

**GOVERNMENT OF GUJARAT**

**ROAD & BUILDING DEPARTMENT**

## **SPECIFICATIONS**

**Name of Work :- SR to Outhouse & Manager Quarter**  
**in the Circuit House Campus at Nadiad**

# **SPECIFICATIONS**

## **(A) GENERAL TECHNICAL SPECIFICATIONS**

### **1. GENERAL:**

All measurements shall be made in the metric system. Different items of work shall be measured in accordance with the procedure set forth in the relevant sections read in conjunction with General conditions of contract. The same shall not, however, apply in the case of lumpsum items. All measure- and computation unless of herwise indicated shall be carried nearest to the following limits

( i ) Length & Breadth.....	10mm.
( ii ) Height, depth or thickness of earthwork, subbase, base, surfacing and structural members.....	5 mm.
( iii ) Areas in sqm.....	0.01
(iv ) Cubic contents cum.....	0.01

In recording dimentions of work the sequence of length, width and height or depth or thickness shall be followed.

### **2. MEASUREMENTS OF LEAD FOR MATERIALS:**

Where lead is specified in the contract for construction materials. the same shall be measured as described here under.

Lead shall be measured over the shortest practicable route and not the one actually taken and decision of the Engineer- in - charge in this regard shall be taken as final. Distances upto and including 100 meters shall be measured in units of 50 meters exceeding 100 meters but riot exceeding 'I km. in units of 100 meters. and exceeding 1 km. in units of 500 meters. The half and greater than half of the units shall

be reckoned as one and less than half of the units ignored. in this regard, the source of the material shall be divided in to suitable blocks and for each block the distance from the centre of the block to the centre of placing pertaining to that block shall be taken as the lead distance.

### 3. SURFACE REGULARITY OF SUBGRADE & PAVEMENT COURSES :

The surface regularity of compacted sub base course and wearing surfaces in the longitudinal and transverse directions shall be within the tolerances indicated in table below. The longitudinal profile shall be checked with a 3m. long straight edge, at the middle of each traffic lane along a line parallel to the center line of the road. The transverse profiles shall be checked with a set of three camber boards at interval of 10 metres.

#### PERMITTED TOLERANCES OF SURFACE REGULARITY FOR PAVEMENT COURSES.

Sr.	Type of construction	Longitudinal profile with 3 metre straight edge					Cross profile
		Maximum permissible undulation in mm.	Maximum number of undulation permitted in any 300mm. length exceeding in mm.				
1	2	3	4	5	6	7	8
1.	Earth subgrade	36	30	...	...	...	15
2.	Granular / lime / cement stablised sub base	23	...	30	...	...	12
3.	Water bound macadam with nominal size metal (20-25) mm.	18	...	...	30	...	8
4.	Semi-dense	15	...	...	...	20	6

	carpet						
--	--------	--	--	--	--	--	--

**Notes :**

1. These are for machine laid surface. If laid manually due to unavoidable reason, tolerances upto 50% above these values in this column may be permitted. However this relaxation does not apply to the values of maximum undulation for longitudinal and cross profiles mentioned in columns 3 and 8 in the table.
2. Surface evenness requirements in respect of both the longitudinal and cross profiles should be simultaneously satisfied.
3. **Rectification :** Where the surface irregularity of subgrade and the various pavement courses fail outside the specified tolerances the contractor shall be liable to rectify these in the manner described below and to the satisfaction of the Engineer-in Charge at his own cost.

**( i ) Sub Grade**

Where the surface is high, it shall be trimmed and suitable compacted. Where the same is low the deficiency shall be corrected by scarifying the lower layer and adding fresh material and reoccupation to the required density. The degree of compaction and the type of materials to be used shall conform to the requirements of clause 305. (MOST 1995)

**( ii ) Granular / Sub – base**

Same as at (1) above, except that the degree of compaction and the type of material to be used shall conform to the requirements of clause-401 (MOST 1995)

**( iii ) Lime / Cement stabilized soil sub base :** For lime / cement fretted materials where the Surface is high, the same shall be suitably trimmed while taking care that the material below is not disturbed due to this operation. However the surface is low the same shall be corrected as described herein below.

For cement treated material, when the time lapsed between detection of irregularity and the time of mixing of the material is less than 2 hours. the surface shall be scarified to a depth of 50 mm supplemented with freshly mixed materials as necessary and recomputed to the relevant specifications. When this time is more than 2 hours. the full depth of the layer shall be removed from the

pavement and replaced with fresh material to specification. This shall also apply to lime treated material except that the lime criteria shall be 3 hours instead of 2 hours.

**( iv ) Water Bound Macadam Base :** Where the surface is high or low, the top 75 mm shall be scarified, reshaped with added material as necessary and recomputed to clause 404. (MOST 1995) This shall also apply to wet mix macadam to clause - 406. (MOST – 1995)

**( v ) Bituminous Constructions :** For bituminous construction other than wearing course, where the surface is low, the deficiency shall be corrected by adding fresh material over a suitable tack coat if needed and recomposing to specifications. Where the surface is high, the full depth of the layer shall be removed and replaced with fresh material and compacted to specifications. For wearing' course, where the surface is high or low, the full depth, of the layers shall be removed and replaced with fresh material and compacted to specifications. In all cases where the removal and replacement of a bituminous layer is involved, the area treated shall not be less than 5 m. in length and not less than 1 lane wide.

**( vi ) Lean Concrete Sub-base / Rolled cement concrete :**

The defective length of the course shall be removed to full depth and replaced with material conforming to clauses 601 of 603. (MOST 1995 ) as applicable. The area treated shall be at least 3 m., long, not less than 1 lane wide and extend to the full depth., before relaying the course. the disturbed sub grade or layer shall be corrected by leveling, watering and compacting.

**( vii ) Cement Concrete Pavement :** The defective areas having surface irregularity exceeding 3 mm but not greater than 6 mm may be rectified by bump cutting or scrubbling or grinding using approved equipment. When required -b the Engineer, areas which have been reduced in level by the above operation (s) shall be retextured in an approved manner either by cutting grooves (5 mm deep ) or roughening the surface by hacking the surface. If high areas is excess 6 mm or low. areas in excess of 3 mm occur, exceeding the permitted numbers if the contractor can not rectify, the slab shall be demolished and I reconstructed at the contractor's exp6nse and in no case the area removed shall be less than the full width of the lane in which the irregularity occurs and full'-length of the slab. If

deemed necessary by the Engineer, any section of the slab which deviates from the specified levels and tolerances shall be demolished and reconstructed at the constructed at the contractor's expense.

#### **4. Quality Control tests during Construction :**

The materials supplied and the works carried out by the contractor shall conform to the specification prescribed in the preceding clauses. For ensuring the requisite quality of construction the materials and works shall be subjected to quality control tests, as described hereinafter. The testing frequencies set forth are the desirable minimum and the Engineer shall have the full authority to carry out additional tests as frequently as he may deem necessary, to satisfy himself that the materials and works comply with the appropriate specifications. However, the number of tests recommended in Table 7.1 may be reduced at the discretion of the Engineer if it is felt that consistency in the quality of materials can still be maintained with the reduced number of tests. Test Procedures for the various quality control tests are indicated in the respective sections of these specifications or for certain tests within this section. Where no specific testing procedure is mentioned, the tests shall be carried out as per the prevalent accepted engineering Practice to the directions of the Engineer-in-charge.

#### **Tests on Earthwork for Embank construction :**

##### **4.1 Borrow material :**

- (a) Sand content ( IS 2720 Part – IV ) two test per 8000 cum.
- (b) Plasticity Test ( IS : 2720 Part-V ) Each type to be tested, Two tests per 8000 cum. of soil.
- (c) Density test ( IS : 2720 Part VII ) Each soil type to be tested, Two tests per 8000 cum. of soil.
- (d) Moisture Content test ( IS : 2720 Part- II ) One test for every 250 cum. of soil.

##### **4.2 Compaction control :**

Control shall be exercised by taking at least one measurement of density for each 1000 sqm. Of compacted area or closer as required to yield the minimum number of test results for evaluating day's work on statistical basis. The determination of density shall be in accordance with IS : 2720 ( Part XXVIII ). Test locations shall be chosen only through random sampling techniques. Control shall not be based on the result of any one test but on the mean value of a set of 5-10 density determinations. The number of test in one set of measurements shall be 5 as long as it is felt that sufficient control over borrow material and the method of compactions is being

exercised. If considerable variations are observed between individual density results, the minimum number of tests in one set of measurement shall be increased to 10. The acceptance of work shall be subject to condition that the mean dry density equals or exceeds the specified density and the standard deviation for any set of results is below 0.08gm./ cc. However for earthwork in shoulders and in top 500mm. portion of the embankment below sub grade at least one density measurement shall be taken for every 500 square metres of the compacted area provided further that the number of the tests in each set of measurement shall be at least 10 in other respects, the control shall be similar to that described earlier.

**5. Following materials shall confirm to the Indian Standards shown against them :**

- |     |                                   |           |
|-----|-----------------------------------|-----------|
| (1) | Cement                            | IS : 269  |
| (2) | Sand for masonry                  | IS : 2116 |
| (3) | Sand for concrete                 | IS : 383  |
| (4) | Coarse aggregate                  | IS : 383  |
| (5) | Mild steel                        | IS : 432  |
| (6) | High Yield Strength Deformed Bars |           |
|     | (a) Hot rolled                    | IS : 1139 |
|     | (b) Cold Twisted                  | IS : 1786 |

**6. Barrel thickness of pipes of different class be as under :**

Sr. No.	Internal Diametre of pipe in mm.	Barrel thickness in mm.		
		NP 1	NP 2	NP 3
1	80	25	25	...
2	100	25	25	...
3	150	25	25	...
4	250	25	25	...
5	300	30	30	...
6	350	32	32	75
7	400	32	32	75
8	450	35	35	75
9	500	...	35	75
10	600	...	40	80
11	700	...	40	80
12	800	...	45	90
13	900	...	50	100
14	1000	...	55	100
15	1100	...	60	115
16	1200	...	65	115



## **SPECIFICATION FOR MATERIAL**

### **M – 1 :WATER :**

1.1 Water shall not be salty or brackish and shall be clean, reasonably clean and free from objectionable quantities of silt and traces of oil and injurious alkalis, salts, organic matter and other deleterious material which will either weaken the mortar or concrete or cause efflorescence or attach the steel in R.C.C. container for transport, storage and handling of water shall be clean. Water shall conform to the standards specified in L.S. 456 – 1978.

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

1.3 Water for curing mortar, concrete or masonry should not be too acidic or too alkaline. It shall be free of elements which significantly affect the hydration reaction or otherwise interfere with the hardening of concrete during curing or those which produce objectionable stains or other unsightly deposits on concrete or mortar surface.

1.4 Hard and bitter water shall not be used for curing.

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

### **M.3 Cement :**

3.1 Cement shall be ordinary portland slag cement as per L.S. 269-1976 or portland slag cement as per I.S. 455 – 1976.

### **M.6 Sand :**

6.1 Sand shall be natural sand, clean, well graded, hard strong durable and gritty particle free from injurious amounts of dust clay, kankar, nodules, soft or flaky particles shale, alkali, salts organic, matter, loam, mica or other deleterious substances and shall be got approved from the Engineer in charge. The same shall not contain more than 8 percent of silt as determined by field test, if necessary the sand shall be washed to make it clean.

#### **1. Coarse Sand :**

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

I

I.S.sieve Percentage	Percentage by weight passing sieve	I.S. sieved Designation	Percentage by weight passing sieve
4.75mm	100	600Micron	30 – 100
2.36mm	90 – 100	300 Micron	5 – 70
1.18mm	70-100	150 Micron	0 - 50

2.

#### **3. Fine Sand :**

The finess modulus shallnot exceed 1.0. The sieve analysis of fine sand shall be as under :

I.S.sieve Percentage	Percentage by weight passing sieve	I.S. sieved Designation	Percentage by weight passing sieve
4.75mm	100	600Micron	40-85
2.36mm	100	300 Micron	5 – 50
1.18mm	70-100	150 Micron	0 – 10

#### **M.12 Stone Coarse Aggregate for Nominal Mix Concrete :**

- a. Coarse aggregated shall be machine crushed stone of black trap or equivalent and be hard, strong, dense, durable, clean and free from skin and coating likely to prevent proper adhesion of mortar.
- b. The aggregate shall generally be cubical in shape. Unless special stones of particular quarries are mentioned aggregates shall be machine cruhsed from the best black trap or equivalent hard stone as pproved. Aggretgate shall have no deleterious reaction with cement. The size of the coarse aggregate for plain cement concrete and ordinary reinforced cement concrete shall generally be as per the table give below. However, in case of reinforced cement concrete the maximum limit may be restrictred to 6mm less than the minimum lateral clear distance between bars or 6mm, less than the cover , whichever is smaller.

#### **TABLE**

I.S.Sieve Designation	Percentage passing for single sized aggregates of Nominal size			I.S.Sieve Designation 20mm	Percentage passing for single sized aggregates of Nominal size		
	40mm	20mm	40mm		40mm	20mm	40mm
80mm	..	..	..	12.5 mm	..	..	..
63mm	100	..	..	10 mm	0.5	0.02	0.30
40mm	85 - 100	100	..	4.75mm	...	0.50	0.05
20mm	0-20	85- 100	100	2.35mm	..	..	..
16mm	..	..	85- 100	..	..	..	..

Notes : This percentage may be varied some what by Engineer in charge when considered

necessary for obtaining better density and strength of concrete.

- c. The grading test shall be taken in the beginning and at the change of source of materials. The necessary test indicated in I.S. 383 – 1970 and I.S. 456 – 1978 shall have to be carried out to ensure the acceptability. The aggregate shall be stored separately and handled in such a manner as to prevent the intermixing of different aggregates. If the aggregates are covered with dust, they shall be washed with water to make them clean.

### **M.13 Black Trap Hard Stone Coarse Aggregate :**

13.1 Aggregate For Design Mix Concrete : Coarse aggregate shall be of machine crushed stone of black trap or equivalent hard stone and be hard strong dense – durable clean and free from skin and coating likely to prevent proper adhesion of mortar.

13.2 The aggregates shall generally be cubical in shape. Unless special stones of particular quarries are mentioned, aggregates shall be machine crushed from the best, black trap or equivalent hardstone stone as approved. Aggregate shall have no deleterious reaction with cement.

13.1 The necessary tests indicated in I.S. 383-1978 shall have to be carried out to ensure the acceptability of the material.

13.4 If aggregate is covered with dust it shall be washed with water to make it clean.

#### **M.14 Brick Bats Aggregate :**

14.1 Brick bat aggregate shall be broken from well or slightly over burnt and dense brick. It shall be homogeneous in texture roughly cubical in shape, clean and free from dirt of any other foreign material. The brick bats shall be of 40mm to 50mm size unless otherwise specified in the item. The under burnt or over burnt brick bats shall not be allowed.

#### **M.18 Mild Steel Bars :**

18.1 Mild steel bars reinforcement for R.C.C. work shall conform to I.S. 432 ( Part-II ) 1966 and shall be of tested quality. It shall also comply with relevant part of I.S. 156-1978.

18.3 For the purpose of payment, the bar shall be measured correct upto 100mm length and weight payable worked out at the rate specified below.

1	6mm	0.22 Kg/Rmt.	8	20mm	2.47 Kg/Rmt.
2	8mm	0.39 Kg/Rmt.	9	22mm	2.98 Kg/Rmt.
3	10mm	0.62 Kg/Rmt.	10	25mm	3.85 Kg/Rmt.
4	12mm	0.89 Kg/Rmt.	11	28mm	4.83 Kg/Rmt.
5	14mm	1.21 Kg/Rmt.	12	32mm	6.31 Kg/Rmt.
6	16mm	1.58 Kg/Rmt.	13	36mm	7.99 Kg/Rmt.
7	18mm	2.00 Kg/Rmt.	14	40mm	9.86 Kg/Rmt.

