist. Navsari**

## **Technical Specification**

**Item No.3      Laying and spreading available soil in the sub-grade on a prepared surface, pulverising, mixing the spread soil in place with loader with 15 per cent slaked lime having minimum content of 70 per cent of CaO, grading with loader, electric generator.**

### **403. LIME TREATED SOIL FOR IMPROVED SUBGRADE/SUB-BASE**

#### **403.0. General Guidelines**

Lime treatment is generally adopted for silty clays and clayey soils, including Black Cotton soils. Reduction in plasticity index and development of strength in lime-soil mixes depends on the type of clay and its quantity in the soil. The lime shall have purity of not less than 70 per cent by weight of quicklime

(CaO) when tested in accordance with IS:1514. By way of general guidelines, the lime content requirements for different types of soils are as under:

Soil Type	Required Lime
Content Alluvial Soils and Moorums (PI : 10-15)	3 per cent
Clays/B.C.Soils of Medium Plasticity (PI : 15-30)	3-5 per cent
Highly Expansive Clays (PI : Over 30)	5-6 per cent

Mix design should be worked out to decide the optimum quantity of lime to be added to obtain the required test value.

As a modifier, the quantity of lime can be determined for reducing the PI of a high PI soil to a value less than 10 and for increasing the CBR to the required value. As a stabilizer, the quantity of lime has to be worked out to attain the needed strength of the mix in terms of a 7 day Unconfined Compressive Strength UCS) value.

It is only on the basis of mix design, carried out on representative samples of soil, as well as lime to be used, that the required quantity of lime is to be specified.

Pulverization of soil clods to the required degree and mixing of pulverized soil with lime can be accomplished by using tractor-towed implements, like, disc harrows or rotavator. A static 80 to 100 kN smooth wheeled roller and tractor-towed water bowser are generally adequate for compaction. Curing for 7-days by covering the compacted layer with wet gunny bags, moist straw or sand periodically sprinkled with water, is an important part of the construction process.

#### **403.1. Scope**

This work shall consist of laying and compacting an improved subgrade/lower sub-base of soil treated with lime on prepared subgrade in accordance with the requirements of these Specifications and in conformity with the lines, grades and cross-sections shown on the drawings or as directed by the Engineer. Lime treatment is generally effective for soils which contain a relatively high percentage of loam and silty clay.

#### **403.2. Materials**

**403.2.1. Soil:** Except when otherwise specified, the soil used for lime treatment shall be the local clayey soil having a plasticity index greater than 10.

**403.2.2. Lime:** Lime for lime-soil stabilization work shall be commercial dry lime slaked at site or pre-slaked lime delivered to the site in suitable packing. Unless otherwise permitted by the Engineer, the lime shall have purity of not less than 70 per cent by weight of Quick-lime (CaO) when tested in accordance with IS:1514. Lime shall be properly stored to avoid prolonged exposure to the atmosphere and consequent carbonation which would reduce its binding properties. Slaked lime supplied in airtight bags shall not be stored for more than

3 months.

**403.2.3. Quantity of lime in stabilized mix:** Quantity of lime to be added as percentage by weight of the dry soil shall be as specified in the Contract. The quantity of lime used shall be related to its calcium oxide content which shall be specified. Where the lime of different calcium oxide content is to be used, its quantity shall be suitably adjusted to the approval of the Engineer so that equivalent calcium oxide is incorporated in the work.

The mix design shall be done to arrive at the appropriate quantity of lime to be added, having due regard to the purity of lime, the type of soil, the moisture-density relationship, and the design CBR/Unconfined Compressive Strength (UCS) value specified in the Contract. The laboratory CBR/UCS value shall be at least 1.5 times the minimum field value of CBR/UCS stipulated in the Contract.

**403.2.4. Water:** The water to be used for lime stabilization shall be clean and free from injurious substances. Potable water shall be preferred.

### **403.3. Construction Operations**

**403.3.1. Weather limitations:** Lime-soil stabilization shall not be done when the air temperature in the shade is less than 10<sup>0</sup> C

**403.3.2. Degree of pulverization:** For lime stabilization, the soil before addition of stabilizer, shall be pulverized using agricultural implements, like, tractor-towed disc harrows and rotavators to the extent that it passes the requirements set out in Table 400.4, as explained at *Annexure-400.1*.

