

**Name of work :- Repairs To Distillery Office Building At Dharampur Ta-
Dharampur Dist: Valsad**

TECHNICAL SPECIFICATIONS

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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" (Fifth REVISION printed in year 2013) 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.

Quality Control for Road Works

GENERAL

901.1 All materials to be used, all methods to be adopted and all works to be performed shall be strictly in accordance with the requirements of these Specifications. The Contractor shall set up a field laboratory at locations approved by the Engineer and equip the same with adequate equipment and personnel in order to carry out Quality Control for works and all the required tests as per Specifications and/or as directed by the Engineer. The provision and maintenance of the laboratory shall be as per Clause 120 and/or as directed by the Engineer. The list of equipment and the facilities to be provided shall be got approved from the Engineer in advance.

901.2 The Contractor's laboratory shall be manned by a qualified Materials Engineer/Civil Engineer assisted by experienced technicians, and the set-up should be got approved by the Engineer.

901.3 The Contractor shall carry out quality control tests on the materials and work to the frequency stipulated in subsequent paragraphs. In the absence of clear indications about method and or frequency of tests for any item, the instructions of the Engineer shall be followed.

901.4 For satisfying himself about the quality of the materials and work, quality control tests will also be conducted by the Engineer (by himself, by his Quality Control Units or by any other agencies deemed fit by him), generally to the frequency set forth hereunder. Additional tests may also be conducted where, in the opinion of the Engineer, need for such tests exists.

901.5 The Contractor shall provide necessary co-operation and assistance in obtaining the samples for tests and carrying out the field tests as required by the Engineer from time to time. This shall include provision of laboratory equipment, transport, consumables, personnel including labour attendants, assistants in packing and dispatching and any other assistance considered necessary in connection with the tests.

901.6 For the work of embankment, subgrade and pavement, construction of subsequent layer of same or other material over the finished layer shall be done after obtaining permission from the Engineer. Similar permission from the Engineer shall be obtained in respect of all other items of works prior to proceeding with the next stage of construction.

901.7 The Contractor shall carry out modifications in the procedure of work, if found necessary, as directed by the Engineer. Works falling short of quality shall be rectified/ redone by the Contractor at his own cost, and defective work shall also be removed from the site of works by the Contractor at his own cost.

901.8 The cost of laboratory building including essential supplies like water, electricity, sanitary services and their maintenance and cost of all equipment, tools, materials, labour and incidentals to perform tests and other operations of quality control according to the Specification requirements shall be deemed to be incidental to the work and no payment

shall be made for the same. If, however, there is a separate item in the Bill of Quantities for setting up of a laboratory and installing testing equipment, such work shall be paid for separately.

901.9 For testing of soils/soil mixes, granular materials and mixes, bituminous materials and mixes, cement concrete materials and mixes, aggregates, cores etc., samples in the required quantity and form shall be supplied by the Contractor at his own cost.

901.10 For cement, bitumen, steel, emulsion, road marking paint, sign boards, geo-synthetics and similar other materials where essential tests are to be carried out in the presence of Engineer at the manufacturer's plants or at laboratories other than the site laboratory, the cost of samples, sampling, testing and furnishing of test certificates shall be borne by the Contractor.

Manufacturer's test certificate together with invoice or delivery challan shall be furnished for every lot of supply apart from tests to be conducted at site laboratory for prime properties of the material like cement, bitumen, etc. Where facilities for testing of materials are not available at site laboratory the same shall be tested at an outside laboratory in the presence of the Engineer. For specialized items such as sign boards, road marking paint, etc. the Engineer may order for third party test from an approved laboratory.

901.11 The method of sampling and testing of materials shall be in accordance with the requirements of the relevant Indian Standards and these Specifications. Where they are contradicting, the provisions in these Specifications shall be followed. Where they are silent, sound engineering practices shall be adopted. The sampling and testing procedure to be used shall be as approved by the Engineer and his decision shall be final and binding on the Contractor. The cost of all tests shall be borne by the Contractor.

901.12 The materials for embankment construction shall be got approved from the Engineer. The responsibility for arranging and obtaining the land for borrowing or exploitation in any other way shall rest with the Contractor who shall ensure smooth and uninterrupted supply of materials in the required quantity during the construction period.

Similarly, the supply of aggregates and other materials for construction shall be from sources approved by the Engineer. Responsibility for arranging uninterrupted supply of materials from the source shall be that of the Contractor.

901.13 Defective Materials

All materials which the Engineer has determined as not conforming to the the Contract shall be rejected whether in place or not; they shall be removed immediately from the site as directed. Materials, which have been subsequently corrected, shall not be used in the work unless approval is accorded in writing by the Engineer. Upon failure of the Contractor to comply with any instruction of the Engineer, the Engineer shall have authority to cause the removal of rejected material and to deduct the removal cost thereof from any payments due to the Contractor.