### **M.19 High Yield Strength Steel Deformed Bars :**

19.1 High Yield Strength Steel Deformed Bars be either cold twisted or hot rolled shall conform to I.S.1739-1966 and I.S. 1139-1966 respectively.

19.2 Other provision and requirements shall conform to specification

### **M.20 High Tensile Steel Wires :**

20.1 The high tensile wires for the use in pre stressed concrete work shall confirm to I.S. 2090-1962.

20.2 The tensile strength of the high tensile steel bars shall be as specified in the item. In absence of the given strength, the minimum

strength shall be taken as per Para 6.1 of I.S. 1785-1962. testing shall be done as per I.S. requirements.

20.3 The high tensile steel shall be free from loose mill scale, rust oil, grease, or any other harmful matter. Cleaning of steel bars may be carried out by immersion in solvent solution, wire brushing or passing through a pressure box containing carborandum.

20.4 The high tensile wire shall be obtained from manufactures in coil having diameter not less than 350 times the diameter of wire itself so that wire itself so that wire springs back straight on being uncoiled.

#### **M.21 Mild Steel Binding Wires :**

21.1 The mild steel wire shall be of 1.63mm or 1.22mm ( 16 or 18 gauge ) diameter and shall conform to I.S. 280 – 1972.

21.2

21.3 The use of black wire will be permitted for binding reinforcement bars. It shall be free from rust, oil paint, grease, loose mill scale or any other undesirable coating which may prevent adhesion of cement mortar.

### **101.INTRODUCTION**

These Specifications shall apply to all such road and bridge works as are required to be executed under the Contract or otherwise directed by the Engineer-in-Charge (hereafter referred to as the Engineer). In every case, the work shall be carried out to the satisfaction of the Engineer and conform to the location, lines, dimensions, grades and cross-sections shown on the drawings or as indicated by

the Engineer. The quality of materials, processing of materials as may be needed at the site, salient features of the construction work and quality of finished work shall comply with the requirements set forth in succeeding sections. Where the drawings and Specifications describe a portion of the work in only general terms, and not in complete detail, it shall be understood that only the best general practice is to prevail, materials and workmanship of the best quality are to be employed and instructions of the Engineer are to be fully complied with.

A list of Indian Roads Congress Specifications and Recommended Codes of Practice which have been made use of in the preparation of these Specifications is given at *Appendix-1*. The latest edition of all Specifications/Standards till 30 (thirty) days before the final date of submission of the tender, shall be adopted.

## **102 DEFINITIONS**

The words like Contract, Contractor, Engineer (synonymous with Engineer-in-charge), Drawings, Employer, Government, Works and Work Site used in this specification shall be considered to have the meaning as understood from the definitions of these terms given in the General Conditions of Contract.

The following abbreviations shall have the meaning as set forth below:

AASHTO	:	American Association of State Highway and Transportation Officials
ASTM	:	American Society for Testing and Materials
<b>BS</b>	:	<b>British Standard published by the British Standards Institution</b>
CBR	:	California Bearing Ratio
IRC	:	Indian Roads Congress
IS	:	Indian Standard published by the Bureau of Indian Standards

## **103. MATERIALS AND TEST STANDARDS**

The relevant standard for materials, as well as the testing procedures, have been indicated at appropriate places in the Specifications. A list of these standards with their full title and the year of publication applicable is included at *Appendix-2*.

## **104. SIEVE DESIGNATIONS**



The sieve designation referred to in the Specifications correspond to those specified by Bureau of Indian Standards in IS: 460. Table 100-1 gives the list of the commonly used IS sieves.

**TABLE 100-1. DESIGNATION OF TEST SIEVES**

IS Designation conforming to IS: 460

(In mm)	(In micron)	
* 125 106	850	
* 90 75	*710 600	
	*500	
*63 53	425 355 300	
*45 37.5		*250
	212	
*31.5 26.5	*180 150	
*22.4 19.0	*125 106	
*16.0 13.2	*90 75	
*11.2 9.50	*63 53	

*8.00	
6.70	*45
*5.60	
4.75	
*4.00	
3.35	
*2.80	
2.36	
*2.00	
1.70	
*1.40	
1.18	
*1.00	

---

Notes: 1. >\*= are the principal sizes stated in ISO-565 and are preferred.

2. Sieve sizes given in BS:410 & ASTM-E 11 are same as in IS:460.

4. Only sieves with square openings shall be used.

## **105. SCOPE OF WORK**

**105.1.** The work to be carried out under the Contract shall consist of the various items as generally described in the Tender Documents as well as in the Bill of Quantities furnished in the Tender Documents.

**105.2** The works to be performed shall also include all general works preparatory to the construction of roads, bridges, canal crossings, drainage and all other related works. The works shall include work of any kind necessary for the due and satisfactory construction, completion and maintenance of the works to the intent and meaning of the drawings and these Specifications and further drawings and orders that may be issued by the Engineer from time to time. The scope of the work shall include compliance by the Contractor with all General Conditions of Contract, whether specifically mentioned or not in the various clauses of these Specifications, all materials, apparatus, plant, equipment, tools, fuel, water, strutting, timbering, transport, offices, stores, workshop, staff, labour and the provision of proper and sufficient protective works, diversions, temporary fencing and lighting. It shall also include: safety of workers, first-aid equipment, suitable accommodation for the staff and workmen with adequate sanitary arrangements, the effecting and maintenance of all insurances, the payment of all wages, salaries, fees, royalties, duties or other charges arising out of the erection of works and the regular clearance of rubbish, reinstatement and clearing-up of the site as may be required on completion of works, safety of the public and protection of the works and adjoining land.

**105.3.** The Contractor shall ensure that all actions are taken to build in quality assurance in the planning and execution of works. The quality assurance shall cover all the stages of work such as setting out, selection of materials, selection of construction methods, selection of equipment and plant, deployment of personnel and supervisory staff, quality control testing, etc. The work of building in quality assurance shall be deemed to be covered in the scope of the work..

**105.4.** The Contractor shall furnish, at least 15 days in advance, his programme of commencement of item of work, the method of working he intends to adopt for various items of work such as site clearance, construction for embankment, sub-base, base, surfacing, culverts, bridges, retaining walls, well-sinking, cast-in-situ piling, construction of cast-in situ prestressed concrete simply supported girders, cantilever construction of prestressed concrete superstructure, and such other items for which the

Engineer demands the submission of the method of working. He shall provide information regarding the details of the method of working and equipment he proposes to employ and satisfy the Engineer about the adequacy and safety of the same. The sole responsibility for the safety and adequacy of the methods adopted by the Contractor will, however, rest on the Contractor, irrespective of any approval given by the Engineer.

## **106.CONSTRUCTION EQUIPMENT**

In addition to the general conditions indicated in the Contract Documents, the following conditions regarding use of equipment in works shall be satisfied:

- (a) The Contractor shall be required to give a trial run of the equipment for establishing their capability to achieve the laid down Specifications and tolerances to the satisfaction of the Engineer before commencement of the work;
- (b) All equipment provided shall be of proven efficiency and shall be operated and maintained at all times in a manner acceptable to the Engineer;
- (c) All the plant/equipment to be deployed on the works shall be got approved from the Engineer for ensuring their fitness and efficiency before commencement of work;
- (d) Any material or equipment not meeting the approval of the Engineer shall be removed from the site forthwith;
- (e) No equipment will be removed from site without permission of the Engineer; and
- (f) The Contractor shall also make available the equipment for site quality control work as directed by the Engineer.

## **107. CONTRACT DRAWINGS**

**107.1.** The Contract Drawings provided for tendering purposes shall be as contained in the Tender Documents and shall be used as a reference only. The Contractor should visualise the nature and type of work contemplated and to ensure that the rates and prices quoted by him in the Bill of Quantities have due consideration of the qualitative

and quantitative variations, as may be found at the site and complexities of work involved during actual execution/construction.

**107.2.** The tendered rates/prices for the work shall be deemed to include the cost of preparation, supply and delivery of all necessary drawings, prints, tracings and negatives which the Contractor is required to provide in accordance with the Contract.

**107.3.** Two copies of drawings, on the basis of which actual execution of the work is to proceed, shall be furnished free of cost to the Contractor by the Engineer progressively according to the work programme submitted by the Contractor and accepted by the Engineer. Drawings for any particular activity shall be issued to the Contractor at least 30 days in advance of the scheduled date of the start of the activity.

**107.4.** Examination and/or approval by the Engineer of any drawings or other documents submitted by the Contractor shall not relieve the Contractor of his responsibilities or liabilities under the Contract.

## **108. SITE INFORMATION**

**108.1.** The information about the site of work and site conditions in the Tender Documents is given in good faith for guidance only but the Contractor shall satisfy himself regarding all aspects of site conditions.

**108.2.** The location of the works and the general site particulars are as generally shown on the Site plan/Index plan enclosed with the Tender Documents.

**108.3.** Whereas the right-of-way to the bridge sites/road works shall be provided to the Contractor by the Engineer, the Contractor shall have to make his own arrangement for the land required by him for site offices, labour camps, stores, etc.

**108.4.** The quarry charts enclosed with the Tender Documents indicate the location of quarries and other sources from which naturally occurring materials are available, for guidance of the Contractor. The leads indicated in the said charts are only approximate. It is assumed that the Contractor has inspected the quarries, borrow areas etc., before quoting his rates for the work to assess the availability of construction materials in required quantity and quality.

## **109. SETTING OUT**

**109.1.** The Contractor shall establish working Bench Marks tied with the Reference Bench Mark in the area soon after taking possession of the site. The Reference Bench Mark for the area shall be as indicated in the Contract Documents and the values of the same shall be obtained by the Contractor from the Engineer. The working Bench Marks shall be at the rate of four per km and also at or near all drainage structures, over-bridges and underpasses. The working Bench Marks/levels should be got approved from the Engineer. Checks must be made on these Bench Marks once every month and adjustments, if any, got agreed with the Engineer and recorded. An up-to-date record of all Bench. Marks including approved adjustments, if any, shall be maintained by the Contractor and also a copy supplied to the Engineer for his record.

**109.2.** The lines and the levels of formation, side slopes, drainage works, carriageways and shoulders shall be carefully set out and frequently checked, care being taken to ensure that correct gradients and cross-sections are obtained everywhere.

**109.3.** In order to facilitate the setting out of the works, the centre line of the carriageway or highway must be accurately established by the Contractor and approved by the Engineer. It must then be accurately referenced in a manner satisfactory to the Engineer, every 50m intervals in plain and rolling terrains and 20m intervals in hilly terrain and in all curve points as directed by the Engineer, with marker pegs and chainage boards set in or near the fence line, and a schedule of reference dimensions shall be prepared and supplied by the Contractor to the Engineer. These markers shall be maintained until the works reach finished formation level and are accepted by the Engineer.

**109.4.** On Construction reaching the formation level stage, the centre line shall again be set by the Contractor and when approved by the Engineer, shall be accurately referenced in a manner satisfactory to the Engineer by marker pegs set at the outer limits of the formation.

**109.5.** No reference peg or marker shall be moved or withdrawn without the approval of the Engineer and no earthwork or structural work shall be commenced until the centre line has been referenced.

**109.6.** The Contractor will be the sole responsible party for safe-guarding all survey monuments, bench marks, beacons, etc. The Engineer will provide the Contractor with the data necessary for setting out of the center line. All dimension and levels

shown on the drawings or mentioned in documents forming part of or issued under the Contract shall be verified by the Contractor on the site and he shall immediately inform the Engineer of any apparent errors or discrepancies in such dimensions or levels. The Contractor shall, in connection with the staking out of the centre line, survey the terrain along the road and shall submit to the Engineer for his approval, a profile along the road centre line and cross-sections at intervals as required by the Engineer.

**109.7.** After obtaining approval of the Engineer, work on earthwork can commence and the profile and cross-sections shall form the basis for measurements and payment. The Contractor shall be responsible for ensuring that all the basic traverse point are in place at the commencement of the contract and if any are missing, or appear to have been disturbed, the Contractor shall make arrangements to re-establish these points. A “Survey File” containing the necessary data will be made available for this purpose. If in the opinion of the Engineer, design modifications of the centre line or grade are advisable, the Engineer will issue detailed instructions to the Contractor and the Contractor shall perform the modifications in the field, as required, and modify the ground levels on the cross-sections accordingly as many times as required. There will be no separate payment for any survey work performed by the Contractor. The cost of these services shall be considered as being included in the cost of the items of work in the Bill of Quantities.

**109.8.** The work of setting out shall be deemed to be a part of general works preparatory to the execution of work and no separate payment shall be made for the same.

**109.9** Precision automatic levels, having a standard deviation of  $\pm 2\text{mm}$  per km, and fitted with micrometer attachment shall be used for all double run levelling work.. Setting out of the road alignment and measurement of the angles shall be done by using theodolite with traversing target, having an accuracy of one second. Measurement of distances shall be done preferably using precision instruments like Distomat.

## **110. PUBLIC UTILITIES**

**110.1.** Drawings scheduling the effected services like water pipes, sewers, oil pipelines, cables, gas ducts etc. owned by various authorities including Public Undertakings and Local Authorities included in the Contract Documents shall be verified by the Contractor for the accuracy of the information prior to the commencement of any work.

**110.2.** Notwithstanding the fact that the information on affected services may not be exhaustive, the final position of these services within the works shall be supposed to have been indicated based on the information furnished by different bodies and to the extent the bodies are familiar with the final proposals. The intermediate stage of the works are, however, unknown at the design stage, these being dictated by the Contractor's methods of working. Accordingly, the Contractor's programme must take into account the period of notice and duration of diversionary works of each body as given on the Drawings and the Contractor must also allow for any effect of these services and alterations upto the Works and for arranging regular meetings with the various bodies at the commencement of the Contract and throughout the period of the Works in order to maintain the required co-ordination. During the period of the Works, the Contractor shall have no objection if the public utility bodies vary their decisions in the execution of their proposals in terms of programme and construction, provided that, in the opinion of the Engineer, the Contractor has received reasonable notice thereof before the relevant alterations are put in hand.

**110.3.** No clearance or alterations to the utility shall be carried out unless specially ordered by the Engineer.

**110.4.** Any services affected by the Works must be temporarily supported by the Contractor who must also take all measures reasonably required by the various bodies to protect their services and property during the progress of the Works.

**110.5.** The Contractor may be required to carry out certain works for and on behalf of the various bodies and he shall also provide, with the prior approval of the Engineer , such assistance to the various bodies as may be authorised by the Engineer.

**110.6.** The work of temporarily supporting and protecting the public utility services during execution of the Works shall be deemed to be part of the Contract and no extra payment shall be made for the same.



**110.7.** The Contractor may be required to carry out the removal or shifting of certain service/utilities on specific orders from the Engineer for which payment shall be made to him. Such works shall be taken up by the Contractor only after obtaining clearance from the Engineer and ensuring adequate safety measures.

## **111. PRECAUTIONS FOR SAFEGUARDING THE ENVIRONMENT**

### **111.1 .General**

The Contractor shall take all precautions for safeguarding the environment during the course of the construction of the works. He shall abide by all laws, rules and regulations in force governing pollution and environmental protection that are applicable in the area where the works are situated.

### **111.2.Borrowpits for Embankment Construction**

Borrowpits shall not be dug in the right-of-way of the road. The stipulations in Clause 305.2.2. shall govern.