**TABLE 400.4 : SOIL PULVERISATION REQUIREMENTS FOR  
LIME STABILISATION**

IS Sieve Designation	Minimum per cent by Weight Passing the IS Sieve
26.5 mm	100
5.6 mm	80

**403.3.3. Equipment for construction:** Stabilised soil sub-base shall be constructed by mix-in-place method of construction or as otherwise approved by

the Engineer. 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 tractor-towed rotavator or similar approved equipment capable of pulverizing and mixing the soil with additive and water to specified degree to the full thickness of the layer being processed, and of achieving the desired degree of mixing and uniformity of the stabilized material. If so desired by the Engineer, trial runs with the equipment shall be carried out to establish its suitability for work.

The thickness of any layer to be stabilized shall be not less than 100 mm when compacted. The maximum thickness shall be 200 mm, provided the plant used is accepted by the Engineer.

**403.3.4. Mix-in-place method of construction:** Before deploying the equipment, the soil after it is made free of undesirable vegetation or other deleterious matter shall be spread uniformly on the prepared subgrade in a quantity sufficient to achieve the desired compacted thickness of the stabilized layer. Where single-pass equipment is to be employed, the soil shall be lightly rolled at the discretion of the Engineer.

The equipment used shall either be of single-pass or multiple pass type. The mixes shall be equipped with an appropriate device for controlling the depth of processing and the mixing blades shall be maintained or reset periodically so that the correct depth of mixing is obtained at all times.

With single-pass equipment, the forward speed of the machine shall be so selected in relation to the rotor speed that the required degree of mixing, pulverization and depth of processing is obtained. In multiple pass processing, the prepared subgrade shall be pulverised to the required depth with successive passes of the equipment and the moisture content adjusted to be within prescribed limits. The blending or stabilizing material shall then be spread uniformly and mixing continued with successive passes until the required depth and uniformity of processing have been obtained. Appropriate tractor-towed equipment, approved by the Engineer, are suitable for performing various operations in the construction process, like, pulverization of soil clods by tractor-towed disc harrows and mixing of soil with stabilizer by tractor-towed Rotavator.

**403.3.5. Construction with manual means:** Where manual mixing is permitted, the soil from borrow areas shall first be freed of all vegetation and other deleterious matter and placed on the prepared subgrade. The soil shall then be pulverized by means of crow-bars, pick axes or other means approved by the Engineer.

Water in requisite quantities may be sprinkled on the soil for aiding pulverization. On the pulverized soil, the blending material(s) in requisite quantities shall be spread uniformly and mixed thoroughly by working with spades or other similar implements till the whole mass is uniform. After adjusting the moisture content to be within the limits mentioned later, the mixed material shall be levelled upto the required thickness so that it is ready to be rolled.

**403.3.6 Addition of lime:** Lime may be mixed with the prepared material either in slurry form or dry state at the option of the Contractor with the approval of the Engineer.

Dry lime shall be prevented from blowing by adding water to the lime or other suitable means selected by the Contractor, with the approval of the Engineer.

The tops of windrowed material may be flattened or slightly trenched to receive the lime. The distance to which lime may be spread upon the prepared material ahead of the mixing operation shall be determined by the Engineer.

No traffic other than the mixing equipment shall be allowed to pass over the spread lime until after completion of mixing.

Mixing or remixing operations, regardless of equipment used, shall continue until the material is free of any white streaks or pockets of lime and the mixture is uniform.

Non-uniformity of colour reaction, when the treated material is tested with the standard phenolphthalein alcohol indicator, shall be considered evidence of inadequate mixing.

**403.3.7. Moisture content for compaction** The moisture content at compaction checked vide IS:2720 (Part 2) shall be within 2 per cent of the optimum moisture content corresponding to IS:2720 (Part 7).

**403.3.8. Rolling:** Immediately after spreading, grading and leveling of the mixed material, compaction shall be carried out with 80-100 kN static weight smooth-wheeled roller or other roller approved by the Engineer. Rolling shall begin at the edges and progress towards the centre on straight portions. On superelevated curves the rolling shall proceed from the inner to the outer edge. Compaction shall continue until the density achieved is atleast 100 per cent of the maximum dry density of the material as per IS:2720 (Part 7). The suitability of a particular compaction equipment and number of passes required may be verified on a test strip. Ideally, not more than 60 minutes shall elapse between the start of moist mixing and start of compaction process. Care shall be taken to see that

compaction is completed within 3 hours of mixing or such shorter period as may be necessary during dry weather.

During rolling, it shall be ensured that the roller does not bear directly on hardened or partially hardened treated material previously laid other than what may be necessary for achieving the specified compaction at the

joint. The final surface shall be well closed, free from movement under compaction planes, ridges, cracks or loose material. All loose or segregated or otherwise defective areas shall be made good to the full thickness of the layer and recompact.

