

**Name of work :- PROPOSED CONSTRUCTION OF LIBRARY BUILDING AT
VERATH VILLAGE, TA: MANDVI ,DIST.SURAT**

TECHNICAL SPECIFICATIONS

TECHNICAL SPECIFICATIONS

1.0 PREAMBLE:-

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

1.2 Site Information:-

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

2.0 GENERAL REQUIREMENTS:-

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

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

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

(2) The General Technical Specifications for Road works.

(3) The General Technical Specifications for Bridge works.

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

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

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

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

**Name of work: PROPOSED CONSTRUCTION OF LIBRARY BUILDING AT
VERATH VILLAGE, TA: MANDVI ,DIST.SURAT**

ITEM WISE SPECIFICATION

Item No. 13

Providing and laying controlled cement concrete M.250 and curing complete including the cost of formwork but Excluding the cost of reinforcement for reinforced concrete work in All Thickness in Walls PARDI All Floor.

1.0. Materials

- 1.1.** Water shall conform to M-1. Cement shall conform to M-3. Sand shall conform to M-6. Grit shall conform to M-8 Course aggregate shall conform M-12.

2.0. General

- 2.1.** The relevant specification of item No. 5.4.1. of ordinary concrete shall be followed except that the concrete mix shall be designed from preliminary tests. The proportioning of cement and aggregates shall be done by weight and necessary precautions shall be taken in the production to ensure that the required work cube strength is attained and maintained. The controlled concrete shall be in grades of M-100, M-150, M-200, M-250, M-300, M-350 & M-400 with prefix controlled added to it. The letter M refers to mix and the numbers specify 28 days work cube compressive strength of 150 mm. cubes of the mix expressed in Kg./Cmt.
- 2.2.** The proportion of cement, sand and coarse aggregate shall be determined of weight. The weight batch machine shall be used for maintaining proper control over the proportion of aggregates as per mix design. The strength requirements of different grades of concrete shall be as under:

Grade	Compressive strength of 15 cms. cubes in Kg./Cmt. at	Work test Min.
Concrete	28 days, conducted in accordance with I.S. 516-1959.	
Preliminary test Min.		
M-1 50	200	150
M-200	260	200
M-250	320	250
M-300	380	300
M-350	440	350
M-400	500	400

In all cases, the 28 days compressive strength specified in above be the criteria for acceptance or rejection of the concrete. Where the strength of a concrete mix as indicated

by tests, lies in between the strength of any two grades specified in the above table, such concrete shall be classified in for purpose as concrete belonging to the lower of the grades between which its strength lies.

3.0. Workmanship

- 3.1.** The proportions for ingredients chosen shall be such that concrete has adequate workability for conditions prevailing on the work question and can be properly compacted with means available except where it can be shown to the satisfaction of the Engineer-in-charge, that supply of properly graded aggregate of uniform quality can be maintained till the completion of work, grading of aggregate shall be controlled by obtaining the coarse aggregates in different sizes and bending them in the right proportions as required. Aggregates of different sizes shall be stocked in separate stock piles. The required quantity of material shall be stock piled several hours, preferably a day before use. The grading of coarse and fine aggregate shall be checked as frequently as possible, the frequency for a given job being determined by Engineer-in-charge to ensure that the suppliers are maintaining the uniform grading as approved for samples used in the preliminary tests..
- 3.2.** In proportioning concrete, the quantity of both cement and aggregate shall be determined by weight. Where the weight of cement is determined by accepting the maker's weight per bag, a reasonable number of bags shall be weighted separately to check the net weight. Where cement is weighted from bulk stocks at site and not by bags, it shall be weighed separately from the aggregate. Water, shall either be measured by volume in calibrated tanks or weighed. All measuring equipment shall be maintained in clean, and serviceable condition. Their accuracy shall be periodically checked.
- 3.3.** It is most important to keep the specified water cement ratio constant and at its correct value. To this end, moisture content in both fine and coarse aggregates shall be determined by the Engineer-in-charge according to the weather conditions. The amount of mixing water shall then be adjusted to compensate for variations in the moisture content. For the determination of moisture content in the aggregates. I.S. 2386 (Part-III) shall be referred to. Suitable adjustments shall also be made in the weights of aggregates due to variation in their moisture content. Minimum quantity of cement to be used in controlled concrete shall not be less than 220 kg/M³ in plain concrete and not less than 250 kg/M³ in reinforced concrete.

1.0. Materials

Water shall conform to M-1. Cement shall conform to M-3. Sand shall conform to M-6. Grit shall conform to M-8. Graded stone aggregate 20 mm nominal size shall conform to M-12.

2.0. General

- 2.1.** The concrete mix is not required to be designed by preliminary tests. The proportion of the concrete mix shall be 1:2:4 (1 cement : 2 coarse sand : 4 graded stone aggregate 20 mm. nominal size) by volume concrete work shall have exposed concrete surface or as specified in the item
- 2.2.** The designation ordinary M-100, M-150, M-200, M-250 specified as per I.S. correspond approximately to 1:3:6, 1:2:4, 1:1 1/2:3 and 1:1:2 nominal mix of ordinary concrete by volume respectively

- 2.3.** The ingredients required for ordinary concrete containing one bag of cement of 50 kg. by weight (0.0342 Cu M.) for different proportions of mix shall be as under:

Grade of concrete	Total quantity of dry aggregate by volume per 50 kgs. of cement to be taken as the sum of individual volume of fine and coarse aggregates, maximum	Proportion of aggregate to fine aggregate	Quantity of water per 50 Kegs. of cement maximum
1	2	3	4
M-100 (1:3:6)	300 Liters	Generally 1:2 for line aggregate to coarse aggregate by volume	34 Liters
M-150 (1:2:4)	220 Liters	but subject to an upper limit of 1:1.1/2 and lower limit	32 Liters
M-200 (1:1.1/2:3)	100 Liters		160 Liters
M-250 (1:1:2)			1:3 27 Liters