### **111.3. Quarry Operations**

The Contractor shall obtain materials from quarries only after the consent of the Forest Department or other concerned authorities is obtained. The quarry operations shall be undertaken within the purview of the rules and regulations in force.

### **111.4.Control of Soil Erosion, Sedimentation and Water Pollution**

The Contractor shall carry out the works in such a manner that soil erosion is fully controlled, and sedimentation and pollution of natural water courses, ponds, tanks and reservoirs is avoided. The stipulations in Clause 306 shall govern.

### **111.5.Pollution from Hot-Mix Plants and Batching Plants**

Bituminous hot-mix and concrete batching plants shall be located sufficiently away from habitation, agricultural operations or industrial establishments. The Contractor shall take every precaution to reduce the levels of noise, vibration, dust and emissions from his plant and shall be fully responsible for any claims for damages caused to the owners of property, fields and residences in the vicinity.

#### **111.6 Substance Hazardous to Health**

The Contractor shall not use or generate any material in the works which are hazardous to the health of persons, animals or vegetation. Where it is necessary to use some substances which can cause injury to the health of workers, the Contractor shall provide protective clothing or appliances to his workers.

#### **11.7. Use of Nuclear Gauges**

Nuclear gauges shall be used only where permitted by the Engineer. The Contractor shall provide the Engineer with a copy of the regulations governing the safe use of nuclear gauges he intends to employ and shall abide by such regulations.

**111.8.** The Contractor must take all reasonable steps to minimise dust nuisance during the construction of the works.

**111.9.** All existing highways and roads used by vehicle of the Contractor or any of his sub-contractors or suppliers of materials or plant, and similarly any new roads, which are part of the works and which are being used by traffic, shall be kept clean of all dust/mud or other extraneous materials dropped by the said vehicles or their tyres. Similarly, all dust/mud or other extraneous materials from the works spreading on these highways shall be immediately cleared by the Contractor.

**111.10.** Clearance shall be effected immediately by manual sweeping and removal of debris, or, if so directed by the Engineer, by mechanical sweeping and clearing equipment, and all dust, mud and other debris shall be removed entirely from the road surface. Additionally, if so directed by the Engineer, the road surface shall be hosed or watered using suitable equipment

**111.11** Any structural damage caused to the existing roads by the Contractor's construction equipment shall be made good without any extra cost.

**111.12** Compliance with the foregoing will not relieve the Contractor of any responsibility for complying with the requirements of any Highway Authority in respect of the roads used by him.

## **112.ARRANGEMENT FOR TRAFFIC DURING CONSTRUCTION**

### **112.1. General**

The Contractor shall at all times carry out work on the highway in a manner creating least interference to the flow of traffic while consistent with the satisfactory execution of the same. For all works involving improvements to the existing highway, the Contractor shall, in accordance with the directives of the Engineer, provide and maintain, during execution of the work, a passage for traffic either along a part of the existing carriageway under improvement, or along a temporary diversion constructed close to the highway. The Contractor shall take prior approval of the Engineer regarding traffic arrangements during construction.

### **112.2 Passage of Traffic along a part of the Existing Carriageway under Improvement**

For widening/strengthening existing carriageway where part width of the existing carriageway is proposed to be used for passage of traffic, treated shoulders shall be provided on the side on which work is not in progress. The treatment to the shoulder shall consist of providing atleast 150 mm thick granular base course covered with bituminous surface dressing in a width of atleast 1.5 m and the surface shall be maintained throughout the period during which traffic uses the same to the satisfaction of the Engineer. The continuous length in which such work shall be carried out, would be limited normally to 500 m at a place. However, where work is allowed by the Engineer in longer stretches passing places atleast 20m long with additional paved width of 2.5 m shall be provided at every 0.5 km interval.

In case of widening existing two-lane to four-lane, the additional two lanes would be constructed first and the traffic diverted to it and only thereafter the required treatment to the existing carriageway would be carried out. However, in case where on the request of the Contractor, work on existing two-lane carriageway is allowed by the Engineer with traffic using part of the existing carriageway, stipulations as in para above shall apply.

After obtaining permission of the Engineer, the treated shoulder shall be dismantled, the debris disposed of and the area cleared as per the direction of the Engineer.

### **112.3 Passage of Traffic along a Temporary Diversion**

In stretches where it is not possible to pass the traffic on part width of the carriageway, a temporary diversion shall be constructed with 7 m carriageway and 2.5 m earthen shoulders on each side (total width of roadway 12 m ) with the following provision for road crust in the 7 m width:

- (i) 200 mm (compacted) granular subbase;
- (ii) 225 mm (compacted) granular base course; and
- (iii) Premix carpet with Seal Coat/Mix Seal Surfacing.

The alignment and longitudinal section of diversion including junctions and temporary cross drainage provision shall be as approved by the Engineer.

### **112.4 Traffic Safety and Control**

The Contractor shall take all necessary measures for the safety of traffic during construction and provide, erect and maintain such barricades, including signs, markings, flags, lights and flagmen as may be required by the Engineer for the information and protection of traffic approaching or passing through the section of the highway under improvement . Before taking up any construction, an agreed phased programme for the diversion of traffic on the highway shall be drawn up in consultation with the Engineer.

The barricades erected on either side of the carriageway/portion of the carriageway closed to traffic, shall be of strong design to resist violation, and painted with alternate black and white stripes. Red lanterns or warning lights of similar type shall be mounted on the barricades at night and kept lit throughout from sunset to sunrise.

At the points where traffic is to deviate from its normal path (whether on temporary diversion or part width of the carriageway) the channel for traffic shall be clearly marked with the aid of pavement markings, painted drums or a similar device to the directions of the Engineer. At night, the passage shall be delineated with lanterns or other suitable light source.

One-way traffic operation shall be established whenever the traffic is to be passed over part of the carriageway inadequate for two-lane traffic. This shall be done with the help of temporary traffic signals or flagmen kept positioned on opposite sides during all hours. For regulation of traffic, the flagmen shall be equipped with red and green flags and lanterns/lights.

On both sides, suitable regulatory/warning signs as approved by the Engineer shall be installed for the guidance of road users. On each approach, at least two signs shall be put up, one close to the point where transition of carriageway begins and the other 120 m away. The signs shall be of approved design and of refractory type, if so directed by the Engineer.

### **112.5. Maintenance of Diversions and Traffic Control Devices**

Signs, lights, barriers and other traffic control devices, as well as the riding surface of diversions shall be maintained in a satisfactory condition till such time they are required as directed by the Engineer. The temporary travelled way shall be kept free of dust by frequent applications of water, if necessary.

## **Item No. 1 : Demolition including stacking of serviceable materials and disposal of unserviceable materials with all lead and lift. (i) R.C.C. work**

### **2.0. Workmanship**

#### **2.1. The**

shall consist of demolition of one or more parts of the building as specified or shown in the drawings. Demolition implies taking up or down or breaking up. This shall consist of demolishing whole or part of work including all relevant items as specified or shown in the drawings.

- The demolition shall always be planned before hand shall be done in reverse order to the one in which the structure was constructed. This scheme shall be got approved from the Engineer-in-charge before starting the work. This however will not absolve the contractor from the responsibility of proper and safe demolition.
- Necessary propping, shoring and under pinning shall be provided for the safety of the adjoining work or property, which is to be left intact, before dismantling and demolishing is taken up and the work shall be carried out in such a way that no damage is caused to the adjoining property.
- Wherever required, temporary enclosures or partitions shall also be provided. Necessary precautions shall be taken to keep the dust nuisance down as and where necessary.
- Dismantling shall be commenced in a systematic manner. All materials which are likely to be damaged by dropping from a height or demolishing roof, masonry etc. shall be carefully dismantled first. The dismantled articles shall be properly stacked as directed.
- All materials obtained from demolition shall be the property of Government unless otherwise specified and shall be kept in safe custody until handed over to the Engineer-in-charge.
- Any serviceable materials, obtained during dismantling or demolition shall be separated out and stacked properly as directed with all lead and lift. All unserviceable materials, rubbish etc., shall be stacked as directed by the Engineer-in-charge.

#### **1.8. On completion of work, the site shall be cleared of**

<sup>4</sup> debris rubbish and cleaned as directed.

### **3.0. Mode of measurements and payment**

#### **3.1. Measurement**

work shall be taken before demolition or dismantling and no allowance for increase in bulk shall be allowed. The demolition of lime concrete shall be measured under this item.

Specification for deduction for voids, openings etc. shall be on same basis as that employed for construction of work,

- All work shall be measured in decimal system as fixed in its place subject to the following limits; unless otherwise stated hereinafter : (a) Dimensions shall be measured to the nearest 0.01 mt. (b) Area shall be worked out to the nearest 0.01 sq. mt. (c) Cubical contents shall be worked out to the nearest 0.01 Cu.m.

- The rate shall include cost of all labour involved and tools used in demolishing and dismantling including scaffolding. The rate shall also include the charges for separating out and stacking the serviceable materials properly and disposing the unserviceable materials with all lead and lift. The rate also includes for temporary shoring for the safety of the portion not required to be pulled down or of adjoining property and providing temporary enclosures or necessary.

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

**Item No. 2 : Demolition of Brick work and stone masonry including stacking of serviceable materials and disposal of unserviceable materials with all lead and lift.(ii) In Cement Mortar.**

- 1.1.** The relevant specifications of item No. 20.1.(i) shall be followed except that demolition of brick or stone masonry in lime mortar is to be done.
- 2.2. Mode of measurements and payment**
- 2.3.** The relevant specifications of item No. 20.1(i) shall be followed except that the wall and independent piers or columns of brick or stone masonry shall be measured in cubic meters. All copings, corbels, combs and other projections shall be included with the wall measurements.
- 2.4.** In measuring thickness of plastered walls, the thickness of plaster shall be included. The unserviceable materials shall be disposed off with all lead and lift. Ashlars face stones dressed stone etc., if required to be taken down intact shall be dismantled and measured separately in cubic meters.
- 2.5.** The rate is exclusive of cleaning of bricks or stones. Honey comb works or hollow block walling shall be measured as solid.
- 2.4.** The rate shall be for a unit of one cubic meter.

**Item No. 3:- Dismantling doors, windows, ventilators etc. (wood or steel) shutters including chowkhats architraves, holdfasts and other attachment etc. complete and stacking them within all lead and lift.(ii) Exceeding 3 Sq.M. in area.**

The work shall be executed as per the specification of "Item No. 20.49.(i) Page No. 150" of attached Building Specification Booklet.

Payment shall be made on Each basis.

**Item No. 4 : Dismantling tiled of stone floors laid in mortar including stacking of serviceable materials and disposal of unserviceable materials with all lead and lift.**

The work shall be executed as per the specification of "Item No. 20.23. Page No. 148 " of Building Specification Booklet.

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

**Item No. 5 : Removing and scraping of old deteriorated plaster of any thickness from wall / R.C.C member including stacking of serviceable material and disposal of unserviceable from site of work with all lead and lift**

**1.0. Workmanship**

**1.1.** The demolition shall consist of demolition of one or more parts of the building as specified or shown in the drawings. Demolition implies taking up or down or breaking up. This shall consist of demolishing whole or part of work

including all relevant items as specified or shown in the drawings.

**1.2.** The demolition shall always be planned before hand shall be done in reverse order to the one in which the structure was constructed. This scheme shall be got approved from the Engineer-in-charge before starting the work.

This however will not absolve the contractor from the responsibility of proper and safe demolition.

**1.3.** Necessary propping, shoring and under pinning shall be provided for the safety of the adjoining work or property, which is to be left intact, before dismantling and demolishing is taken up and the work shall be carried out in

such a way that no damage is caused to the adjoining property.

**1.4.** Wherever required, temporary enclosures or partitions shall also be provided. Necessary precautions shall be

taken to keep the dust nuisance down as and where necessary.

**1.5.** Dismantling shall be commenced in a systematic manner. All materials which are likely to be damaged by

dropping from a height or demolishing roof, masonry etc. shall be carefully dismantled first. The dismantled articles

shall be properly stacked as directed.

**1.6.** All materials obtained from demolition shall be the property of Government unless otherwise specified

and

shall be kept in safe custody until handed over to the Engineer-in-charge.

**1.7.** Any serviceable materials, obtained during dismantling or demolition shall be separated out and stacked

properly as directed with all lead and lift. All unserviceable materials, rubbish etc., shall be stacked as directed' by the

Engineer-in-charge.

**1.8.** On completion of work, the site shall be cleared of all debris rubbish and cleaned as directed.

**2.0. Mode of measurements and payment**

**2.1.** Measurements of all work except hidden work shall be taken before demolition or dismantling and no allowance for increase in bulk shall be allowed. The demolition of lime concrete shall be measured under this item.

Specification for deduction for voids, openings etc. shall be on same basis as that employed for construction of work,

**2.2.** All work shall be measured in decimal system as fixed in its place subject to the following limits; unless otherwise stated hereinafter : (a) Dimensions shall be measured to the nearest 0.01 mt. (b) Area shall be worked out

to the nearest 0.01 sq. mt.(c) Cubical contents shall be worked out to the nearest 0.01 Cu.m.

**2.3.** The rate shall include cost of all labour involved and tools used in demolishing and dismantling including

scaffolding. The rate shall also include the charges for separating out and stacking the serviceable materials properly

and disposing the unserviceable materials with all lead and lift. The rate also includes for temporary shoring for the

safety of the portion not required to be pulled down or of adjoining property and providing temporary enclosures or

portions where considered necessary.

**2.4.** The rate shall be for a unit of one Sq.Mt.

**Item No. 6 : Excavation for foundation up to 1.50mt.Depth including sorting out and stacking of useful materials and disposing of the excavated stuff as directed with in all lead & Lift (B) Dense or Hard soil.**

The work shall be executed as per the specification of "Item No. 4.0.0(B) Page No. 29 "of attached Building Specification Booklet.

Payment shall be made on **Cum** basis

**Item No. 7 : Filling foundation and plinth with sand under floors including watering, ramming and consolidating dressing etc, comp.**

The work shall be executed as per the specification of "Item No. 4.24 Page No. 35"of attached Building Specification Booklet.

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

**Item No. 8 : Filling available excavated earth excluding rock in trenches plinth side of foundation etc. in layer not exceeding 20cm. In depth consolidation each deposited layer by ramming and watering.**

The work shall be executed as per the specification of "Item No. 4.12 Page No. 35" of attached Building Specification Booklet.

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

**Item No. 9 : Filling foundation and plinth with murrum or selected soil in layers of 20 cm. thickness including watering, ramming and consolidating etc. comp.**

The work shall be executed as per the specification of "Item No. 4.12 Page No. 35" of attached Building Specification Booklet.

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



**Item No. 10 : Applying general insecticide pest control treatment to floors, cupboards etc including labour materials etc. complete. Using Imidacloprid 30.5 SCas Per IS 6313 part - II( 0.075% concentration by mass) is recommended 10.5ml chemical diluted with 5 liters of water application 0.5 litre chemical /Sqm of surface is recommended as per I.S**

**1 Materials :**

The chemicals used for the soil treatment shall be only one of the following with concentration shown against each in aqueous emulsion.

**Chemicals Concentration**

1. Aldrin 0.50% (by weight)

2. Heptachlor 0.50% (by weight)

3. Chlordane 1.00% (by weight)

2.1. The chemicals barrier shall be complete and continuous under whole of the structure to be protected.

2.2. The bottom and the sides of foundations up to a height of 30 cms. from the bottom of excavation made for masonry foundation and for basement column pits shall be treated with the chemical emulsion at the rate 5 liters/ sq. meter of the surface area.