#### **403.3.9. Curing**

Curing of the compacted layer shall be carried out for a minimum period of 7-days by spreading moist straw/wet gunny bags or sand and sprinkling water periodically. Curing by ponding of water shall not be permitted to avoid leaching of lime. After the curing period is over, subsequent pavement layers shall be laid as early as possible to prevent the surface from drying out. No traffic shall be allowed to ply during the curing period, unless permitted by the Engineer.

#### **403.4. Surface Finish and Quality Control of Work**

The surface finish of construction shall conform to the requirements of

Clause 1802.

Control on the quality of materials and works shall be exercised by the

Engineer in accordance with Section 1800.

#### **403.5. Strength**

When lime is used for improving the subgrade, the soil-lime mix shall be tested for its CBR value. When lime stabilized soil is used in a sub-base, it shall be tested for unconfined compressive strength (UCS) at 7-days. In case of variation from the design CBR/UCS, in situ value being lower, the pavement design shall be reviewed based on the actual CBR/UCS values. The extra pavement thickness needed on account of lower CBR/UCS value shall be constructed by the Contractor at his own cost.

#### **403.6. Arrangements of Traffic**

During the period of construction, arrangement of traffic shall be maintained in accordance with Clause 111.

#### **403.7. Measurements for Payment**

Stabilised soil sub-base shall be measured as finished work in position in cubic metres.



#### **403.8. Rate**

The Contract unit rate of lime stabilised soil sub-base shall be payment in full for carrying out the required operations including full compensation for all components listed in Clause 401.9 (i) to (v).

**Item No.22 Providing and laying Machine cut, Free edges, Machine polished Granite stone slab 18 mm thick Single Piece For doors and Windows Cill and Jambs Cladding as per design including Full moulded Round front edge and 1 cm nosing and laid on 20 mm thick cement mortar 1:6 (1 cement : 6 coarse sand) and jointed with gray cement slurry including rubbing and polishing etc. complete.**

- Polished or honed Granite tiles are calibrated & gauged with a tolerance of +/- 0.5mm. The sides are sawn to perfect right angle and top edges are micro beveled
- Granite being natural stone, variation to shade & pigmentation within a batch is a natural occurrence and accepted by the industry as normal. This variation adds unique beauty to the finished surface
- It is recommended to consider 5% to 10% additional material to the coverage area depending on the style of installation to allow for wastage due to cutting of tiles to fill corners and defects in natural stone tile
- Granite tiles can be but jointed or grout jointed to suit installation style. It is recommended to make a dry run to match flow of pattern to avoid cross setting.
- Please review typical installation photos to get a better understanding of the finished floor.
- Polished or Honed Granite tiles are not recommended for outdoor flooring. Moist/wet flooring can be highly slippery. Flamed or bush hammered finish is recommended for outdoor flooring.
- Water based penetrating sealer is recommended to protect from staining. Please follow manufacturer's instruction for application.
- Water based penetrating sealer/enhancer is recommended for deeper & vibrant coloration of the finished floor. It is recommended to do a test on a small hidden area or some waste tiles before applying to entire floor.

Mode of Payment : The measurement shall be in Sqmt of Marble granite tiles supplied and fixed in position

**Item No.24 Providing and fixing standard extruded of aluminium section of size 63mm x 38.10mm x 1.2mm (Jindal Section :2434, @ Wt. 0.643 Kg/mt) with colour Powder Coated aluminium frame for ventilation with 5 mm thick frosted glass as details etc complete for Ventilation.**

1.0 Materials:-

1.1 Aluminum standard section:-

1.1.1 Main outer frame of rectangular tube

Aluminum extruded channel section shall be as per M-31/P.17 of relevant specifications of General Technical specifications for Building works Booklet as directed.

Aluminum alloy used in the manufacture of extruded Ventilation section shall confirm to IS designation HEA – WP – of IS 733 – 1975 and also Designation WVG – WP of IS 1285 – 1975 section shall be as specified in the drawing and design.

Size of Outer frame shall confirm 63mm x 38.10mm x 1.2mm (Jindal Section : 2434, @ Wt. 0.643 kg per mt With colour powder coated aluminium frame

All sections shall be free from any scratches or holes or any damages on surface. All section shall have finished luster surface on all sides.