- 2.4.** The water cement ratios shall not be more than specified in the above table. The cement content of the mix specified in the table shall be increased if the quantity of water in mix has to be met eased to overcome the difficulties of placements and compaction so that the water-cement ratio specified in the table is not exceeded.
- 2.5.** Workability of the concrete shall be controlled by maintaining a water -cement-ratio that is found to give a concrete mix which is just sufficient wet to be placed and compacted without difficulty with the means available.
- 2.6.** The maximum size of coarse aggregate shall be as large as possible within the limits specified but in no case greater than one forth of the minimum thickness of the member provided that the concrete can be placed without difficulty so as to surround all reinforcement thoroughly and to fill the corners of the form.
- 2.7.** For reinforced concrete work; coarse aggregates having a nominal size of 20 mm. are generally considered satisfactory.
- 2.8.** For heavily reinforced concrete members as in the case of ribs of main beams, the nominal maximum size of coarse aggregate should usually be restricted to 5 mm. less than the minimum clear distance between the main bar or 5 mm. less than the minimum cover to the reinforcement whichever is smaller.
- 2.9.** Where the reinforcement is widely spaced as in solid slabs, limitations of size of the aggregate may not be so important, and the nominal maximum size may some times be as great as or greater than the minimum cover.
- 2.10.** Admixture maybe used in concrete only with approval of Engineer-in-charge based upon the evidence that with the passage of time neither the compressive strength of concrete is reduced not are other requisite qualities of concrete and steel impaired by the use of such admixtures.
- 3.0. Workmanship**
- 3.1.** Proportioning : Proportioning shall be done by volume, except which shall be measured in terms of bags of 50 kg. weight, the volume of one such bag being taken as 0.0342 cu. meter Boxes of suitable size shall be used for measuring sand aggregate. The size of boxes (internal) shall be 35 x 25 cms. and 40 cms deep

while measuring the aggregate and sand the boxes shall be filled without shaking ramming or hammering. The proportioning of sand shall be on the basis of its dry volume and in case of damp sand, allowances for bulkage shall be made.

3.2. Mixing :

3.2.1. For all work, concrete shall be mixed in a mechanical mixer which along with other accessories shall be kept in first class working condition and so maintained throughout the construction. Measured quantity of aggregate, sand and cement required for each batch shall be poured into the drum of the mechanical mixer while it is continuously running. After half a minute of dry mixing measured quantity of water required for each batch of concrete mix shall be added gradually and mixing continued for another one and a half minute. Mixing shall be continued till materials are uniformly distributed and uniform colour of the entire mass is obtained and each individual particle of the coarse aggregate shows complete coating of mortar containing its proportionate amount of cement. In no case shall the mixing be done for less than 2 minutes after all ingredients have been put into the mixer.

3.2.2. When hand mixing is permitted by the Engineer-in-charge for small jobs or for certain other reasons, it shall be done on the smooth watertight platform large enough to allow efficient turning over the ingredients of concrete before and after adding water. Mixing platform shall be so arranged that no foreign material gets mixed with concrete nor does the mixing water flow out. Cement in required number of bags shall be spread in a layer of uniform thickness on the mixing platform. Dry coarse and fine aggregate and cement shall then be mixed thoroughly by turning over to get a mixture of uniform colour. Specified quantity of water shall then be added gradually through a rose can and the mass turned over till a mix of required consistency is obtained. In hand mixing quantity of cement shall be increased by 10 percent above that specified.

3.2.3. Mixers which have been out of use for more than 30 minutes shall be thoroughly cleaned before putting in a new batch. Unless otherwise agreed to by the Engineer in-charge the first batch of concrete from the mixture shall contain only two thirds of normal quantity of coarse aggregate. Mixing plant shall be thoroughly cleaned before changing from one type of cement to another.

3.3. Consistency:

3.3.1. The degree of consistency which shall depend upon the nature of the work and methods of vibration of concrete, shall be determined by regular slump tests in accordance with I.S. 1199-193. The slump of 10 mm. to 25 mm shall be adopted when vibrators are used and 80 mm. when vibrators are not used.

3.4. Inspection:

3.4.1. Contractor shall give the Engineer-in-charge due notice before placing any concrete in the forms to permit him to inspect and accept the work and forms as to their strength, alignment and general fitness but such inspection shall not relieve the contractor of his responsibility for the safety of men, machinery, materials and for results obtained immediately before concreting. All forms shall be thoroughly cleaned.

3.4.2. Centering design and its erection shall be got approved from the engineer-in-charge. One carpenter with helper shall invariably be kept present throughout the period of concreting. Movement of labour and other persons shall be totally prohibited for reinforcement laid in position. For access to different parts suitable mobile platforms shall be provided so that steel reinforcement in position is not disturbed. For ensuring proper cover, mortar blocks of suitable size shall be cast and tied to the reinforcement. Timber kapachi or metal pieces shall not be used for this purpose.

3.5. Transporting and laying:

3.5.1. The method of transporting and placing concrete shall be as approved. Concrete shall be so transported and placed that no contamination, segregation or loss of its constituent material takes place. All form work shall be cleaned and made free from standing water dust, snow or ice immediately before placing of concrete. No concrete shall be placed in any part of the structure until the approval of the engineer-in-charge has been obtained.

3.5.2. Concreting shall proceed continuously over the area between construction joints. Fresh concrete proper contraction joint is formed. Concrete shall be compacted in its final position within 30 minutes of its discharge from the mixer. Except where otherwise agreed to by the engineer-in-charge, concrete shall be deposited in horizontal layers to a compacted depth of not more than 0.45 meter when internal vibrators are used and not exceeding 0.30 meter in all other cases.