2.3. The chemical treatment shall be-carried out when the surfaces is quite dry. Chemical treatment shall not be carried out when it is raining or when the soil wet with rain or sub soil water.

2.4. Once formed, treated soil barriers shall be not disturbed. If by chance, treated soil barriers are disturbed, immediate steps shall be taken to restore the continuing and compactness of the barrier system

2.5. The treatment against termite infection shall remain fully effective for a period not less than 10 years from date of issue of the final certificate to completion of work. If at any time during this period, any defects in treatment are revealed or any evidence of infection in any part of the building or structure is noticed, the contractor shall be rectify the concerned defects within 14 days on receipt of notice from Engineer-in-charge. On contractor's failure to do so, the Engineer-in-charge may get the same rectified through any other agency at contractor's risk and cost, and decision of Engineer-in-charge as to the cost payable by contractor for the same shall be final and binding to the contractor.

2.6. A guarantee bond on appropriately stamped paper shall be given by the contractor to the department in the

I/We..... ( Contractor) hereby guarantee that work will remain unaffected and will not be any way damaged by termite or any other germs of similar types, for a period for 10 years after completion of the work of anti-termite as per the terms and conditions of the contract and or damage that might be caused on account of termite and or other similar type of germs and hereby Guarantees to make good any loss of damages suffered by the Government of Gujarat and further guarantee to redo effective work without claiming any extra cost.

2.7. This guarantee shall remain in force for the period of 10 years from the completion of the work under the

contract and it shall remain binding to the contractor for period of 10 years.

2.8. The deposit at the rate of 50% of the cost of this item from the running and final bills shall be recovered and retained for the first one year after completion of the work and 10% shall be retained for the balance of guarantee period and shall be refunded only after the completion of the guarantee period.

**3.0. Mode of measurements & payment**

3.1. The length and breadth shall be measured correct to a cm. as per the dimensions of sanctioned plans. No deduction shall be made nor extra paid for any opening for pipes etc. up to 0.1.sq. mt. The rate shall include the cost of all labour and materials required for the operation involved for satisfactory completion of this item. The sides of the trenches 30 cms, each side and bottom shall be measured under this item.

3.2. The rate shall be for a unit of One sq. meter.

**Item No. 11 : Providing and laying controlled cement concrete M-150 and curing complete excluding the cost of form work and reinforcement concrete work in:(a) Foundation footing base of column and mass concrete.**

The work shall be executed as per the specification of "Item No. 5.8.1 Page No. 46" of attached Building Specification Booklet.

Payment shall be made on Cum basis.

**Item No. 12 : Providing and laying controlled cement concrete M-250 and curing complete including the cost of form work but excluding the cost of reinforcement concrete work in Foundation footing bases of column.**

The work shall be executed as per the specification of "Item No. 5.8.3 Page No. 47" of attached Building Specification Booklet.

Payment shall be made on Cum basis.

**Item No. 13 : Providing and laying controlled cement concrete M-250 and curing complete including the cost of form work but excluding the cost of reinforcement concrete work in Column upto floor two level. Upto ground level.**

The work shall be executed as per the specification of "Item No. 5.8.3 Page No. 47" of attached Building Specification Booklet.

Payment shall be made on Cum basis.

**Item No. 14 : Providing and laying controlled cement concrete M.150 for curing complete excluding cost of formwork and reinforcement for reinforced concrete work in (A) Foundations, footings, Base of columns and Mass concrete**

The work shall be executed as per the specification of "Item No. 5.8.1 Page No. 46" of attached Building Specification Booklet.

Payment shall be made on Cum basis.

**Item No. 15 : Providing and laying Controlled cement concrete M200 using B.T. stone aggregate and curing etc. complete including the cost of form work but excluding the cost of reinforcement. (a) Column for All floor.**

The work shall be executed as per the specification of "Item No. 5.0.0.8 Page No. 49" of attached Building Specification Booklet.

Payment shall be made on Cum basis.

**Item No. 16 : Providing and laying Controlled cement concrete M 250 using B.T. stone aggregate and curing etc. complete including the cost of form work but excluding the cost of reinforcement for (c) PLINTH BEAM having cross sectional area more than 0.12 sqm**

The work shall be executed as per the specification of "Item No. 5.8.3 Page No. 47" of attached Building Specification Booklet.

Payment shall be made on Cum basis.

**Item No. 17 : Providing and laying controlled cement concrete M-150 and curing complete including the cost of form work but excluding the cost of reinforcement for reinforced concrete work in Plinth PLINTH Slab .**

The work shall be executed as per the specification of "Item No. 5.8.1 Page No. 46" of attached Building Specification Booklet.

Payment shall be made on Cum basis.

**Item No. 18 : Providing and laying controlled cement concrete M-200 and curing complete including the cost of form work but excluding the cost of reinforcement for reinforced concrete work in Wall caps / Coping / Lintel bends Ground Floor.**

The work shall be executed as per the specification of "Item No. 5.0.0.8 Page No. 49" of attached Building Specification Booklet.

Payment shall be made on Cum basis.

**Item No. 19 : Providing and laying controlled cement concrete M-200 and curing complete including the cost of form work but excluding the cost of reinforcement for reinforced concrete work in BEAMS For Ground Floor.**

The work shall be executed as per the specification of "Item No. 5.0.0.8 Page No. 49" of attached Building Specification Booklet.

Payment shall be made on Cum basis.

**Item No. 20 : Providing and laying controlled cement concrete M-200 and curing complete including the cost of form work but excluding the cost of reinforcement for reinforced concrete work in LINTELS Ground Floor.**

The work shall be executed as per the specification of "Item No. 5.0.0.8 Page No. 49" of attached Building Specification Booklet.

Payment shall be made on Cum basis.

**Item No. 21 : Providing and laying controlled cement concrete M-200 and curing complete including the cost of form work but excluding the cost of reinforcement for reinforced concrete work in CHHAJJAS All Floor.**

The work shall be executed as per the specification of "Item No. 5.0.0.8 Page No. 49" of attached Building Specification Booklet.

Payment shall be made on Cum basis.

**Item No. 22 : Providing and laying controlled cement concrete M-200 and curing complete including the cost of form work but excluding the cost of reinforcement for reinforced concrete work in slabs for Ground Floor.**

The work shall be executed as per the specification of "Item No. 5.0.0.8 Page No. 49" of attached Building Specification Booklet.

Payment shall be made on Cum basis.

**item No. 23 : Providing T.M.T. bar FE500/500D reinforcement confirmed to for R.C.C. work including bending, binding, and placing. In position comp. Up to floor two level. For All Floor**

**1.0. GENERAL**

This work shall consist of furnishing and placing coated, or uncoated or high strength deformed 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.

**2.0. MATERIAL**

**2.1. T.M.T. Bars**

Reinforcements may be either T.M.T. tensile steel, confirms to IS 1786-2008 bars. They may be uncoated or coated with epoxy or with approved protective coatings.

**2.2.** T.M.T. bars reinforcement for R.C.C. work shall conform IS 432 (Part II) 1982 (Reaffirmed 1995) and shall be of tested quality. It shall also comply with relevant part of IS 456-2000.

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

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

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

**3.0. Pitch**

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

**4.0. Binding wire**

**4.1.** Mild steel binding wire shall be of 1.63 mm or 1.22 mm (16 to 18 gauge diameter and shall conform IS 280-2006.

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

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

**5.0. PROTECTION OF REINFORCEMENT**

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

**5.2.** Portions of uncoated reinforcing steel and dowels projecting from concrete shall be protected within one week after initial placing of concrete with a brush coat of neat cement mixed with water to a consistency, of thick paint. This coating shall be removed by lightly tapping with a hammer

or other tool not more than one week before placing of the adjacent pour of concrete. Coated reinforcing steel shall be protected against damage to the coating. If the coating on the bars is damaged during transportation or handling and cannot be repaired, the same shall be rejected.

**6.0. Workmanship**

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

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

**7.0. BENDING OF REINFORCEMENT**

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

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

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

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

#### **8.0. PLACING OF REINFORCEMENT**

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

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

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

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

**8.4.** In case of dowels for Columns and walls the vertical reinforcement shall be kept in position by means of timber templates with slots in them accurately, or with cover blocks tied to the Reinforcement Timber templates shall be removed after the concreting has progressed up to a level just below their location.

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

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

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

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

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

#### **9.0. Lapping**

**9.1.** All reinforcement shall be furnished in full lengths as indicated on the drawing. No splicing of bars, except where shown on the drawing; will be permitted without approval of the Engineer. The lengths of the splice shall be as indicated on drawing or as approved by the Engineer.

Where practicable, overlapping bars shall not touch each other and shall be kept apart by 25 mm or 11 1/4 times the maximum size of coarse aggregate, whichever is greater, If this is not feasible, overlapping bars shall be bound with annealed steel binding wire, not less than 1 mm diameter and twisted tight in such a manner as to maintain minimum clear cover to the reinforcement from the concrete surface. Lapped splices shall be staggered or located at points, along the span where stresses are low.

#### **10.0 Welding**

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

**10.2.** While welding may be permitted for T.M.T. reinforcing bars conforming to IS:432, welding of deformed bars conforming to IS: 1786 shall in general be prohibited. Welding may be permitted in case of bars of other than S 240 grade including special. Welding grade of S 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.

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

**10.4.** Bars shall be bent cold to the specified shape and dimensions or as directed by Engineer in charge using the proper bender tool, operated by hand or power to attain proper radius of bends. Bars shall not be bent or straightened in a manner that will injure the material. Bars bent during transport or handling shall be straightened before being used in the work. Bars shall not be heated to facilitate bending

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

**10.6.** All reinforcement bars shall be accurately placed in exact position shown on the drawings and shall be securely held in position during placing of concrete by annealed binding wire not less than 1 mm in size and by using say blocks or metal chairs spacers, metal hangers, supporting wires or other approved devices at sufficiently close intervals. Bars shall not be allowed to sag between supports not displaced during concreting or any other operations of the work. All devices used for positioning shall be of non-corrodible material. Wooden and metal supports shall not extend to the surface of the concrete, except where shown in drawings. Placing bars on layers of freshly laid concrete as the work progresses for adjusting bar spacing shall not be allowed. Pieces of broken stone or brick and wooden blocks shall not be used. Layers of bars shall be separated by spacer bars, pre-cast mortar blocks or other approved devices. Reinforcement after bending placed in position shall be maintained in a clean condition until

completely embedded in concrete. Special care shall be exercised to prevent any displacement of reinforcement in concrete already placed. To prevent reinforcement from corrosion, concrete cover shall be provided as indicated on drawings. All bars protruding from concrete and to which other bars are to be laced and which are likely to be exposed for a period exceeding 10 days shall be protected by a thick coat of neat cement grout

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

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

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

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

## 11.0 MODE OF MEASUREMENTS & PAYMENT

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

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

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

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

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

The unit rate for coated reinforcement shall be deemed to also include cost of all material, labour, tools and plant, royalty, transportation and expertise required to carry out the work. The rate shall also cover sampling, testing and supervision required for the work.

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

**Item No. 24 : Brick work using common burnt clay building bricks having crushing strength not less than 35 Kg./Sq.m. in foundation and plinth in cement mortar 1:6 (1 cement:6 fine sand) (b) Conventional.**

The work shall be executed as per the specification of "Item No.6.12 Page No. 51" of attached **Building Specification Booklet.**

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

**Item No. 25 : Brick work using common burnt clay building bricks having crushing strength not less than 35 Kg./ Sqm. in cement mortar 1:6 ( 1 cement : 6 Fine sand ) in super structure above plinth level upto floor two level ( for G.F ) Conventional**

The work shall be executed as per the specification of "Item No. 6.19 Page No. 53" of attached **Building Specification Booklet.**

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

**Item No. 26 : BOTH SIDE VINEER FINISH FLUSH DOOR Providing Material & Labour charge for making Flush Door (finished size of door is 46 mm) of suggested size considering waterproof flush door sheet of 38 mm thkness covered both side finished with 4 mm thk vineer finished with PU polish on both sides of shutter supprted by SS -304 finish hinges. All exposed framing of approprite sizes made by TEAK wood bidding complete with polish. Finishing with all necessary hardwares like handles, conceal mortise locks, cylinders with 6 nos of keys, MS nails, SS-314 screws stopper -12"- ,Aldrop,Door Chain, Towerbolt,Door viewer,Door Stopper,Magnatic door catch,Floor spring 100 KG etc. as per details given in drawing and as per instructions of Architect/Engineer In charge. Please see the Attached Make List for Apporoved Makes.**

#### **Specification – Both Side Veneer Finish Flush Door**

Providing material and labour for fabrication and installation of flush door shutters of finished thickness **46 mm**, made from **38 mm thick waterproof flush door core**, finished on both sides with **4 mm thick veneer** and PU polished on both faces.

The shutter shall be supported on approved quality **SS-304 finish hinges**. All exposed edges and framing shall be finished with appropriate size **teak wood beading**, complete with matching polish.

The work shall include supplying and fixing all necessary hardware and accessories complete, including but not limited to:

- Handles
- Concealed mortise lock
- Cylinders with 6 keys
- MS nails
- SS-304 screws
- 12" stopper
- Aldrop
- Door chain
- Tower bolt
- Door viewer



- Door stopper
- Magnetic door catch
- Floor spring (100 kg capacity)
- All other required fittings and fixtures

Complete in all respects as per approved drawings, specifications, and instructions of the Architect/Engineer-in-Charge.

Approved makes shall be as per the attached approved make list.

yea

### **BOTH SIDE VENEER FINISH FLUSH DOOR**

Providing and fixing flush door shutter of finished thickness **46 mm**, comprising of **38 mm thick waterproof flush door** finished on both sides with **4 mm thick natural veneer**, complete with PU polish finish on both faces, including all necessary preparation and finishing works.

The shutter shall be fixed with approved quality **SS-304 finish hinges**. All exposed edges/framing shall be provided with appropriate size **teak wood beading**, complete with matching polish finish.

The rate shall include providing and fixing all necessary hardware and accessories such as:

- Handles
- Concealed mortise lock
- Cylinders with 6 nos. keys
- MS nails
- SS-304 screws
- 12" door stopper
- Aldrop
- Door chain
- Tower bolt
- Door viewer
- Magnetic door catch
- Floor spring of 100 kg capacity
- Any other accessories required for proper functioning of the door
- **Payment shall be made on Sqm basis.**

**Item No. 27 : Providing and fixing Anodized Alluminum Section Jindal Deluxe Sliding Window System 27mm series THREE track window with middle fixed window as shown in elevation, shutter with 5mm thick transparent plain float glass, with transparent silicon sealant with allu. anodized coated fittings and fixture etc complete.**

**Specification – Anodized Aluminium Sliding Window**

Providing and fixing anodized aluminium sliding window system using approved quality **Jindal Deluxe 27 mm series**, comprising **three-track sliding windows with middle fixed panel**, as shown in the approved elevation drawings.

The window shutters shall be glazed with **5 mm thick transparent plain float glass**, fixed with approved quality transparent silicone sealant. The aluminium sections shall be anodized finish and complete with all necessary aluminium anodized fittings and fixtures, including rollers, handles, locks, rubber gaskets, screws, cleats, and accessories required for proper operation and installation.

The work shall be completed in all respects as per approved drawings, specifications, and instructions of the Architect/Engineer-in-Charge

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

**Item No. 28 : Providing and fixing standard extruded of aluminium section of size 63mm x 38.10mm x 1.2mm @ Wt. 0.643 Kg/mt) with colour anodized aluminium frame for ventilation with 5 mm thick frosted glass as details etc complete for Ventilation {Colour as directed by Engineer in charge except black & Alluminum section and glass**

**Specification – Aluminium Ventilator with Frosted Glass**

Providing and fixing standard extruded aluminium section of size **63 mm × 38.10 mm × 1.20 mm** having weight not less than **0.643 kg/rmt**, with colour anodized aluminium frame for ventilator, complete with all necessary fittings and fixtures.