1.1.2 Frame for ventilation portion

Aluminum alloy used in the manufacture of extruded ventilation section shall confirm to IS designation HEA – WP – of IS 733 – 1975 and also Designation WVG – WP of IS 1285 – 1975 section shall be as specified in the drawing and design.

All sections shall be free from any scratches or holes or any damages on surface. All section shall have finished luster surface on all sides.

1.1.4 PVC rubber top and bottom

Top and bottom channel of rubber shall be approved make and quality and shall be free from any scratches or holes or any damages on surface. All channels shall have finished luster surface on all sides.

1.3 Glass

The frosted glass shall be of approved make having thickness of 5 mm. The glass shall be clear and free from scratches and cracks. The glass shall be provided on top.

1.5 Rubber gasket

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

1.1.4 Bolts

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

## 2.0 WORKMANSHIP

The work of aluminium ventilation shall be done with extreme finishing. The glass shall be fitted 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. Floor spring shall be fitted properly so as to align the ventilation properly and shall be given trial of opening and closing properly. The aluminum section shall be anodizing with 20 microns silver / colour anodizing or 55 microns powder coating shall be done as directed by the Engineer in charge.

## 3.0 Mode of measurement & Payment:

3.1 The unit rate of aluminum ventilation shall include the cost of all materials, cost of anodizing, cost of all necessary fixtures and fastenings, labour charges for fixing frames, ventilations and fixing the ventilation in wall at the place shown in drawing and as instructed by the Engineer in charge, all tools and plant required for assembling and fixing in position, finishing as per direction of the Engineer in charge, and all other incidental expenses for preparing ventilation frame and louvers of specified size to complete the ventilation structure or its components as shown on the drawings and according to these specifications. They shall also include the cost of making, fixing and making walls good by plaster patch colouretc as required.

3.2 The ventilation shall be measured for its improvising and fixing extruded aluminum ventilators having standard extruded aluminum outer frame size hollow section frame of size 63mm x 38.10mm x 1.2mm (Jindal Section : 2434, @ Wt. 0.643 kg per mtincluding providing 5 mm thick frosted glass with rubber gasket including all labour and equipments etc. complete with ventilator above and height, limiting dimensions to those specified on plan or as directed.

3.3 The rate shall be for unit of one square meter of competed item.

**Item No.25** Providing and applying 15 mm thick cement plaster double coat of mala cement plaster for interior plastering having 12 mm th. base coat in C.M. 1:4 ( 1 cement 4 coarse sand) and 3 mm th. finishing coat in C.M. 1:2 [ 1 Cement : 2 Coarse Sand] with trowel finish including Scaffolding Curing etc. Complete. Including Applying two coats of Birla or Asian Acrylic Lappy [Putty] and two coats of primer of approved Brand and Manufactures 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 For Ground Floor.

This work shall consist of providing **15 mm thick cement plaster (Mala troweled finish) in single coat on brick/concrete wall for interior plastering** of the shape and dimensions shown on the drawings and conforming to these Specifications or as approved by the Engineer in charge

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 lappy-putty) or equivalent & two coats of primer of approved brand and manufacture on new wall surface instead of color washing of undecorative wall .

#### **Material**

##### **CEMENT**

**Cement shall confirm Specification No M-3,**

##### **SAND**

**Sand shall confirm specification no M-6,**

##### **WATER**

**Water shall confirm specification no M-1**

##### **WORKMANSHIP**

**specification no 17.61 (II) and 17.95 shall be applied for this item**

**The surface shall be Mala troweled finish**

**The plaster shall then be finished off with a trowel** The straight edge shall be worked on screeds with a small upward and side way motion 50mm or 75mm at a time. Finally, the surface shall be finished off with a plaster's wooden float.

#### **Mode of Measurement & Payment :**

The Item shall be measured for its **breadth and height** 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.

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

**Item No 27 - P & L 24" x 24" 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 finished with flush pointing & cleaning the surface etc. complete for DARK shade and antiskit.**

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 **DARK shade and antiskit vitrified Tiles** finished vitrified tiles 24 x 24 cm size & 8 mm thick of required quality, colour, design and size as approved by the Engineer in charge shall be used instead of kotah stone and 12mm thick base of cement mortar shall be applied instead of 10mm thick. Including finished with flush pointing & cleaning the surface etc. complete for GVT as approved by engineer in charge.

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 rate shall be for a unit of one **Square meter**.

**Item No.30** Providing and laying water proofing treatment with broken china mosaic flooring by conventional method including cleaning the slab surface by wire brush as directed including 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, in 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. and 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 tamped to bring mortar cream out up to surface using white cement including rounding off junctions and extending them up to 15 cm along the wall, clearing with water and oxalic acid etc. as directed.