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

3.5.4. All concrete shall be compacted to produce a dense homogeneous mass with the assistance of vibrators, unless otherwise permitted by the Engineer-in-charge for exceptional cases, such as concreting under water, where vibrators cannot be used. Sufficient vibrators in serviceable condition shall be kept at site so that spare equipment is always available in the event of breakdowns. Concrete shall be judged to be compacted when the mortar fills the spaces between the coarse aggregate and begins to cream up to form an even surface. Compaction shall be completed before the initial setting starts i.e. within 30 minutes of addition of water to dry mixture. During compaction, it shall be observed that needle vibrators are not applied on reinforcement which is likely to destroy the bond between concrete and reinforcement.

3.6. Curing:

Immediately after compaction, concrete weather including rain, running water, shocks, vibration, traffic, rapid temperature charges, frost and drying out process. It shall be covered with wet sacking has Sian or other similar absorbent material approved, soon after the initial set, and shall be kept continuously wet for a period of not less than 14 days from the date of placement. Masonry work over foundation concrete may be started after 48 hours of its laying but curing of concrete shall be continued for a minimum period of 14 days.

3.7. Sampling and testing of concrete:

3.7.1. Samples from fresh concrete shall be taken as per I.S. 1199-1959 and cubes shall be made, cured and tested at 7 days and 28 days as per requirements in accordance with I.S. 526-1959. A random sampling procedure shall be adopted to ensure that each concrete batch shall have a reasonable chance of being tested i.e. the sampling should be spread over the entire period of concreting and cover all mixing units. The minimum frequency of sampling of concrete of each grade shall be in accordance with following:

Quantity of concrete in the work.	No of samples	Quantity of concrete in the works	No of samples
1-5 cmt.	1	16-30 cmt.	3
6.15 cmt.	2	31-50 cmt.	4
51 and above	4± one additional for each additional 50 mm. or part thereof.		

Note : At least one sample shall be taken from each shift, Ten test specimens shall be made from each sample, five for testing at 7 days and the remaining five at 28 days. The samples of concrete shall be taken on each day of concreting as per above frequency. The number of specimens may be suitably increased as deemed necessary by the Engineer-in-charge when procedure of tests given above reveals a poor quality of concrete and in other special cases.

3.7.2. The average of the group of cubes cast for each day shall not be less than the specified cube strength of 150 K/g Cm² at 28 days. 20% of the cubes cast for each day may have value less than the specified strength provided the lowest value is not less than 85% of the specified strength. If the concrete made in accordance with the proportions given for a particular grade does not yield the specified strength, such concrete shall be classified as belonging to the appropriate lower grade. Concrete made in accordance with the Proportions given for a particular grade shall not, however be placed in a higher grade on the ground that the test strength are higher than the minimum specified.

3.8. Stripping:

3.8.1. The Engineer-in-charge shall be informed in advance by the contractor of his intention to strike the form work. While fixing the time of removal of form work, due consideration shall be given to local conditions, character of the structure, the weather and other conditions that influence the setting of concrete and of the materials used in the mix. In normal circumstances (generally where temperatures

are above 20.C) and where ordinary concrete is used, forms may be struck after expire or periods specified in item No.9.1 (A) for respective item of form work.

- 3.8.2.** All form work shall be removed without causing any shock or vibration as would damage the concrete. Before the soft and struts are removed, the concrete surface shall be gradually exposed, where necessary in order to ascertain that concrete has sufficiently hardened. Centering shall be gradually and uniformly lowered in such a manner as to permit the concrete to take stresses due to its own weight uniformly and gradually. Where internal metal tiles are permitted, they or their removable parts shall be extracted without causing any damage to the concrete and remaining holes filled with mortar. No permanently embedded metal part shall have less than 25 mm. cover to the finished concrete surface. Where it is intended to re-use the form work, it shall be cleaned and made good to the satisfaction of the Engineer-in-charge. After removal of form work and shutting, the Executive Engineer shall inspect the work and satisfy by random checks that concrete produced is of good quality.
- 3.8.3.** Immediately after the removal of forms, all exposed bolts etc. passing through the cement concrete member and used for shuttering or any other purpose shall be cut inside the cement concrete member to a depth of at least 25 mm. below the surface of the concrete and the resulting holes be filled by cement mortar, all fins, caused by form joints, all cavities produced by the removal of form tiles and all other holes and depressions, honeycomb spots, broken edges or corners and other defects, shall be thoroughly cleaned", saturated with water and carefully pointed and rendered true with mortar of cement and fine aggregate mixed in proportions used in the grade of concrete that is being furnished and of as dry consistency as is possible to use. Considerable pressure shall be applied in filling and pointing to ensure thorough filling in all voids. Surface which are pointed shall be kept moist for a period of 24 hours. If rock pockets/honeycombs in the opinion of the Engineer-in-charge are of such an extent or character as to effect the strength of the structure materially or to endanger the life of the steel reinforcement, he may declare the concrete defective and require the removal and replacement of the portions of structure affected.

4.0. Mode of measurement & payment

- 4.1.** The consolidated cubical contents of concrete work as specified in item shall be measured. No deduction shall be made for (a) Ends of dissimilar materials such as joints, beams, posts, girders, falters, purling trusses, corbels and steps etc., up to 500 Sq. Cm. in section.
- 4.2.** The rate includes cost of all materials labour, tools and plant required for mixing, placing in position, vibrating and compacting, finishing, as directed, curing and all other incidental expenses for producing concrete of specified strength. The rate excludes the cost of form work.
- 4.3.** The volume Occupied by reinforcement shall not be deducted from R.C.C. work.
- 4.4.** The rate shall be for a unit of **one cubic meter**.

Item No. 24

**Providing 20 mm deep finished groove in plaster in line and level etc.
Comp. For all Floor**

General

This work shall consist of furnishing and placing **20 mm wide groove / notch in plaster** of the shape and dimensions shown on the drawings and conforming to these Specifications or as approved by the Engineer in charge.