The ventilator shall be glazed with **5 mm thick frosted glass**, fixed with suitable rubber gasket/silicone sealant as required. The aluminium frame shall be colour anodized finish in approved shade (excluding black colour), complete with screws, cleats, handles, fasteners, and all accessories required for proper fixing and operation.

Complete in all respects as per approved drawings, specifications, and instructions of the Engineer-in-Charge.

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

**Item No. 29 : Providing and fixing Safty grills of required pattern for windows Rectangular CRC pipes of size 50 x 30 x 2mm at required spacing as per design including fixing rat mesh and hold fasting with coach bolts including one coat of primer and two coats of mattfinished oil painting etc complete.**

- **Specification – MS Safety Grill for Windows**
  - Providing and fixing safety grills for windows of approved design and pattern, fabricated from rectangular CRC pipes of size **50 mm × 30 mm × 2 mm thickness**, placed at required spacing as per approved drawing/design.
  - The work shall include providing and fixing rat mesh, necessary holdfasts, coach bolts, welding, cutting, grinding, and proper anchoring in position. The grill surface shall be cleaned and treated with **one coat of approved metal primer** and finished with **two coats of matt finish oil paint** of approved shade.
  - Complete in all respects as per approved drawings, specifications, and instructions of the Architect/Engineer-in-Charge.
- 
- **Mode of measurements and payment**
  - The rate shall be for a unit of Kgs.

**Item No. 30 : Providing and laying Vitrified tiles 8 to 10 mm thick , 24" x 24" in flooring treads of steps and landing laid on a bed of 12mm thick cement mortar 1:3 (1-cement : 3-coarse sand ) finishing with flush pointing in white cement.**

Specification – Providing and Laying Vitrified Floor Tiles

Providing and laying **vitrified tiles** of **8–10 mm thickness**, size of approved make and shade, , **24" x 24"** in **flooring, treads of steps, and landings**.

Tiles shall be laid over a **12 mm thick cement mortar bed** in the proportion **1:3 (1 cement : 3 coarse sand)**, properly mixed and spread to true levels and slopes.

Joints shall be kept uniform and finished with **flush pointing using white cement**, mixed with approved pigment if required. Tiles shall be properly aligned, tamped, and set to achieve an even and smooth surface.

The work shall include:

- Cutting of tiles wherever required
- Proper bedding, jointing, and finishing
- Cleaning and curing after laying

The item shall be **complete in all respects**, including all materials, labour, tools, and incidentals, as per drawings and directions of the Engineer-in-Charge.

The rate shall be for a unit of **Sqm.**

**Item No. 31 : Providing and laying Vitrified tiles 8 to 10 mm thick , 36" x 36" in flooring treads of steps and landing laid on a bed of 12mm thick cement mortar 1:3 (1-cement : 3-coarse sand ) finishing with flush pointing in white cement.**

**Specification – Vitrified Tile Flooring**

Providing and laying vitrified tiles of size **36" × 36"** and thickness **8 to 10 mm** for flooring, treads of steps, and landings, laid over a bed of **12 mm thick cement mortar in CM 1:3** (1 cement : 3 coarse sand), including surface preparation, leveling, alignment, cutting, and finishing.

The joints shall be finished with flush pointing using white cement slurry/pigmented joint filler to match the tile shade. The surface shall be properly cleaned and finished complete.

Complete in all respects as per approved drawings, specifications, and instructions of the Architect/Engineer-in-Charge.

**Item No. 32 : Providing and laying 60 x 60cm GTV Vitrified tiles 8 to 10 mm thick with pattern colour & Shade as detailed approve by architect ( 10% Dark colour tiles Pattern ) in skirting risers of steps and dedo on 10mm thick cement plaster 1:3 (1-cement : 3-coarse sand) and jointed with white cement slurry**

Specification – Providing and Laying 600 × 600 mm Anti-Skid Vitrified Tiles

Providing and laying **anti-skid vitrified tiles** of size **600 mm × 600 mm** and **8–10 mm thickness**, of approved make, shade, and pattern, in **flooring, treads of steps, and landings**.

Tiles shall be laid over a **12 mm thick cement mortar bed** in the proportion **1:3 (1 cement : 3 coarse sand)**, properly mixed, spread, and levelled to the required line, level, and slope.

Joints shall be uniform and finished with **flush pointing using white cement**, mixed with approved pigment if required. Tiles shall be properly aligned, tapped, and set to obtain a true, even, and non-slippery surface.

The work shall include:

- Cutting and shaping of tiles wherever required
- Proper bedding, jointing, cleaning, and curing
- All materials, labour, tools, and incidentals

The item shall be **complete in all respects**, as per drawings and directions of the Engineer-in-Charge.

The rate shall be for a unit of **Sqm.**

**Item No. 33 : Providing and laying 30 x 60Cm size Ceramic tiles 6mm thick in skirting risers of steps and dedo on 10mm thick cement plaster 1:3 (1-cement : 3-coarse sand) and jointed with white cement slurry**

**Specification – Ceramic Tile Skirting, Risers & Dado**

Providing and laying ceramic tiles of size **30 × 60 cm** and **6 mm thickness** for skirting, risers of steps, and dado, laid over **10 mm thick cement plaster in CM 1:3** (1 cement : 3 coarse sand), including surface preparation, alignment, cutting, and finishing.

The tiles shall be properly fixed and jointed with white cement slurry/pigmented joint filler to match the shade of tiles, including cleaning of the surface and finishing complete.

Complete in all respects as per approved drawings, specifications, and instructions of the Architect/Engineer-in-Charge.

The rate shall be for a unit of **Sqm.**

**Item No. 34 : Providing and filling the joint with epoxy grout 3 mm width and 8 to 10 mm deep, including cost of necessary materials, PVC spacers, filling grout and cleaning etc complete as directed by engineer in charge. { Colour and Pattern as directed by engineer in charge.}**

#### **Specification – Epoxy Grouting for Tile Joints**

Providing and filling tile joints with approved quality epoxy grout for joints of **3 mm width** and **8 to 10 mm depth**, including cost of all materials, labour, PVC spacers, surface preparation, filling of grout, finishing, and cleaning of excess grout from tile surfaces.

The colour and pattern of epoxy grout shall be as approved and directed by the Engineer-in-Charge.

Complete in all respects as per approved drawings, specifications, and instructions of the Engineer-in-Charge.

Payment shall be made on Sqm. basis.

**Item No.35 : Providing and laying water proofing tretment with chaina mosaic tiles flooring over avg 40 mm C.C. 1:2:4 ( 1 Cement, 2 sand, 1 Kapchi 20mm + 3 grit 6mm to 10mm ) bedding for maintaining slope for plain and curve surface & 12 mm to 20 mm of broken piece of ceramic / glazed tiles ( one or more color as directed ) to be laid over cement mortar bedding of C M 1:3 (1 cement : 3 sand ) containg one Kg. of water profing materials per bag of O P C at plain or / and slops and to be tempered to bring mortar ceramic up to surface with using white cement and colour pigment including rounding of junctions and extending them up to 15 cm along the wall and curing with bends any pattens or design as per drawing and cleaning by using oxalic acid etc complete.**

#### **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 S 455 -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 S 269- 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 fee 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 racked 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 racked 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. 36 : Providing and laying Mirror polished Machine polished Granite stone slab 18mm (Average ) thick for doors & windows sill & Jams clading as per design including full moulded round front steps & 1cm nosing & necessary groove on trades of steps ;laid on 20mm thick cement mortar 1:6 ( 1 cement : 6 coarse sand ) jointed with gray cement sluury including rubbing and polsihing etc. complete.for Doors / windows sill & jams clading.**

#### 1.0. Materials

Water shall conform to M-1. Lime mortar shall conform to M-10. Cement mortar shall conform to M-1). Marble stone slab 16 mm. thick shall conform to M-51.

#### 2.0. Workmanship

##### 2.1. Dressing of slabs :

Every stone shall be cut to required size and fine chisel dressed to give a smooth and even surface on all sides to full depth. A straight edge laid along the sides of the stone shall be fully in contact with it Chisel dressing shall also be done on top surface to remove any waviness. The sides and top surface of marbleslabs shall be machine rubbed or table rubbed with coarse sand before using. All angles and edges or slabs shall be true, square and free from chipping.

2.2 The thickness of stone shall be 16 mm. The allowable tolerance shall be 2 mm. allowable. The 'tolerance shall + 5 mm. in length and breadth.

##### 2.3. Bedding:

Bedding of marble slabs shall either be lime mortar 1:1.5 (1 lime putty : 1.5 coarse sand) or cement mortar 1:6 (1 cement : 6 coarse sand) of average thickness 20 mm. thick as given in description of item. Minimum thickness at any place shall not be less than 10 mm.

##### 2.4. Laying

The surface of sub-grade shall be cleared, wetted and mopped. Mortar of specified mix and thickness shall then be spread on an area sufficient to receive one marble slab. The slab be washed clean before laying. It tie laid on top pressed and tapped gently to bring it in level with other slabs. It shall then be lifted and a side. The top surface of the mortar shall then be corrected by adding fresh mortar at hollows, or depressions. The mortar shall then be allowed to harden it over this surface cement slurry or honey like consistency at 4.4 Kg. of cement per sq. meter. The edges of slabs already paved shall be buttered with gray cement. The slab shall then be gently placed in position and tapped with wooden mallet till it is properly bedded in level with and close to the adjoining slab. The joints shall be as fine as

possible. Surplus cement on the surface of the slab shall be removed. The slab fixed in the floor adjoining the walls shall enter not less than 10 mm. under the plaster skirting or dedo. The junction between the walls and floors shall be finished neatly. The finished surface shall be true to level and slopes as directed.

2.5. Curing : The floor shall be cured for a minimum period of seven days.

##### 2.6. Polishing and finishing:

Unevenness at the meting edges of slab shall be removed by fine chiseling. Finishing etc. shall be done as per relevant specifications of item No. 14.21 (A) or terrazzo tiles flooring except that cement slurry with/or without pigments shall not be applied on the surface before each polishing.

#### 3.0. Mode of measurements and payment

3.1. Marbles stone flooring with various kinds of marble shall be measured in sq. meter. The length and breadth shall be measured between-the finished face of skirting or dedo or wall plaster No deduction shall fie made nor extra shall be paid for nay opening in the floor or area up to 0.05 sq. mt. Nothing extra shall be paid for laying stone at different levels in the same room. Treads and steps of stairs paved with marble stone slabs shall be also be measured under flooring.

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



**Item No. 37 : Providing 20 mm thick double coat mala cement plaster on interior brick / concrete work for plastering comprising of base coat of 12 mm thick cement plaster in cement mortar (1 Cement : 4 coarse sand) in rough finishing and 8 mm thick top coat of cement mortar 1:2 (1 Cement : 2 Coarse sand) finished with trowel including scaffolding curing etc. complete. For Ground Floor**

**1.0. Materials**

1.1. Water shall conform to M-1. The cement mortar of proportion 1:3 shall conform to M-13.

**2.0. Workmanship**

**2.1. Scaffolding:**

Wooden bullies, bamboos, planks, trestles and other scaffolding shall be sound. These shall be properly examined before erection and use. Stage scaffolding shall be provided for ceiling plaster which shall be independent of the walls.

**2.2. Preparation of back-ground :**

2.2.1. The surface shall be cleaned of all dust, loose mortar droppings, traces of algae, efflorescence and other foreign matter by water or by brushing. Smooth surface shall be toughened by wire brushing if it is not hard and by hacking if it is hard. In case of concrete surface, if a chemical retarded has been applied to the form work, the surface shall be roughened by wire brushing and all the resulting dust and loose particles cleaned off and care shall be taken that none of the readers if left on the surface. Trimming of projections on brick/concrete surfaces where necessary shall be carried out to get an even surface.

2.2.2. Raking of joints in case of masonry where necessary shall be allowed to dry out for sufficient period before carrying out the plaster work.

2.2.3. The work shall not be soaked but only damped evenly before applying the plaster. If the surface becomes dry, such area shall be moistened again.

2.2.4. For external plaster, the plastering operation shall be started from top floor and carried downwards. For internal plaster, the plastering operations may be started wherever the building frame and cladding work are ready and the temporary supports of the ceiling resting on the wall of the floor have been removed. Ceiling plaster shall be completed before starting plaster to walls.

**2.3. Application of plaster:**

2.3.1. The plaster about 15x15cms. shall be first applied horizontally and vertically at not more than 2 meters intervals over the entire surface to serve as gauge. The surfaces of these gauges shall be truly in plane of the finished plastered surface. The mortar shall then be applied in uniform surface slightly more than the specified thickness, then brought to a true surface by working a wooden straight edge reaching across the gauges with small upward and sideways movements at a time. Finally, the surface shall be finished off true with a trowel or wooden float according as a smooth or a smooth or a sandy granular texture is required Excessive troweling or overworking the float shall be avoided. All corners, arises, angles and junctions shall be truly vertical or horizontal as the case may be and shall be carefully finished. Hounding or chamfering, corners, arises junctions etc. shall be carried out with proper templates to be size required.

2.3.2. Cement plaster shall be used within half an hour after addition of water. And mortar or plaster which is partially set shall be rejected and removed forthwith from the site.

2.3.3. In suspending the work at the end of the day, the plaster shall be left out clean to the line both horizontally and vertically, when recommencing the plaster, the edges of the old work shall be scraped clean and wetted with cement putty before plaster is applied to the adjacent areas to enable the two to properly join together. Plastering work shall be closed at the end of the day on the body of the wall and nearer than 15 cm. to any corners or arises. It shall not be closed on the body of features such as plaster bands and cornices not at the corners or arises. Horizontal joints in plaster work shall not also occur on parapet tops and copings as these invariably lead to leakage



No portion of the surface shall be left out initially to be packed up later on.

2.3.4. Each coat shall be kept damp continuously till the next coat is applied or for a minimum period of 7 days.

Moistening shall commence as soon as plaster is hardened sufficiently. Soaking of walls shall be avoided and only as much water as can be readily absorbed shall be used, excessive evaporation on the sunny or windward side of building in hot air or dry weather shall be prevented by hanging matting or gunny bags on the outside of the plaster and keeping them wet.

### **3.0. Mode of measurements & payment**

3.1. The rate shall include the cost of all materials, labour and scaffolding etc. involved in the operations described under workmanship.

3.2. All plastering shall be measured in square meters unless otherwise specified. Length breadth or height shall be measured correct to a centimeter.

3.3. Thickness of the plaster shall be exclusive of the thickness of the key i.e. grooves or open joints in brick work, stone work etc. or space between laths. Thickness of plaster shall be average thickness with minimum 10 mm. at any point on this surface.

3.4. This item includes plastering up to floor two level.

3.5. The measurement of wall plastering shall be taken between the walls or partition (dimensions before plastering being taken) for length and from the top of floor or skirting to ceiling for height. Depth of cover of cornices if any shall be deducted.

3.6. Soffits of stairs shall be measured as plastering on ceilings, following soffits shall be measured separately.

3.7. For jambs, soffits, sills etc. for openings not exceeding 0.5 sq. met each in area for ends of joints beams, posts, girders, steps etc. not exceeding 0.5 sq. mt each in area and for openings exceeding 0.5 sq. mt and not exceeding 3.00 sq. mt. in each area deductions and additions shall be made in the following manners.