### **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)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 up to surface using white cement including rounding off junctions and extending them up to 15 cm along the wall,clearing with water and oxalic acid etc.as directed.

(D) 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 GUATANTEE BOND**

I We ..... (Contractor) hereby guarantee that water proofing work will remain leakage proof for period of 5 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 gurantee to redo effective work without claiming any extra cost

**2.1** This gurarantee 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 gurantee period and shall be refunded only after the completion of the gurantee 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 31 Providing & laying and jointing in true line and level 40 mm dia UPVC pipe (SCH-40) line including fitting make or equivalent as approved by engineer in charge the pipe shall be fixed on wall with the help of clamp at every two meter center to center or shall be concerned as directed including necessary fitting etc including testing of pipe and joints and fix in the same with adhesive solvent including cost of material (A) 40 mm OD pipe**

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 32 Providing & laying and jointing in true line and level 25 mm dia UPVC pipe (SCH-40) line including fitting make or equivalent as approved by engineer in charge the pipe shall be fixed on wall with the help of clamp at every two meter center to center or shall be concerned as directed including necessary fitting etc including testing of pipe and joints and fix in the same with adhesive solvent including cost of material (A) 25 mm OD pipe**

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 33** Providing & laying and jointing in true line and level 15 mm dia UPVC pipe (SCH-40) line including fitting make or equivalent as approved by engineer in charge the pipe shall be fixed on wall with the help of clamp at every two meter center to center or shall be concealed as directed including necessary fitting etc including testing of pipe and joints and fix in the same with adhesive solvent including cost of material (A) 15 mm OD pipe

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 20mm dia.

- Item No 41** Providing and fixing to wall ceiling and floor 10.0 Kg. F/Cm<sup>2</sup> working pressure polythene pipes of the following outside Dia. Low density, complete with special flange compression type fittings, wall clipsetc. including making good the wall ceiling and floor.(B) 25mm

The relevant specifications of Building Booklet It. No.23.8./ Page No.162 shall be followed expect use 25 mm Rain water pipe 10.00Kg F/CM<sup>2</sup> 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 50mm dia&6 kgs/sq.cm. working pressure polythene pipes

- Item No 42** Providing and fixing to wall ceiling and floor 10.0 Kg. F/Cm<sup>2</sup> working pressure polythene pipes of the following outside Dia. Low density, complete with special flange compression type fittings, wall clipsetc. including making good the wall ceiling and floor.(A) 20mm

The relevant specifications of Building Booklet It. No.23.8./ Page No.162 shall be followed expect use 20 mm Rain water pipe 10.00Kg F/CM<sup>2</sup> 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 50mm dia&6 kgs/sq.cm. working pressure polythene pipes

- Item No 43** providing and fixing in position cowl vent to pipe (II) 100mm

Item referred for providing and fixing pvccowl vent of 100mm dia. (above 4 inch) pvccowl ventilator for 100mm dia shall conform to IS & shall be of best quality pvccowl ventilator shall be fixed to pipe with joints. Item shall measured and paid on number basis.

**Item No 51**    **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.**

### **General**

This work shall consist of **Providing and fixing P V C water tank of specified capacity with necessary G I fittings including 25 mm dia G.I. over flow pipe, ball valve**, of the shape and dimensions shown on the drawings and conforming to these Specifications or as approved by the Engineer in charge.

### **PVC Water tank**

PVC Water tank of specified capacity and of I.S.I. mark of approved in litters of approved make and quality equivalent to syntax product

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

### **Nipple**

Galvanize pipe nipple shall be of approved make and of best quality Relevant specification given in Booklet of Building specification shall be applied for the execution of this item

### **Ball valve**

Ball valve shall confirm specification no 23.00.5 (A) on page 172 of specification booklet for building works

Ball valve shall be of approved make and of best quality. Relevant specification given in Booklet of Building specification shall be applied for the execution of this item

### **Connections**

Connections shall be of approved make and of best quality. Relevant specification given in Booklet of Building specification shall be applied for the execution of this item

### **WORKMAN SHIP**

Tank shall be approved quality and as per IS standard make. Material used in manufacturing tank shall be confirmed to relevant IS code. 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 odor. It does not have any toxic effect and it does not contaminate the water. Thereby making it unpotable.

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.

**Mode of Measurement & Payment:**

The payment will be made on **capacity in litter's** 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 **capacity in liters** limiting dimensions to those specified on plan or as directed.

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