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

Workmanship

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 throating or plaster drip and mounding shall be 1.20 centimeter in thickness.

Workmanship

The proportions of materials for the cement mortar shall be as mentioned with the specifications of the item. Grooves and notches in outer plaster shall be as per design given by architect in drawing and as directed by Engineer in charge

Mode of Measurement & Payment :

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

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

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

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

Item No. 29

Providing and fixing 37 mm thick flush door both sides laminated and shutter fabricated from 35 mm thick solid core malemine faced three layered pre laminated flat pressed wood based exterior grade bonded BWP/BWR synthetic resin having stamped IS 12823 grade I type II including three coats of lacquer polishing to exposed wooden surfaces and Stainless steel decorative type designs fixtures / fastening 2Nos. Handles, 2Nos. Aldropes, towerbolt etc. as per architectural detailed drawing and as directed by engineer in charge.

General

This work shall consist of furnishing and **Providing and fixing 37 mm thick flush door both sides laminated and shutter fabricated from 35 mm thick solid core malemine faced three layered pre laminated flat pressed wood based exterior grade bonded BWP/BWR synthetic resin having stamped IS 12823 grade I type II including three coats of lacquer polishing to exposed wooden surfaces and Stainless steel decorative type designs fixtures / fastening 2Nos. Handles, 2Nos. Aldropes, towerbolt etc. as per architectural detailed drawing and as directed by engineer in charge.** of the shape and dimensions shown on the drawings and conforming to these Specifications or as approved by the Engineer in charge.

MATERIAL

Aluminum standard section for frame

Aluminum Door shall confirm specification no 31 of specification Booklet for building works

Flush door

Flush door shall confirm M-30 of specification booklet for building works

Fixtures & fastening

Fixtures & fastening shall confirm M-43 of specification booklet for building works except fixtures and fastening shall be made of stainless steel

Glass

Glass Shall confirm specification no 38 of specification Booklet for building works Except the glass shall be approved quality of 6 mm the. Transparent glass

Laminated sheet

Laminated sheet Shall be of approved Brand colour and thickness and shall be free from any defect

WORKMANSHIP

Aluminum frame for Door shall confirm specification M-31 of specification Booklet for building works Door work shall confirm specification no 10.30 Page 72 for flush door shutters of specification Booklet for building works

Mode of Measurement & Payment :

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

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

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

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

Item No. 30

Providing and fixing FRP frame size 125x65 mm and 35mm thick FRP shutter having extra reinforcement on sides & edges in polish finish. The core of the shutter & frame is to be filed up with injected polyurethane foam done in situ alongwith embedded wooden pieces for stiffening & also taking hinges & fintures. The whole FRP frame & shutter is to be water proof weather proof, termite proof & resistance to mild acid/alkali. Rates are to be inclusive of S.S hinges with necessary screws & alluminium S.S fixtures & fastenings & fastener sleeve.

General

This work shall consist of **Providing and fixing FRP frame size 125x65 mm and 35mm thick FRP shutter having extra reinforcement on sides & edges in polish finish. The core of the shutter & frame is to be filed up with injected polyurethane foam done in situ alongwith embedded wooden pieces for stiffening & also taking hinges & fintures. The whole FRP frame & shutter is to be water proof weather proof, termite proof & resistance to mild acid/alkali** of the shape and dimensions shown on the drawings and conforming to these Specifications or as approved by the Engineer in charge

MATERIAL

F R P molded frame

FRP Molded frame shall be of approved make as approved by Engineer in charge
FRP molded frame shall be of water proof weather proof termite proof mild acid and alkali proof, sound proof and fire resistance

F R P molded frame chamfered type size 125 mm x 65 mm with F R P skin 1.5 mm to 2 mm thickness with extra reinforcement on side and edges and gel coat finished
Remaining hollow portion is to be filled by polyurethane foam P U F with wooden block for taking hinges

F R P molded shutters

FRP Molded shutters shall be of approved make as approved by Engineer in charge
FRP molded shutters shall be of water proof weather proof termite proof mild acid and alkali proof, sound proof and fire resistance

FRP Shutters of 27 mm thick in standard design of FRP and 3.12 mm hide and dandified molded wood primer coated skin on both side of shutter skin is to be confirmed to ASTM D - 1037 pressed under hot process over wood style 65 x 35 mm top and bottom rail and lock rail 125 mm x 235 mm including stainless steel hinges with necessary aluminum fixture and fastening remaining hole of portion is to be filled up with PUF and shutters is to be finished in gel coat

Whole section shall be of water proof weather proof termite proof mild acid and alkali proof, sound proof and fire resistance

FIXTURES AND FASTNINGS

Stainless steel Fixtures and fastening shall confirm Specification no M-43 except all fixtures and fastening shall be made of stainless steel

WORKMANSHIP

The Work of aluminum door shall be done with extreme finishing. The partial board shall be fixed in the bottom panel and glass shall be fitted on top panel as directed by Engineer in charge using glazing clips and rubber gaskets as required All the fixtures and fastenings shall be fitted at right place and as directed by Engineer in charge. Floor spring shall be fitted properly so as to align the door properly and shall be given trial of opening and closing properly.

The door shall be measured for its **length** and **height**, limiting dimensions to those specified on plan or as directed.