(a) No deductions shall be made for ends of joints, beams, posts etc. and openings not exceeding 0.5 sq. mt each and no addition shall be made for reveals, jambs, soffits, sills etc. of these openings, for finish to plaster around ends of joints, beams posts etc.

(b) Deduction for openings exceeding 0.5 sq. mt but not exceeding 3 sq.mt. each shall be made as follows and no addition shall be made for reveals, jambs, soffits, sills etc. of these openings, (i) When both faces of all wall are plastered with same plaster, deduction shall be made for one face only, (ii) When two faces of wall are plastered with different types of plasters or if one face is plastered and the other pointed, deductions shall be made from the plaster or pointing on the side of frame for door, window etc. on which width of reveals is less than that on the other side but no deductions shall be made on the other side. Where width of reveals on both faces of all are equal, deductions of 50% of area of opening on each face shall be made from areas of plaster and / or pointing as the case may be.

3.8. For openings having door frames equal to or projecting beyond the thickness of wall, full deduction for opening shall be made from each plastered face of the wall.

3.9. In case of openings of area above 3 sq. mt. each, deduction shall be made for openings but jambs, soffits and sills shall be measured.

### **3.10. The rate shall be for a unit of One sq. meter.**

**Item No. 38 : Providing 10mm thick cement plaster in single coat on plastering on ceilings and soffits of stairs,brick/concrete walls for interior plastering upto floor two level and finished even and smooth in (i) Cement mortar 1:3 (1-cement:3-sand) including finishing with a flating coat of neat cement slurry etc. complete. for Ground Floor**

The work shall be executed as per specification of Item No.37 except the work is Providing 10mm thick cement plaster in single coat on brick/concrete walls for interior plastering up to floor two level and finished even and smooth in (i) Cement mortar 1:3 (1-cement:3-sand) including finishing with a flating coat of neat cement slurry etc. complete. for Ground Floor

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

**Item No. 39 : Providing 10mm thick cement plaster in single coat on brick/concrete walls for interior plastering upto floor two level and finished even and smooth in (i) Cement mortar 1:3 (1-cement:3-sand) including finishing with a flating coat of neat cement slurry etc. complete. for Ground Floor**

The work shall be executed as per specification of Item No.37 Providing 10mm thick cement plaster in single coat on brick/concrete walls for interior plastering upto floor two level and finished even and smooth in (i) Cement mortar 1:3 (1-cement:3-sand) including finishing with a flating coat of neat cement slurry etc. complete. for Ground Floor

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

**Item No. 40 : Wall painting (three coats) including priming coat with plastic emulsion paint of approved brand and manufacture on undecorated wall surfaces to give an even shade including thoroughly brushing the surface free from mortar droppings and other foreign matter and sand papered smooth including applying priming coat etc. complete.**

**1.0. Materials**

Water shall be conforming M-1. The plastic emulsion shall conform to I.S.: 5411-1969 (part-I).

**2.0. Workmanship**

2.1. Scaffolding: The relevant specifications of item-No. 18.11 Para 2.1 shall be followed.

2.2. Preparation of surface: The relevant specification of item No. 18.44 Para 2.2 shall be followed.

**2.3. Preparation of Mix :**

This shall be done as per manufacturer's instructions. The thinning of emulsion is to be done with water and not with turpentine. The quantity of thinner to be added shall be as per manufacturer instructions.

**2.4. Application:**

2.4.1. Before pouring into small containers for use, the paint shall be stirred thoroughly in item container. When applying also, the paint shall be continuously stirred in the smaller container, so that its consistency is kept uniform.

2.4.2. The paint shall be laid on evenly and smoothly by means of crossing and laying off the crossing and consist of covering the area over with paint, brushing the surface hard for the first time over and then, brushing alternately in opposite direction two or three times and then finally brushing lightly in direction at right angles to the same. In this process, no brush Marks shall be left after the laying off is finished. No hair marks from the brush or clogging of paint puddles in the corners of panels, angles of moldings, etc. shall be left on the work. The full process of crossing and laying off will constitute one coat.

2.4.3. The paint shall be applied with brush or rollers. For undecorated surfaces, the surface shall be treated with minimum two coats of cement water proofing paint. The second or subsequent coat shall not be started until the preceding coat has become sufficiently hard to resist marking by brushing being used.

2.4.4. The surface on finishing shall present a flat velvety smooth finish. It shall be even and uniform in shade without patches, brush marks, paint drops etc.

**.5. Precautions:**

(a) Old brushes if they are to be used with emulsion paints, shall be completely dried of turpentine or oil paint by washing in warm soap water. Brushes shall be quickly washed in water immediately after use and kept immersed in water during break periods to prevent the paint from hardening on the brush.

(b) In the preparation of wall for plastic emulsion painting, no oil base putty shall be used in filling cracks, holes etc.

(c) Splashes on floors etc. shall be cleaned out without delay as they will be difficult to remove after hardening.

(d) Washing of surfaces treated with emulsion paint shall not be done within 3 to 4 weeks of application

2.6. Protective payment: The relevant specifications of item No. 18.11 shall be followed.

3.0. Mode of measurements and payment

3.1. The relevant specifications of item No. 18.11 shall be followed.

**3.2. The rate shall be for a unit of One sq. meter.**

**Item No. 41 : Applying two coats of Birla or Asian acrylic lappy (putty) and two coats of approved brand and manufacture on new wall surface to give an even shade including thoroughly brushing the surface free from mortar dropping and other foreign matter and sand paper smooth.**

The work shall be executed as per the specification of "Item No. 18.57. Page No. 136 "of attached Building Specification Booklet.

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

**Item No. 42 : Painting two coats including priming coat on new steel and other metal surfaces with enamel paint brushing, interior to give enamel paint brushing, interior to give an even shade including cleaning the surface of all dirt, dust and other foreign matter.**

The work shall be executed as per the specification of "Item No. 18.57 Page No. 136" of Building Specification Booklet.

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

**Item No. 43 : 20mm thick sand faced cement plaster on walls upto height 10 metres above ground level consisting of 12mm thick backing coat of C.M. 1:3 (1-cement : 3-sand) and 8mm thick finishing coat of C.M. 1:1 (1-cement : 1-sand) etc. complete.**

**1.0. Materials**

1.1. Water shall conform to M-1. Cement mortar shall conform to M-11.

**2.0. Workmanship**

2.1. The work shall be carried out in the coats. The backing coat (base coat) shall be 12 mm. thick in C.M. 1:3. The relevant specifications of item No. 17.58(I) shall be followed except that the thickness of back coat shall be 12 mm. average. Before the first coat hardens its surface shall be beaten up by edges of wooden tapers and close dents shall be made on the surface. The subsequent coat shall be applied after this coat has been allowed to set for 3 to 5 days, depending upon the weather conditions. The surface shall not be allowed to dry during this period.

2.2. The second coat shall be completed to 8 mm. thickness in C.M. 1:1 as described above, including raising sand facing by bushing. The sample of sand face shall be got approved before the work is started. The whole work shall be carried out uniformly as per sample approved.

2.3. Curing :

The curing shall be started overnight after finishing of plaster. The plaster shall be kept wet for a period of 7 days. During this period, it shall be protected from all damages.

**3.0. Mode of measurement & payment**

3.1. The relevant specifications of item No. 17.58 shall be followed except that the sand face plaster on outside up to 10 m. above ground level shall be measured under this item.

**3.2. The rate shall be for a unit of One sq. meter.**

**Item No. 44 : Providing laying and jointing in true line and level 15mm dia. U.P.V.C. Pipe ( SCH- 40) for cold water including fittings as approved by Engineer In Charge. Pipe shall be fixed on the wall with the help of clamp at every two metre C/C or shall be cancelled as directed including necessary fittings etc. including testing of pipe and joints and fixing the same with adhesive solvent, including cost of all materials.**

The work shall be executed as per the specification of "Item No. 23.8 Page No. 162 (15 mm dia. shall be used)" of Building Specification Booklet.

Payment shall be made on Rmt basis.

**Item No. 45 : Providing laying and jointing in true line and level 25mm dia. U.P.V.C. Pipe ( SCH- 40) for cold water including fittings as approved by Engineer In Charge. Pipe shall be fixed on the wall with the help of clamp at every two metre C/C or shall be cancelled as directed including necessary fittings etc. including testing of pipe and joints and fixing the same with adhesive solvent, including cost of all materials. [B] 25mm dia..**

The work shall be executed as per the specification of "Item No. 23.8 Page No. 162 (25 mm dia. shall be used)" of Building Specification Booklet.

Payment shall be made on Rmt basis.

**Item No. 46 : Providing laying and jointing in true line and level 40mm dia. U.P.V.C. Pipe ( SCH- 40) for cold water including fittings as approved by Engineer In Charge. Pipe shall be fixed on the wall with the help of clamp at every two metre C/C or shall be cancelled as directed including necessary fittings etc. including testing of pipe and joints and fixing the same with adhesive solvent, including cost of all materials.[D] 40 mm.**

The work shall be executed as per the specification of "**Item No. 23.8 Page No. 162 (40 mm dia. shall be used)**" of **Building Specification Booklet**.

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

**Item No. 47 : Providing and fixing Handle valve of approved brand (B) 25mm dia.,**

1. Valve Type: Stainless steel Handle valve Material: Stainless steel construction, Diameter: 25mm (as per IS approved standards), Brand: Specify the approved brand or list of acceptable brands

1. Compliance Standards:

Ensure that the valve meets the standards set by the Indian Standards (IS) for quality and safety.,

Mention any specific certifications or approvals required by local building codes or regulations.

1. Installation Requirements:

Specify the method for fixing the valve securely in place., Include any additional components needed for installation, such as gaskets, bolts, or flanges.

1. Testing and Quality Assurance:

Mention any required testing procedures to ensure the proper functioning of the valve., Specify any quality control measures or inspections needed before and after installation.

1. Operational Specifications:

Describe how the valve should operate and its intended function within the system., Include any specific instructions or considerations for opening, closing, and maintaining the valve.

1. Safety Measures:

Specify any safety precautions to be taken during installation or operation of the valve., Ensure compliance with safety standards to prevent accidents or malfunctions.

1. Warranty and Maintenance:

Outline any warranty information provided by the manufacturer., Specify recommended maintenance procedures to ensure the longevity and optimal performance of the valve.

1. Testing and Commissioning:

Specify any testing or commissioning procedures required before the valve is put into service.,

Detail the responsibilities for testing and commissioning, whether by the supplier, contractor, or third-party agency.

Payment shall be made on **No** basis.

**Item No. 48 : Providing and fixing Handle valve of approved brand (C) 40mm dia.,**

1. Valve Type: Stainless steel Handle valve Material: Stainless steel construction, Diameter: 25mm (as per IS approved standards), Brand: Specify the approved brand or list of acceptable brands

**1. Compliance Standards:**

Ensure that the valve meets the standards set by the Indian Standards (IS) for quality and safety., Mention any specific certifications or approvals required by local building codes or regulations.

**1. Installation Requirements:**

Specify the method for fixing the valve securely in place., Include any additional components needed for installation, such as gaskets, bolts, or flanges.

**1. Testing and Quality Assurance:**

Mention any required testing procedures to ensure the proper functioning of the valve., Specify any quality control measures or inspections needed before and after installation.

**1. Operational Specifications:**

Describe how the valve should operate and its intended function within the system., Include any specific instructions or considerations for opening, closing, and maintaining the valve.

**1. Safety Measures:**

Specify any safety precautions to be taken during installation or operation of the valve., Ensure compliance with safety standards to prevent accidents or malfunctions.

**1. Warranty and Maintenance:**

Outline any warranty information provided by the manufacturer., Specify recommended maintenance procedures to ensure the longevity and optimal performance of the valve.

**1. Testing and Commissioning:**

Specify any testing or commissioning procedures required before the valve is put into service., Detail the responsibilities for testing and commissioning, whether by the supplier, contractor, or third-party agency.

Payment shall be made on **No** basis.

**Item No. 49 : Providing, laying and jointing in true line and level 75 diameter U.P.V.C (Type B) conforming to IS 13592-1992 with one end plain and other end socketed with rubber ring, & fittings conforming to ISI 14735-1999 of approved make for drainage system pipe line, pipe shall be jointed with each other with rubber lubricant, pipe shall be fixed on wall using of PVC clamp of the size 110 mm diameter x 149 mm length x 145 mm height at every 2000 mm center to center or shall be concealed in walls as directed including necessary fittings such as bends, shoes etc. including testing of pipes and joints and jointed with adhesive solvent cement including cost of all materials.**

The work shall be executed as per the specification of "Item No. 28.8 (II) Page No. 162 (75 mm dia. U.P.V.C (Type B) pipe shall be used)" of Building Specification Booklet.

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

**Item No. 50 : Providing and fixing MS Z clamp on Wall or ceiling for Pipe Fitting including all type necessary fittings and accessory etc. completed as per directed engineer in charge.**

- Assessment and Planning: Identify the locations where the pipes need to be mounted on the wall or ceiling.
- Determine the appropriate placement for the MS Z clamps to support the pipes securely.
- Material and Tools Gathering: Procure the required MS Z clamps along with necessary fittings and accessories.
- Gather tools such as a drill, screws, anchors, and a measuring tape.
- Marking and Positioning: Mark the spots where the MS Z clamps will be installed, ensuring they align with the pipe layout.
- Use a level to ensure the markings are straight and accurately positioned.
- Installation of MS Z Clamps: Drill holes at the marked spots on the wall or ceiling for the MS Z clamps.
- Place the clamps and attach them securely using appropriate screws or anchors.
- Ensure the clamps are firmly fixed to provide sturdy support for the pipes.
- Fitting the Pipes: Mount the pipes onto the installed MS Z clamps securely.
- Use additional fittings and accessories as necessary to connect and secure the pipes in place.
- Alignment and Adjustment: Check the alignment of the pipes and make necessary adjustments to ensure they are level and properly positioned.
- Tighten the fittings and clamps to secure the pipes firmly in place.

Completion and Clean-Up: Once all pipes are securely mounted, ensure the installation meets the Engineer-in-Charge's specifications.

Clean up any debris or leftover materials from the installation area.

**The rate will be made on No basis of the finished work.**

**Item No. 51 : Providing and fixing PVC SWR Nahni trap IS 14735 for drain - 100 mm diameter with jali of the following nominal diameter of self cleansing design with C.I scread down or hinged grating including the cost of cutting and making good the walls.**

**1.0. Materials**

1.1. The cast iron (spun) Nahni trap shall conform to M-69. The C.I. hinged or screwed down cover shall be of best quality

**2.0. Workmanship**

2.1. The Nahni trap with 100 mm. dia inlet and 50 mm. dia. outlet shall be fixed as per drawing or as directed.

2.2. The Nahni trap shall be jointed with C.I. Pipe, 75 mm. dia. with lead joints. The lead joints shall be done in conformation with I.S. 782.-1976.

**3.0. Mode of measurements and payment**

3.1. The rate includes cost of all labour, materials, tools and plants etc. required for satisfactory completion of this item including lead, jointing and testing.

3.2. The rate shall be for a unit of one number.

**Item No. 52 : Providing & Fixing Premium quality approved make Bib cock with wall flange including labour, material, transportation etc. complete as directed by engineer in charge.**

The work shall be executed as per the specification of "**Item No. 2.1 Page No. 170 Bib cock of Building Specification Booklet.**"

Payment shall be made on **No.** basis.

**Item No. 53 : Providing and fixing C.P. Brass health faucet with cleaning system 1.25mt. Long P,V.C. flexible tubes and ABS wall hook with angular stop cock with extension nipple 62mm log etc. complete.**

The work shall be executed as per the specification of "**Item No. 2.1 Page No. 170 Bib cock of Building Specification Booklet.**"

Payment shall be made on **No.** basis.