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

Item No. 31

Providing and fixing window having extruded aluminum Colour anodized section frame main outer size 95mm x 24mm x 1.17mm @ wt.of 0.738 Kg/mt , horizontal Three track member size 92mm x 31.75mm x 1.30mm,@ Wt.1.07 Kg/mt , vertical member of size 92mm x 31.75mm x 1.50mm @ Wt. 1.06 Kg/mt with sliding shutters of horizontal member size 40 mmx18mm x1.29mm @ wt.of 0.456 Kg/mt, vertical member of size 40mm x 18mm x 1.29 mm @ wt.of 0.456Kg/mt/ with 5 mm thick transparent bronze colour tinted float glass with powder coated aluminum fittings and fixtures and transparent silicon sealant glass fixing to frame as per details etc

General

This work shall consist of **Providing & fixing in position standard extruded Aluminum window**, of the shape and dimensions shown on the drawings and conforming to these Specifications or as approved by the Engineer in charge

MATERIAL

Aluminum standard section

Specification no M-31 from specification booklet for Building works on surface. All section shall have finished luster surface on all sides and Quality shall be equivalent to Jindal Product
Outer frame sections shall be of **Three track**

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

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

size and weight of the Members shall be as describe in Item

5 mm thick colour tinted glass

5 mm thick colour tinted glass Specification no M-38 from specification booklet for Building works except the glass shall be colour tinted of approved brand and colour and thickness

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

Glassing clips

Glazing clips shall be of size 19.00 x 17.00 mm. shall be Free from any scratches or holes or any damages on surface. All section shall have finished luster surface on all sides

Rubber Gasket

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

Fixtures

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

Handles,

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

Bolts,

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

WORKMANSHIP

The Work of aluminum door shall be done with extreme finishing. The partial board shall be fixed in the bottom panel and glass shall be fitted on top panel as directed by Engineer in charge using glazing clips and rubber gaskets as required All the fixtures and fastenings shall be fitted at right place and as directed by Engineer in charge. Floor spring shall be fitted properly so as to align the door properly and shall be given trial of opening and closing properly.

Mode of Measurement & Payment :

The Item shall be measured for its **breadth and height** limiting dimensions to those specified on plan or as directed. The rate shall be for a unit of one square meter.

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

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

Item No. 32

Providing and fixing window having extruded aluminum Colour anodized section frame main outer size 63.50 x 38.10 x 1.95 mm, @ Wt 1.094 Kg / Rmt, horizontal two track member size 61.85 mm x 31.75 mm x 1.20mm @ wt.of 0.695 Kg/mt, vertical member of size 61.85 mm x 31.75mm x 1.30 mm @ wt.of 0.659 Kg/mt with sliding shutters of horizontal member size 40mm x 18mm x 1.29mm @ wt.of 0.456Kg/mt, vertical member of size 40mm x 18mm x 1.29mm @ wt.of 0.456Kg/mt, @ Wt. 0.457 Kg/mt with 5 mm thick transparent bronze colour tinted float glass with powder coated aluminum fittings and fixtures and transparent silicon sealant glass fixing to frame as per details etc complete for window.

General

This work shall consist of **Providing & fixing in position standard extruded Aluminum window**, of the shape and dimensions shown on the drawings and conforming to these Specifications or as approved by the Engineer in charge

MATERIAL

Aluminum standard section

Specification no M-31 from specification booklet for Building works

on surface. All section shall have finished luster surface on all sides and Quality shall be equivalent to Jindal Product

Outer frame sections shall be of **Two track**

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

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

size and weight of the Members shall be as describe in Item

5 mm thick colour tinted glass

5 mm thick colour tinted glass Specification no M-38 from specification booklet for Building works except the glass shall be colour tinted of approved brand and colour and thickness

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

Glazing clips

Glazing clips shall be of size 19.00 x 17.00 mm. shall be Free from any scratches or holes or any damages on surface. All section shall have finished luster surface on all sides

Rubber Gasket

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

Fixtures

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

Handles,

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

Bolts,

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

WORKMANSHIP

The Work of aluminum door shall be done with extreme finishing. The partial board shall be fixed in the bottom panel and glass shall be fitted on top panel as directed by Engineer in charge using glazing clips and rubber gaskets as required All the fixtures and fastenings shall be fitted at right place and as directed by Engineer in charge. Floor spring shall be fitted properly so as to align the door properly and shall be given trial of opening and closing properly.

Mode of Measurement & Payment :

The Item shall be measured for its **breadth and height** limiting dimensions to those specified on plan or as directed. The rate shall be for a unit of one square meter.

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

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

Item No. 33

Providing and fixing standard extruded of aluminium section of size 63mm x 38.10mm x 1.2mm (Jindal Section :2434, @ Wt. 0.643 Kg/mt) with colour anodized aluminium frame for ventilation with 5 mm thick frosted glass as details etc complete for Ventilation.

General

This work shall consist of providing **Providing and fixing standard extruded of aluminium section of size 63mm x 38.10mm x 1.2mm (Jindal Section :2434, @ Wt. 0.643 Kg/mt) with colour anodized aluminium frame for ventilation with 5 mm thick frosted glass as details etc complete for Ventilation** of the shape and dimensions shown on the drawings and conforming to these Specifications or as approved by the Engineer in charge

MATERIAL

Aluminum standard section

Specification no M-31 from specification booklet for Building works on surface. All section shall have finished luster surface on all sides

Glass

Specification no M-38 from specification booklet for Building works

Rubber Gasket

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

Fixtures and fastenings

Specification no M-43 from specification booklet for Building works for fixture and fastening

WORKMANSHIP

The Work of aluminum window shall be done with extreme finishing as directed by Engineer in charge using glazing clips and rubber gaskets as required All the fixtures and fastenings shall be fitted at right place and as directed by Engineer in charge. and shall be given trial of opening and closing properly.

Mode of measurement and payment

The Item shall be measured for its **breadth and height** limiting dimensions to those specified on plan or as directed.

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

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

Item No. 41

Providing and laying broken chine mosaic flooring for terrace using 12 mm to 20 mm broken pieces of glazed tiles to be laid over cement mortar 1:3 to plain or slope and to be tempered to bring mortar creme out upto surface using white cement including rounding off junctions and extending them upto 15 cm along the wall,clearing with water and oxalic acid etc. as directed.

General

This work shall consist of furnishing and placing **Providing and laying broken chine mosaic flooring for terrace using 12 mm to 20 mm broken pieces of glazed tiles to be laid over cement mortar 1:3 to plain or slope and to be tempered to bring mortar creme out upto surface using white cement including rounding off junctions and extending them upto 15 cm along the wall,clearing with water and oxalic acid etc. as directed.** of the shape and dimensions shown on the drawings and conforming to these Specifications or as approved by the Engineer in charge.

Material

Water Shall confirm Material Specification no M- 1

Cement Shall confirm Material Specification no M- 3

Sand Shall confirm Material Specification no M- 6

Crushed stone aggregates Shall confirm Material Specification no M- 12

Brick aggregates Shall confirm Material Specification no M- 14

Glazed tiles pieces Shall confirm Material Specification no M- 55

White Cement Shall confirm Material Specification no M- 4

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

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

Workmanship

40 mm thick cement concrete flooring for bedding shall confirm specification no 14.71 (B) Page 11 of specification booklet for building works

The floring shall be laid in proper slope as directed by Engineer in charge

Mixing of water proofing material shall confirm specification no 17.70 Page no 121 of specification booklet for building works

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

Laying of white or colour glazed tiles pieces shall confirm specification item no 14.29 Page o 96 of specification booklet for building works
broken pieces of tiles shall be of ceramic/glaze tiles in one or more colour as directed and shall be not more than 12mm to 20mm in size

20 mm thick layer of cm 1:5 shall confirm Specification no 17.61 A Page 120 of specification booklet for building works

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

Laying of white glazed tile pieces shall confirm Specification no 14.29 Page 96 of specification booklet for building works

Mode of Measurement & Payment :

The Item shall be measured for its **breadth and height** limiting dimensions to those specified on plan or as directed. The rate shall be for a unit of one square meter.

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

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

Item No. 42

Providing and fixing Stainless Steel railing having 50 mm dia hollow stainless steel pipe as hand rail and 32 mm dia hollow stainless steel pipe with combination of 10 cm long 16mm dia pipe as per vertical supports 20 mm dia hollow stainless steel pipes H.

General

This work shall consist of furnishing and placing **Providing and fixing Stainless Steel railing having 50 mm dia hollow stainless steel pipe as hand rail and 32 mm dia hollow stainless steel pipe with combination of 10 cm long 16mm dia pipe as per vertical supports 20 mm dia hollow stainless steel pipes** of the shape and dimensions shown on the drawings and conforming to these Specifications or as approved by the Engineer in charge.

MATERIAL**50 mm diameter round hollow Stainless Steel pipe for railing**

Round Hollow S. S. Pipe for railing shall be confirming general Indian standards. Round Hollow pipe shall be free from the defects and shall have smooth finish.

The Material shall be free from loose scales rust pits or other affective
The Strength and durability

Workmanship

vertical supports of to get 90 cm height of railing shall be fixed as directed and round hollow pipe shall be fixed by welding in true line and level and slope the railing shall be powder coated finish as per standards

Mode of Measurement & Payment:

The Item shall be measured for its **Length** 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 **running Meter** basis of the finished work.

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

Item No. 63

Providing and fixing in position cowl vent to pipes.(C) 100mm dia

Material

Cowl vent

Cowl vent shall be of cast iron and shall be sound and free from porosity or other defects which affect serviceability The thickness of the base metal shall not be less than 6.5 mm The surface shall be smooth and free from craze, chips and other flaws or any other kind of defects which affect serviceability The size of Cowl vent shall be of Cast Iron

Cowl vent shall be of-quality approved by the Engineer-in-charge and shall generally conform to the relevant Indian Standards.

The cover shall be cast iron perforated cover shall be provided on the trap of appropriate size.

Mode of Measurement & Payment :

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

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

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

Item No. 64

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

General

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

PVC Water tank

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

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

Nipple

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

Ball valve

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

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

Connections

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

WORKMAN SHIP

Tank shall be approved quality and as per IS standard make. Material used in manufacturing tank shall be confirmed to relevant IS code. The material of tank and lead and fittings which may come in contact of water should be such that it does not impart any taste, colour or odor. It does not have any toxic effect and it does not contaminate the water. Thereby making it unpotable.

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

Mode of Measurement & Payment:

The payment will be made on **capacity in litter's** basis of the finished work.

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

The item shall be measured for its **capacity in liters** limiting dimensions to those specified on plan or as directed.

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

Item No.88 Providing & fixing & making Table LxBxH (1.20 x 0.60 x 0.75) using Ply Wood ISI Brand Using IS 710 Plywood (8mm, 10mm, 12mm, 19mm, & 25mm) Top with All side square top for superior quality table with thickness of 25 mm.All the outer & Inner surface cover by I.S.I. brand Sunmica of Formica , silicone ,bloom green or equivalent & inner 1.5mm thick Laminate Sheet silicone or bloom or equivalent Brand.using drawer channel of Hetich brand & handle s.s. matt & drawer lock , including S.S Screws , necessary hardware etc. complete including necessary polish, hardware and labour etc. As per attached drawing & instructed by in charge Consultant. key board tray, CPU stand Ebaco Brand, drawer cabinet, horizontal - vertical cable cover, LEG frame)

1.0 MATERIALS

- 1.1 Table LxBxH (1.20 x 0.60 x 0.75)
- 1.2 Ply Wood ISI Brand Using IS 710 Plywood (8mm, 10mm, 12mm, 19mm, & 25mm) Top with All side square top for superior quality table with thickness of 25 mm
- 1.3 All the outer & Inner surface cover by I.S.I. brand Sunmica of Formica , silicone ,bloom green or equivalent & inner 1.5mm thick Laminate Sheet silicone or bloom or equivalent Brand.using drawer channel of Hetich brand & handle s.s. matt & drawer lock , including S.S Screws , necessary hardware etc
- 1.4 complete including necessary polish, hardware and labour etc
- 1.5 All other necessary hardwares including screws,nails,locks,adhesives(Fevicol marine grade) of approved quality.
- 1.6 Scaffolding with all lead, lift and transport.