**Item No. 54 : Providing & Fixing Premium quality approved make Quarter Turn Pillar Cock for Basin including labour, material, transportation etc. complete as directed by engineer in charge**

The work shall be executed as per the specification of "**Item No. 23.8, Page No. 173" of Building Specification Booklet.**"

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

**Item No. 55 : Applying two coats of two component dampproof coating of approved brand and manufacture on undecorated wall surface to give an even shade including thoroughly brushing the surface free from mortar droppings and other foreign matter and sand papered smooth as per instruction of Engineer In Charge.**

1. **Manufacturer's Specifications:** Start by exploring products from reputable manufacturers that specialize in crystalline waterproofing.

2. **Certification Check:** Look for products that have certifications from recognized bodies or organizations such as ICC-ES, Ecolabel programs, or the FDA.

3. **Technical Data:** Ensure the product's technical data sheets provide information on crystalline waterproofing, SEM photographs, testing reports, and compliance with relevant standards (IS, ASTM, etc.).

**Evaluation Criteria:**

1. **Compliance:** Verify if the product meets the standards you've listed (IS 2645, IS 516, ASTM C 1202-05, FDA standards, etc.).

2. **Testing Reports:** Request testing reports from manufacturers for SEM photographs, permeability tests, chloride penetration reduction, and chemical erosion resistance.

1. **Certifications:** Check if the product is listed in ICC-ES EVALUATION REPORT INDEX and holds green certifications from recognized Ecolabel programs.

2. **Application Method:** Ensure the product's application aligns with the approved method of waterproofing accepted by the Engineer in Charge.



1. **Tender Process:** During the tender process, request comprehensive documentation from potential suppliers, including test reports, certifications, and compliance details.

2. **Review and Approval:** Evaluate the documentation provided by suppliers thoroughly, seeking clarification or additional information as needed.

3. **Contractual Agreement:** Once you've selected a product and supplier, establish a contractual agreement outlining the scope of work, compliance standards, and warranties.

4. The rate shall be for a unit of one sq. meter.

**Item No. 56 : Finishing wall with weather proof exterior emulsion paint on wall surface (two coats) to give an required shape even shade after thoroughly brushing the surface to remove all dirt, and remains of loose powdered materials. etc complete**

#### **1.0. Materials**

Water shall be conforming M-1. The plastic emulsion shall conform to I.S.: 5411-1969 (part- I).

##### **• Workmanship**

• Scaffolding: The relevant specifications of item-No. 18.11 Para 2.1 shall be followed.

• Preparation of surface: The relevant specification of item No. 18.44 Para 2.2 shall be followed.

##### **• Preparation of Mix :**

This shall be done as per manufacturer's instructions. The thinning of emulsion is to be done with water and not with turpentine. The quantity of thinner to be added shall be as per manufacturer instructions.

##### **• Application:**

• Before pouring into small containers for use, the paint shall be stirred thoroughly in item container. When applying also, the paint shall be continuously stirred in the smaller container, so that its consistency is kept uniform.

• The paint shall be laid on evenly and smoothly by means of crossing and laying off the crossing and consist of covering the area over with paint, brushing the surface hard for the first time over and then, brushing alternately in opposite direction two or three times and then finally brushing lightly in direction at right angles to the same. In this process, no brush Marks shall be left after the laying off is finished. No hair marks from the brush or clogging of paint puddles in the corners of panels, angles of moldings, etc. shall be left on the work. The full process of crossing and laying off will constitute one coat.

• The paint shall be applied with brush or rollers. For undecorated surfaces, the surface shall be treated with minimum two coats of cement water proofing paint. The second or subsequent coat shall not be started until the proceeding coat as become sufficiently hard to resist marking by brushing being used.

2.4.4. The surface on finishing shall present a flat velvety smooth finish. It shall be even and uniform in shade without patches, brush marks, paint drops etc.

#### **2.6. Precautions:**

3 xix. Old brushes if they are to be used with emulsion paints, shall be completely dried of turpentine or oil paint by washing in warm soap water. Brushes shall be quickly washed in water immediately after use and kept immersed in water fusing break periods to prevent the paint from hardening on the brush.

4 xx. In the preparation of wall for plastic emulsion painting, no oil base petals shall be sued in filling cracks, holes etc.

5 xxi. Splashes on floors etc. shall be cleaned out without delay as they will be difficult to remove after hardening.

6 xxii. Washing or surfaces treated with emulsion paint shall not be done within 3 to 4 weeks of application

7 2.6. Protective payment: The relevant specifications of item No. 18.11 shall be followed.

8 • Mode of measurements and payment

9 • The relevant specifications of item No. 18.11 shall be followed.

• The rate shall be for a unit of **One sq. meter**.

### **Item No. 57 : Providing thoruting or plaster drip and moulding to R.C.C. chhajja.**

#### **1.0. Materials**

Water shall conform to M-1. Cement shall conform to M-3. Sand shall conform to M-6 Cement mortar shall conform to M-11

#### **2.0. Workmanship**

2.1. The work shall be carried out as directed. The proportion of mix for finishing shall be in C.M. 1:2 by volume. Curing shall be done for not less than 7 days. The work shall be carried out in best workman like manner. The thwarting or plaster drip and moulding shall be one centimeter in thickness.

### **Item No. 58 : Providing and fixing stainless steel kitchen sink glossy AISI 304 grade and 1 mm thick with overall size 610mm x 460mm x 330mm deep having bowl size 560mm x 410mm x 200mm of Nirali or equivalent brand with all fittings CI or MS brackets painted white or fixing on stone base including cutting holes and making good the same brass valve and fisher union fitting including all necessary fittings**

#### **1.0. Materials**

1.1. White glazed vitreous china sink 600 mm. x 450 mm. x 150 mm. size shall conform to M-63.

#### **2.0. Workmanship**

2.1. The kitchen sink shall be supported on a pair of M.S. or C.I. brackets fixed in cement mortar 1:3 (1 cement : 3

coarse sand). The M.S. or C.I. brackets shall conform to I.S. 775-1962. The wall plaster on the rear shall be cut to rest

over the top edge of the sink. After fixing the sink, plaster shall be made good and the surface finished to match with the existing one.

2.2. The C.P. brass trap and union shall be connected to 40 mm. nominal bore galvanised mild steel waste pipe which shall be suitably bent towards the wall and which shall discharge into an open drain leading to gully-trap or

direct into the gully-trap on the ground on floor and shall be connected to a waste pipe through a floor trap on the

upper floors. C.P. brass trap and union may not be provided where surface drain or a floor trap is placed directly under

the sink and the waste is discharged to it vertically.

2.3. The height of front edge of the wash basin from the floor, level shall be 80 cms.

#### **3.0. Mode of measurements & payment**

3.1. The rate includes cost of all labour, materials, tools and plant and other equipment required for satisfactory completion of this item as described in workmanship.

3.2. The rate shall be for a unit of One number.

**Item No. 59 : Constructing Sandwich Platform of 18 mm thick Polished Black Granite at top and 25 mm thick Kota stone slab using cement mortar 1:3 for sandwich and fitting at bottom & edges with waterproof rigid adhesives including macking necessary grooves in walls with Vertical Kotastone 30 mm x 2 No sandwich thick every 60 cm centre to centre including all labour material of approved quality incl. full moulded round front edge fixed in wall for partition and jointed with grey cement slurry including rubbing and polishing etc. complete**

**Specification – Sandwich Platform with Granite & Kota Stone**

Providing and constructing sandwich platform comprising **18 mm thick polished black granite** on top and **25 mm thick Kota stone slab** at bottom, fixed in cement mortar **CM 1:3** (1 cement : 3 coarse sand) for sandwich construction, including fixing at bottom and edges with approved waterproof rigid adhesive.

The work shall include making necessary grooves in walls and providing vertical Kota stone supports of size **30 mm thick × 2 Nos. sandwich pieces** at every **60 cm centre-to-centre**, complete with all labour and materials of approved quality.

The front edge shall be full moulded/rounded finish, properly fixed into walls for partition support, and joints finished with grey cement slurry. The surface shall be neatly rubbed and polished to required finish.

Complete in all respects as per approved drawings, specifications, and instructions of the Architect/Engineer-in-Charge.

**Specification – Sandwich Platform with Black Granite & Kota Stone**

Providing and fixing sandwich type platform consisting of **18 mm thick polished black granite stone** at top and **25 mm thick Kota stone slab** at bottom, laid and bonded in **cement mortar CM 1:3** (1 cement : 3 coarse sand), including necessary alignment, leveling, cutting, edge finishing, and fixing complete.

The work shall include fixing the bottom and exposed edges using approved quality waterproof rigid adhesive, making necessary grooves/chases in walls, and providing vertical Kota stone supports of sandwich section comprising **2 Nos. of 30 mm thick Kota stone members** at every **60 cm c/c** for proper structural support.

The platform shall be provided with machine-moulded rounded front edge/profile finish, properly embedded and fixed into wall/partition supports. All joints shall be neatly finished with grey cement slurry, including rubbing, grinding, and polishing to achieve a smooth and uniform finish.

The rate shall be for a unit of One Sqm.

**Item No. 60 : Providing and fixing 18MM TERMITE PROOF PLY (GREENPLY OR EQUIVALENT) WITH BOTH SIDE LAMINATE & PVC BEADING ON PERIPHERY and Providing and Fixing Stainless Steel (Grade -316) accessories, sheet cutlery basket (2 Nos), Thali Basket(2 Nos), Plain Basket(2 nos), Cup Saucer Basket (2 Nos) of size 520 x 485 x 100 mm fixing on telescopic channel (GODREJ OR EQUIVALENT) having hardware like handles, dead lock, magnet etc with fixing all expose surface are decoartive laminate sheet and other inner surfaces are 1.0 mm thick lamiate including all necessary fixture and fastening ( Steel handle, hinges, stopper , chains and locking arrangement etc. complete as directed by Engineer-in-charge.**

**Specification – Modular Kitchen Shutters with Accessories & SS Storage Units**

Providing and fixing **18 mm thick termite proof plywood (Greenply or approved equivalent)** for shutters and carcass members, finished with **decorative laminate on both sides**, including provision of **PVC beading on all exposed periphery edges** for protection and durability.

The work shall include providing and fixing **Stainless Steel Grade 316 kitchen accessories** consisting of:

- Sheet cutlery basket – 2 Nos
- Thali basket – 2 Nos
- Plain basket – 2 Nos
- Cup & saucer basket – 2 Nos

of size **520 × 485 × 100 mm**, mounted on approved quality **telescopic channels (Godrej or equivalent approved make)** for smooth sliding operation.

All internal surfaces shall be finished with **1.0 mm thick laminate**, and all exposed visible surfaces shall be finished with **decorative laminate sheet of approved shade and pattern**.

The work shall include providing all necessary hardware fittings such as:

- Stainless steel handles
- Hinges
- Magnetic catch
- Dead lock arrangement
- Door stopper
- Chains
- Locking arrangement
- Screws, fasteners, and other required fixtures

All edges shall be properly sealed and finished with PVC lipping/beading for durability and moisture resistance.

Complete in all respects including material, labour, cutting, fitting, alignment, finishing, and installation as per approved drawings, specifications, and instructions of the Engineer-in-Charge.

Payment shall be made on Sqm basis.

**Item No. 61 : Providing & fixing Gypsum board false ceiling as per architectural drawing using M.S. 'E' bottom channel frame work average 450 mm x 450 mm c/c grid, vertical 'L' & 12.5 mm thick Gypsum board sheet of Saint Gobain with providing boxes for lighting arrangement including all fixtures and fastening etc. complete.**

**Specification – Gypsum Board False Ceiling**

Providing and fixing false ceiling of **12.5 mm thick Gypsum board (Saint-Gobain or approved equivalent)** as per architectural drawings, including suspension and support system with **M.S. 'E' bottom channel framework** forming an average grid of **450 mm × 450 mm c/c**.

The framework shall include vertical **'L' sections and channels**, properly suspended and levelled with necessary hangers, cleats, fasteners, screws, anchors, and accessories to ensure rigid and stable installation.

The work shall also include making provision for **lighting arrangements**, including necessary cut-outs, boxing, recesses, and framing for light fixtures, downlights, and other electrical fittings as per drawing requirements.

The gypsum boards shall be fixed properly to the framework with approved screws, joints shall be taped and finished smooth with jointing compound, and the surface shall be prepared ready for painting/finishing as directed.

The rate shall include all materials, labour, scaffolding, wastage, finishing, and all fixtures & fastenings complete in all respects as per approved drawings, specifications, and instructions of the Architect/Engineer-in-Charge.

The rate shall be for a unit of **Sqm.**

**Item No. 62 : Blinds assemblies are to be supplied & installed in all windows with great precision. It should be water resistant and fitted on aluminium head rails duly power coated and fitted with stainless steel drive rods. Manual operated and should have ISI mark. Providing & fixing roller type window curtains of Deck, Aerolux, Siddhi or eq. make including same brand channel - chain mechanism, synthetic black out fabric of approved colour & design, silver coated backside, same fabric plated pelmet etc. with all necessary fittings etc. complete as per Architect/ Site engineer's instructions as per sized specified in detail drawings. Material selection should be as per engineer in charge and chief architect.**

#### **Specification – Roller Blinds / Window Curtains**

Providing, supplying, and installing roller blind assemblies for all windows with high precision and proper alignment as per architectural drawings and site conditions.

The system shall be water resistant and shall be fixed on **powder-coated aluminium head rails**, complete with **stainless steel drive rods** and all necessary fittings and accessories. The blinds shall be **manually operated**, smooth in operation, and conforming to **ISI marked standards**.

The work shall include providing and fixing **roller type window curtains** of approved makes such as **Deck, Aerolux, Siddhi or equivalent approved**, including matching channel and chain mechanism of same brand.

The fabric shall be **synthetic blackout fabric** of approved colour and design, with **silver coated backing**, providing complete light control and thermal insulation. The system shall also include matching **fabric pleated/padded pelmet** for a neat and finished appearance.

The installation shall include all necessary fixtures such as brackets, end caps, screws, supports, locking arrangements, and fastening accessories required for proper functioning and durability.

All blinds shall be installed strictly as per approved shop drawings, window sizes, and instructions of the Architect / Site Engineer. Material selection, shade, and finish shall be as directed by the Engineer-in-Charge and Chief Architect.

Complete in all respects including supply, installation, testing, adjustment, and commissioning of the system.

payment shall be made on Sqm basis.

**Item No. 63 : Pro. & Fix. wash down water closet (European w. c .pan) with integral" p " or " s " trap and PVC flushing cistern with a pair of C.L.I. Or Mild steel Brackets, complete with fittings such as lead value siphon, 15 mm. Nominal size brass ball valve with polythene float, C.P. Brass handle unions and couplings for connections with inlet, outlet and over flow pipes, 40 mm. dia. flush bend including cutting holes in walls and making good the same connecting the flush bend with cistern and closet etc comp incl plastic sheet cover including jointing trap with pipe in cm 1:1 (a) Viterous china in white or colour**

The work shall be executed as per the specification of "Item No. 23.111.(A)(I) Page No. 163 Item No. 23.113 (A) Page No. 165 Item No. 23.114 Page No. 165 Item No. 23.96 (A) + 23.00.4 Page No. 171" of attached Building Specification Booklet.  
Payment shall be made on **Each** basis.

**Item No. 64 : Providing and fixing wash basin with pedestal of std. Height with single hole for pillar tap with C.I or M.S brackets painted white including cutting cutting holes and making good the same including C.P. brass waste and waste pipes and bottal trap (A) Vitreous China: (ii) Flat Back washbasin 550 mm x 400mm size.In colour.**

The work shall be executed as per the specification of "Item No. 23.127 Page No. 167 Item No. 23.135 (A) Page No. 168 Item No. 23.136 (A) Page No. 168" of attached Building Specification Booklet.  
Payment shall be made on Each basis.