2.0 WORKMANSHIP

- 2.1 entire work to be carried out as per drawings,instructions and supervision of the architect.

3.0 MODE OF MEASUREMENT AND PAYMENT

- 3.1 The rate shall be consolidated for all above items including wastage.

The rate shall include cost of all materials,fixtures, joineries etc. & labour to complete the work satisfactorily as per instruction of Engineer-in charge.

No Extra payment will be given for any of the reasons.

The rate shall be for a unit of Nos basis including wastage.

Item No.89 Providing and fixing of OFFICE CHAIRS of pvc base and armrest,40 density high mould foam in seat and back,or mesh, pu upholstery,multi funtional mechenism, bifma class IV gas lift and p.a castors,REVOLVING chairs as per the specified company of HOF, Feather light, Wipro, Godrej etc.as per selection and complete the work satisfactorily as per instruction of architect or Engineer-in charge

MATERIALS

Providing and fixing of OFFICE CHAIRS of pvc base and armrest,80 density high mould foam in seat and back,or mesh, pu upholstery,multi funtional mechenism, bifma class IV gas lift and p.a castors,REVOLVING chairs as per the specified company of HOF, Feather light, Wipro, Godrej etc.as per selection and complete the work satisfactorily as per instruction of architect or Engineer-in charge

MODE OF MEASUREMENT AND PAYMENT

The rate shall be consolidated for all above items including wastage.

The rate shall include cost of all materials,fixtures, joineries etc. & labour to complete the work satisfactorily as per instruction of Engineer-in charge.

No Extra payment will be given for any of the reasons.

The rate shall be for a unit of Nos basis including.

Item No.90

Providing and placing of Study Chair With Extra Support Of Pips Must Be required For Long Time Usage Chair Overall Size (approx): H-83 x W-52 x D- 60 (cm)

Material Description: Seat & Back: Seat & back from hot mould plywood of minimum 12 mm thickness of ergonomic design to avoid back pain. Cushioning: PU foam having density of 40 kg for back and 50kgs/m³ for seat. Average thickness of foam not less than 50 mm + 10 mm Polly foam.

Tapestry: Minimum average weight required 400to490 gms per sq. mtr,with average weight of 450 grams per square meter • Frame structure: 4 legs type Frame and handle for arm rest from ERW prime quality tube of 14 swg, reinforced at all bends for static and impact load with cushioning effect ,

• Finishing: All steel parts will be epoxy polyester powder coated to the thickness not less than 50 microns finish after 10 tank anti-rust treatment and B grade phosphating (in house) & same will be demonstrated to the Engineer incharge during pre-dispatch Inspection.

• Product Shoud be Tested by approved BIFMA standard laboratories confirming to ANSI/BIFMA X 5.1- 2002 Cl. No. 5,7,8,12,13,17 on functional requirement. Certificets Should be submitting With Supply

,Without certificets Product Will Not Be Accepted.All work must be done As per Architect Drawing & Instructed By Site Engineer

1.0 MATERIALS

1.1 of Study Chair With Extra Support Of Pips Must Be required For Long Time Usage Chair Overall Size (approx): H-83 x W-52 x D- 60 (cm)

1.2 Seat & Back: Seat & back from hot mould plywood of minimum 12 mm thickness of ergonomic design to avoid back pain. Cushioning: PU foam having density of 40 kg for back and 50kgs/m³ for seat. Average thickness of foam not less than 50 mm + 10 mm Polly foam.

1.3 Tapestry: Minimum average weight required 400to490 gms per sq. mtr,with average weight of 450 grams per square meter

1.4 Frame structure: 4 legs type Frame and handle for arm rest from ERW prime quality tube of 14 swg, reinforced at all bends for static and impact load with cushioning effect

1.5 Finishing: All steel parts will be epoxy polyester powder coated to the thickness not less than 50 microns finish after 10 tank anti-rust treatment and B grade phosphating (in house) & same will be demonstrated to the Engineer incharge during pre-dispatch Inspection.

1.6 Product Shoud be Tested by approved BIFMA standard laboratories confirming to ANSI/BIFMA X 5.1- 2002 Cl. No. 5,7,8,12,13,17 on functional requirement. Certificets Should be submitting With Supply.

2.0 WORKMANSHIP

2.1 entire work to be carried out as per drawings,instructions and supervision of the architect.

3.0 MODE OF MEASUREMENT AND PAYMENT

3.1 The rate shall be consolidated for all above items including wastage. The rate shall include cost of all materials, fixtures, joineries etc. & labour to complete the work satisfactorily as per instruction of Engineer-in charge. No Extra payment will be given for any of the reasons. The rate shall be for a unit of Nos basis including wastage.

Item No.91

Providing & Fixing single Modular Reading table

Table Size 900 x 610 x 760 with 1370mm high partition and extra shelf for bags

Table top made with 19mm thick Semi water proof plywood of ISO 303, with all sides border of 40 mm thick in 19mm thick ply wood, single side seating system , with extra book shelf above top , foot rest, All outer surfaces are to be laminated with 1.0 mm laminate and bottom of table are to be laminated with 0.80mm laminate sheet as approved by architect. Including all necessary hardware & fittings such as screw, buffer, bonding material etc.(Wall facing modular reading tables) . all work must be done As per Architect Drawing & Instructed By Site Engineer Table

1.0 MATERIALS

- 1.1 Table Size 900 x 610 x 760 with 1370mm high partition and extra shelf for bags
- 1.2 Table top made with 19mm thick Semi water proof plywood of ISO 303, with all sides border of 40 mm thick in 19mm thick ply wood
- 1.3 single side seating system , with extra book shelf above top , foot rest, All outer surfaces are to be laminated with 1.0 mm laminate and bottom of table are to be laminated with 0.80mm laminate sheet as approved by architect
- 1.4 Including all necessary hardware & fittings such as screw, buffer, bonding material etc

2.0 WORKMANSHIP

- 2.1 entire work to be carried out as per drawings,instructions and supervision of the architect.

3.0 MODE OF MEASUREMENT AND PAYMENT

- 3.1 The rate shall be consolidated for all above items including wastage. The rate shall include cost of all materials, fixtures, joineries etc. & labour to complete the work satisfactorily as per instruction of Engineer-in charge. No Extra payment will be given for any of the reasons. The rate shall be for a unit of Nos basis including wastage.

Item No:92 Providing & Fixing single faced main unit and add on M.S. Book Rack multipurpose expandable storage rack in knock down design with Adjustable 3 shelves making 4 compartments of 20swg thick. TATA/Essar/Jindal CRCA sheet IS 513.

Approximant size H-1524 X W-915 X D-380mm

- Storage shelf of 22swg thick. TATA/Essar/Jindal CRCA sheet IS 513.
- All steel parts will be epoxy polyester powder coated to the thickness not less than 50 microns finish after 10 tank anti-rust treatment and B grade phosphating (in house) & same will be demonstrated to the purchaser during pre-dispatch inspection.
- Bottom Frame of 25*25*1.21mm Thik, ERW Square MS Tube With Adjustable Stud .With Extra 2 Book Support On Each Shelf . all work must be done As per Architect Drawing & Instructed By Site Engineer

74.1.0 MATERIALS

- multipurpose expandable storage rack in knock down design with Adjustable 8 shelves making 9
- compartments in both sides of 20swg thick. TATA/Essar/Jindal sheet IS 513.
- Approximate size H-1800 X W-1200 X D-900mm
- Storage shelf of 22 swg thick. TATA/Essar/Jindal CRCA sheet IS 513.
- All steel parts will be epoxy polyester powder coated to the thickness not less than 50 microns finish
- after 10 tank anti-rust treatment and B grade phosphating (inhouse)
- Bottom Frame of 25*25*1.21 mm Thik, ERWS square MS Tube With Adjustable Stud. With Extra 2 Book Support On each Shelf.

2.0 WORKMANSHIP

2.1 Entire work to be carried out as per drawings, instructions and supervision of the architect.

3.0 MODE OF MEASUREMENT AND PAYMENT

3.1 The rate shall be consolidated for all above items including wastage. The rate shall include cost of all materials, fixtures, joineries etc. & labour to complete the work satisfactorily as per instruction of Engineer-in-charge. No Extra payment will be given for any of the reasons.
The rate shall be for a PER UNIT BASIS only.

Signature of Contractor

**Deputy Executive Engineer
Panchayat (R&B) Sub Division
Mandavi**

**Executive Engineer
Panchayat (R&B) Division
Surat**

Schedule for Testing of Materials

For ensuring quality control and workmanship, various test prescribed below corresponding to the material concerned shall be taken as periodic intervals as stipulated below..

The Material shall be got tested at GERI or Govt. recognized Laboratory or field Laboratory of GERI for which 1 % of the estimated amount put to tender shall be recovered from the contractor from the R.A. Bill and Final Bills as the testing charges shall be paid by the Govt. to the Laboratory. However if the charges increase over 1 % no excess recovery shall be made from the contractor as per resolution of B&C department dated 10th May 1985, vide TNC/1085 (4) S.

Item No. as per Sch. B	Brief Description of Materials to be tested	Qty. of Material	Prescription of test which shall be carried out	Frequency @ which test shall be carried out	Total No. of Test to be carried out
	Coarse Aggregate (Metal, Kapchi, Gravel etc.)		<ul style="list-style-type: none"> - Gradation test - Impact Value - Flakiness Index - Water absorption - Stripping Value 	1 to 100 Cum – 1 test 100 to 500 – 3 tests 500 to 1500 – 5 tests 1500 to 5000 – 7 tests	
	Grit		<ul style="list-style-type: none"> - Stripping Value 	One test per work	
	Sand		<ul style="list-style-type: none"> - Gradation - Fineness Modulus - Specific gravity - Water absorption - Silt – Content 	One test per 150 Cum or as per requirement of relevant specification	
	Tiles		<ul style="list-style-type: none"> - Dimension Test - Transverse strength - Water Absorption - Abrasion Test 	One test per 2000 tiles	
	Teakwood		<ul style="list-style-type: none"> - Anatomy Test - Density Test - Moisture Content Test 	One test per work	
	Bricks		<ul style="list-style-type: none"> - Dimension and tolerance - Water absorption - Effluence - Compressive Strength 	1 Test @ 50,000 Bricks	
	Cement		<ul style="list-style-type: none"> - Consistency - Setting Time - Compressive Strength - Fineness - Chemical analysis - Soundness 	Up to 50 MT 1 Test 50 – 100 MT 2 Test 100 – 200 MT 3 Test 200 – 300 MT 4 Test 300 – 500 MT 5 Test 500 – 800 MT 6 Test 800 – 1300 Mt 7 Test and 8 test for larger consignment	
	Steel		<ul style="list-style-type: none"> - Tensile Strength - Yield Stress - Elongation - Size 	One test/40 tonnes/per category	

	C.C. Cube test 1:2:4		- Compressive Strength	1 to 5 Cum. 1 Test. 6 to 15 Cum. 2 Test. 16 to 20 Cum. 3 Test. 21 to 50 Cum. 4 Test 51 & Above Cum. 4 + 1 for each additional 50Cum or part thereof	
	Aluminum Sections		- Gauge, Section	One Test for each section	

Testing Charges shall be born by Govt. No refund be made or extra charge over 1 % shall be recoverable form the contractor.

Signature of Contractor

**Deputy Executive Engineer
Panchayat (R&B) Sub Division
Mandavi**

**Executive Engineer
Panchayat (R&B) Division
Surat**