**Item No. 65 : Providing and fixing PVC SWR Nahni trap IS 14735 for drain - 100 mm diameter with jali of the following nominal diameter of self cleansing design with C.I sread down or hinged grating including the cost of cutting and making good the walls.**

#### **1.0. Materials**

1.1. The cast iron (spun) Nahni trap shall conform to M-69. The C.I. hinged or screwed down cover shall be of best quality

#### **2.0. Workmanship**

2.1. The Nahni trap with 100 mm. dia inlet and 50 mm. dia. outlet shall be fixed as per drawing or as directed.

2.2. The Nahni trap shall be jointed with C.I. Pipe, 75 mm. dia. with lead joints. The lead joints shall be done in conformation with I.S. 782.-1976.

#### **3.0. Mode of measurements and payment**

3.1. The rate includes cost of all labour, materials, tools and plants etc. required for satisfactory completion of this item including lead, jointing and testing.

3.2. The rate shall be for a unit of one number.

**Item No. 66 : Providing and fixing screw down bib taps of following size.(A) Brass screw down bib tap polished bright. (i) 15mm dia.**

The work shall be executed as per the specification of "Item No. 23.92. (A) Page No. 170 " of Building Specification Booklet.

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

**Item No. 67 : Providing and fixing C.P. brass shower rose with 15mm or 20mm inlet.(A) 100mm dia. Each**

The work shall be executed as per the specification of "Item No. 23.92. (A) Page No. 170 " of Building Specification Booklet.

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

**Item No. 68 : Providing and fixing Brass complete Diverter set , silver chrome finish diverter outer body of high flow single lever concealed mixer & diverter for bath & Shower system with diverter assembly & cartridge sleeve inclusive exposed parts kits complete as directed by engineer in charge**

**Specification – Brass Diverter Set (Concealed Type)**

Providing and fixing **brass complete diverter set** with **silver chrome finish**, suitable for bath and shower system, comprising high flow **single lever concealed mixer with diverter arrangement**.

The diverter shall be complete with diverter assembly, cartridge, sleeve, and all required internal and external components including exposed part kits for proper functioning and finishing.

The unit shall be of approved quality, corrosion resistant, and suitable for concealed installation in wall, ensuring smooth operation, leak-proof performance, and long service life.

The work shall include all necessary fittings, fixtures, supports, connections, sealing materials, testing, and commissioning complete in all respects.

Complete as per approved make, drawings, specifications, and as directed by the Engineer-in-Charge.

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



**Item No. 69 : Providing and fixing Spout heavy duty of following size Brass chromium plated (i) 15mm dia.**

The work shall be executed as per the specification of "Item No. 23.96 (A) Page No. 171 " of Building Specification Booklet.

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

**Item No. 70 : Providing and fixing toilet paper holder.(A) C.P. Brass**

The work shall be executed as per the specification of "Item No. 23.146.(A) Page No. 169" of Building Specification Booklet.

The rate shall be for a unit of One number.

**Item No. 71 : Providing and fixing C.P. Brass health faucet with cleaning system 1.25mt. Long P,V.C. flexible tubes and ABS wall hook with angular stop cock with extension nipple 62mm log etc. complete.**

The work shall be executed as per the specification of "Item No. 23.146.(A) Page No. 169" of Building Specification Booklet.

The rate shall be for a unit of One number.

**Item No. 72 : Providing and fixing pillar tap, capstan head, screw down high pressure with screws, shanks and back nuts.(i) 15mm dia.**

The work shall be executed as per the specification of "Item No. 23.95.(A) Page No. 170" of Building Specification Booklet.

The rate shall be for a unit of One number.

**Item No. 73 : Providing and fixing 600mm x 450mm bevelled edge mirror of superior glass mounted on 6mm thick A.C. sheet or plywood sheet and fixing to wooden pluge with C.P. brass screws and washers.**

**1.0. Materials**

1.1. The 600 mm. x 450 mm. size mirror shall be of superior glass with edge rounded over beveled as specified. It shall be free from flaws specks, or bubbles and its thickness shall not be less than 6 mm. The glass for the mirror shall be uniformly silver plated at the back and shall be free from silvering defects Silvering shall have a protective uniform covering of red lead paint. The 6 mm thick plywood shall conform to M-37. The 6 mm. thick A.C. sheets shall conform to M-24.

**2.10. Workmanship**

2.11. The mirror of 600 mm. x 450 mm. size mounted on A.C. Sheet or plywood 6 mm thick with C.P. brass clips shall be fixed as directed, by fixing wooden plugs in wall and C.P brass screws and washers. The work shall be carried out in best workman like manner.

**3.0. Mode of measurements & payment**

3.1. The rate includes cost of all labour and materials, tools and plant etc. required

The Payment shall be made on Number basis.

**Item No. 74 : Providing and fixing C.P. brass towel rail complete with C.P. brass brackets fixed to wooden plugs with C.P. brass screws.(B) 600mm x 20mm size**

**Materials:**

600mm x 120mm glass shelf with C.P. brass bracket and guard rail complete mixed to wooden plug with C.P. brass screws

**Labour:**

The Work of writing board shall be done with extreme finishing. The water proof ply wood shall be fixed as support to glass board and glass shall be fitted on top as directed by Engineer in charge. All the fixtures and fastenings shall be fitted at right angle and shall jointed with zero joint as directed by Engineer in charge. It shall be fixed on wall as directed by Engineer in charge.

**Mode of Payment:**

The Payment shall be made on Number basis of finished work done.

**Item No. 75 : Providing and fixing S.W. gully trap with C.I. grating brick masonry chamber and water tight C.I. cover with frame of 300mm x 300mm size (inside) with standard weight.(i) Square mouth traps.(B) 150mm x 100mm size P of R type**

. **1.0. Materials :** (t) Water shall conform to M-1. (2) Cement mortar of proportion 1:5 shall conform to M-11. (3) Burnt brick shall conform to M-15. (4) The S.W. Galley trap of 100 mm. x 100 mm. size shall confirm to .M-70.

**7.3. Workmanship**

**7.4.** Excavation for gully trap shall be done true to dimensions and levels as indicated on plans or as directed. The excavation work shall generally be done as per relevant specifications of item 4.0.0.of earth work.

**7.5. Fixing:**

7.5.1. The gully trap shall be fixed over cement concrete 1:5:10 (1 cement : 5 sand : 10 graded brick bats aggregate 40 mm nominal size) foundation. 650 square and 100 mm. thick The depth of top of concrete below the ground level shall be 675 mm. The jointing of gulley outlet to the branch drain shall be done similar to jointing of S.W. pipe ac; described in item No. 24.1 (A) (Building Specification Booklet).

- Brick masonry chamber : After fixing and testing gulley and branch drain, a brick masonry 300 x 330 mm. inside with bricks in CM 1:5 (1 cement : 5 sand) shall be built with a 100 mm. brick work round OH; gulley trap from the top of bed concrete up to ground level. The space between the chamber walls and the trap shall be filled with cement concrete 1:5:10. The upper portion of the chamber i.e. above the top level of the trap shall be plastered inside with cement mortar 1:3 (1 cement: 3 sand) finished with floating coat of neat cement. The corners and bottom of the chamber shall be rounded of so as to slope towards the grating.

- C.I. cover with frame 300 mm, x 300 mm. (inside) size shall then be fixed on the top of the brick masonry with C.c. 1:2:4 ( 1 lent : 2 coarse sand : 4 graded aggregate 20 mm. nominal size) 40 mm. thick and rendered smooth. The finished top of the cover shall be left about 40 mm. above the adjoining ground level so as to exclude the surface water from entering the gulley trap.

**7.2. Mode of measurements & payment**

7.3. The rate includes cost of all labour, materials, tools and plant etc. required for satisfactory completion of this item as described above.

3.2. The rate shall be for a unit of one number basis.

**Item No. 76 : Providing and fixing CP brass screw down stop cock of approved quality 15mm size with adjustable wall flange..**

The work shall be executed as per the specification of "Item No. 23.95.(A) Page No. 170" of Building Specification Booklet.

The rate shall be for a unit of One number.

**Item No. 77 : Providing and fixing 18MM TERMITE PROOF PLY (GREENPLY OR EQUIVALENT) WITH BOTH SIDE LAMINATE & PVC BEADING ON PERIPHERY and Providing and Fixing Stainless Steel (Grade -316) accessories, sheet cutlery basket (2 Nos), Thali Basket(2 Nos), Plain Basket(2 nos), Cup Saucer Basket (2 Nos) of size 520 x 485 x 100 mm fixing on telescopic channel (GODREJ OR EQUIVALENT) having hardware like handles, dead lock, magnet etc with fixing all expose surface are decoartive laminate sheet and other inner surfaces are 1.0 mm thick lamiate including all necessary fixture and fastening ( Steel handle, hinges, stopper , chains and locking arrangement etc. complete as directed by Engineer-in-charge.**

**Specification – Modular Kitchen Units with SS Accessories**

Providing and fixing **18 mm thick termite proof plywood (Greenply or approved equivalent)** for shutters and carcass, finished on both sides with **decorative laminate sheet of approved shade and design**, including **PVC edge banding/beading on all exposed periphery** for protection against moisture and wear.

The work shall include providing and fixing **Stainless Steel Grade 316 kitchen accessories** comprising:

- Sheet cutlery baskets – 2 Nos
- Thali baskets – 2 Nos
- Plain baskets – 2 Nos
- Cup & saucer baskets – 2 Nos

of size **520 × 485 × 100 mm**, mounted on approved quality **telescopic channels (Godrej or equivalent approved make)** for smooth sliding operation and durability.

All internal surfaces shall be finished with **1.0 mm thick laminate**, while all exposed visible surfaces shall be finished with **decorative laminate of approved colour, texture, and pattern**.

The work shall include all necessary hardware and fittings such as:

- Stainless steel handles
- Hinges
- Magnetic catch
- Dead lock arrangement
- Chains
- Locking system
- Stoppers
- Screws, fasteners, and all required fixtures

All edges shall be properly sealed with PVC beading for water resistance and long-term durability.

The complete work shall include design, material, fabrication, fixing, alignment, finishing, and installation as per approved drawings, makes, and instructions of the Engineer-in-Charge.

Payment shall be made on Sqm basis.

**Item No. 78 : Repairing to Door / Window including disassembling from frame, wroughting, providing patti, angles, replacing / repairing stoppers - aldrops - handles etc. for proper fixing in to frame hole etc. complete for smooth operation and proper utilization including assambeling and Refixing of the same and Painting one coats (excluding priming coat) on previously painted wood and wood based surface with enamel paint, to give an even shade including cleaning the of all dirt, dust and other foreign matter. as directed by Engineer-in-charge.**

### **1. Scope of Work**

This specification covers the **repair, disassembly, reassembly, and painting** of **wooden doors/windows**, including replacement of defective parts and ensuring smooth operation.

### **2. Work Details**

#### **A. Disassembly & Inspection**

1. Carefully **dismantle the door/window from the frame** without causing damage.
2. Inspect for **damaged, worn-out, or misaligned components** such as hinges, handles, stoppers, AL drops, etc.
3. Identify any **woodwork issues** such as cracks, warping, or termite damage.

#### **B. Repair & Replacement**

4. **Roughing (reshaping/smoothing) the wooden surface** where necessary.
5. **Providing & fixing Patti, angles, or reinforcements** to strengthen the structure.
6. **Replacing or repairing defective hardware** such as:
  - o **Hinges, handles, stoppers, AL drops, latches, locks.**
  - o Adjusting for proper alignment and smooth movement.
7. **Ensuring a proper fit** into the frame hole for smooth operation.

#### **C. Reassembly & Fixing**

8. **Assemble and refax the door/window back into the frame.**
9. Check for **proper alignment and ease of operation** (opening/closing smoothly).

#### **D. Painting & Finishing**

10. **Cleaning the surface** thoroughly, removing dust, dirt, and old flakes.
11. **Applying one coat of enamel paint** over the previously painted surface:
  - o Ensuring **an even shade** without streaks.
  - o **Excluding primer coat** (if already primed).
12. **Final inspection** to ensure smooth operation and aesthetic finish.

### **3. Materials & Tools Required**

- **Patti, angles, screws, nails, adhesives** for reinforcements.
- **Hardware fittings:** Hinges, handles, stoppers, AL drops, locks.
- **Enamel paint (approved brand & shade)** for uniform finish.
- **Sandpaper, wire brush, putty** for surface preparation.
- **Paintbrushes/rollers** for smooth application.

### **4. Measurement & Payment**

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

**Item No. 79 : Providing and fixing Fly proof S. S. wire gauge of I.S.I gauge designation 85 G. with wire of dia.0.56 mm to windows and elevating windows including Anodized Aluminum Section with allu. power coated fittings and fixture etc complete.**

Specification: Providing & Fixing Fly-Proof SS Wire Gauge with Aluminium Frame

Providing and fixing **fly-proof stainless steel wire gauge (mosquito mesh)** to windows and ventilators, comprising the following:

*Wire Mesh*

- Supplying and fixing **stainless steel wire mesh** of ISI gauge designation **85 G**, made from **0.56 mm diameter wire**, ensuring:
  - Uniform mesh
  - Proper visibility and ventilation
  - Resistance to corrosion

*Frame*

- Providing and fixing **anodized / powder-coated aluminium sections** of approved size and profile, fabricated to required dimensions for windows and ventilators.

*Fittings & Accessories*

- Providing all necessary fittings and fixtures, including:
  - Aluminium clips / beading
  - Corner cleats
  - Rubber / PVC gaskets
  - Screws, fasteners, and fixing accessories

*Installation*

- Fixing the mesh securely within the aluminium frame.
- Properly installing the frame to window openings ensuring:
  - Tight fit
  - No gaps for insect entry
  - Easy removal (if required for cleaning)

*Finish*

- Aluminium sections to be **anodized or powder-coated** in approved colour and finish.

*Workmanship*

- The work includes **all materials, labour, tools, transportation**, complete in all respects, as per: ○

Approved drawings

- Specifications
- Instructions of the **Engineer-in-Charge**

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

**Item No. 80 : Providing and fixing Spout heavy duty of following size Brass chromium plated (i) 15mm dia.**

The work shall be executed as per the specification of "**Item No. 23.96 (A) Page No. 171** " of **Building Specification Booklet**.

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

**Item No. 81 : Providing and Arranging book storage having top 18 mm thick MR grade plywood with 4.00 mm thick veneer melamine polish finish with 0.8 mm balancing laminate. Shelves made of 12 mm thick clear float glass with all edge polish. Side and shutter made of 18mm**

**Specification – Book Storage Unit**

Providing and arranging book storage unit with top made of **18 mm thick MR grade plywood**, finished with **4.0 mm thick natural veneer and melamine polish on exposed surfaces**, and provided with **0.8 mm thick balancing laminate on the underside** for stability and moisture resistance.

The side panels and shutters shall be made of **18 mm thick MR grade plywood**, finished with matching veneer and melamine polish as per approved shade and finish.

The internal shelves shall be made of **12 mm thick clear float glass**, properly supported and fixed with suitable fittings, with all edges **machine polished and smoothened** for safety and aesthetic finish.

The unit shall include all necessary hardware such as hinges, handles, magnetic catch, supports, fasteners, screws, and fixtures required for proper functioning and durability.

All work shall be executed in line with approved drawings, specifications, and instructions of the Architect / Engineer-in-Charge, complete in all respects.

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