901.14 Imported Materials

The Contractor shall furnish a list of materials/finished products manufactured, produced or fabricated outside India which he proposes to use in the work. The Contractor shall not be entitled to extension of time for acts or events occurring outside India and it shall be the Contractor's responsibility to make timely delivery to the job site of all such materials obtained from outside India.

The materials imported from outside India shall conform to the relevant Specifications of the Contract. In case where materials/finished products are not covered by the Specifications in the Contract, the details of laboratories/establishments where tests are to be carried out shall be specifically brought out and agreed to in the Contract.

The Contractor shall furnish to the Engineer a certificate of compliance of the tests carried out. In addition, certified mill test reports clearly identified in the lot of materials shall be furnished at the Contractor's cost.

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ITEM WISE SPECIFICATION

Item No. 1

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 filled up with injected polyurethane foam done in situ alongwith embedded wooden pieces for stiffening & also taking hinges & fixtures. 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 & aluminium S.S fixtures & fastenings & fastener sleeve.

Item No1.0 MATERIAL

1.1. F R P moulded frame

FRP Moulded frame shall be of approved make as approved by Engineer in charge. FRP moulded frame shall be of water proof, weather proof, termite proof, mild acid and alkali proof, sound proof and fire resistance. F R P moulded frame chamfered type shall be of size 125 mm x 65 mm with F R P skin 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.

The frame shall be of best quality and free from any defect.

1.2. 35 mm thick single shutter door with flush design with core material PU foam done in situ & sandwich panel of 4 mm thick plywood & moulded in wooden blocks for fixtures. FRP thickness to be 1.50 mm to 2.00 mm including core of rigid polyurethane foam having density 32 Kg/ cmt to 36 Kg/cmt., compressive strength 3.5 Kg./sq.cm. to 4.5 Kg./sq.cm. and fire retardant grade, PU foam shall be done in situ with Canadian Ponderosa wooden blocks for fixtures. Whole section shall be of water proof weather proof termite proof mild acid and alkali proof, sound proof and fire resistance. The shutters shall be of best quality and free from any defect.

2.0. FIXTURES AND FASTENINGS

2.1 Hinges,

Hinges shall be of stain less steel and of approved make.. It shall be Free from any scratches or holes or any damages on surface. and shall have finished luster surface on all sides

The hinges shall be of best quality and free from any defect

2.2 Handles,

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

The handles shall be of best quality and free from any defect

2.3 Bolts,

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

The bolts shall be of best quality and free from any defect

3.0 WORKMANSHIP:

The Work of FRP door shall be done with extreme finishing. The FRP Shutters and frame shall be fixed in position in true line and level and shall be fitted as directed by Engineer in charge with all required fixtures and fastenings shall be fitted at right place as shown in the drawing and as directed by Engineer in charge.

4.0 Mode of Measurement & Payment :

4.1. The unit rate of FRP door shall include the cost of all materials, cost of all necessary fixtures and fastenings, labour charges for fixing frames, doors and fixing the FRP door in wall at the place shown in drawing and as instructed by Engineer in charge, all tools and plant required for assembling and fixing in position, finishing as per direction of the Engineer-in-charge, and all other incidental expenses for preparing door frame and shutter of specified size to complete the door structure or its components as shown on the drawings and according to these specifications.

4.2. The Item shall be measured in square meter.

Item No.2

Providing and fixing wall paneling on pillars/ceiling/wall in Office or any other place where required. The wall panelling shall be made out of 19mm thick gurjan core plywood and the framing shall be made out of aluminium alloy channels fixed with 75mm ss screws and the ply shall be covered with 4mm thick natural veneer and every edge of veneer shall be cutted in 45 degree for a seamless finish and there shall be 5mm thick grey mirror or panelling and 6mm PU painted CNC designed mdf pasted on mirror and the mirror and mdf design shall be fixed with teakwood peading and the veneer and beading patti shall be finished with melamine polish etc or as per directed by engineer in

The above materials shall be of standard quality and shall be as per approved by Engineer in charge. Glass material shall confirm to M.38/P.18. Aluminium material shall confirm to M.31/P.17. The Item includes providing and fixing of half height/full height partition with toe entire frames work can be supported from the G.I patti and GI angle including all necessary materials. The horizontal member and vertical members are duly fixed intersecting to each toe surface at 1.00x1.00mt apart. The partition skin is to be made out of plywood make multi chambers hollow lobe section with dist 10mm x 168 x 10mm with PVC section having overall diameter of 250 x 6 mm, 8mm x 300mm wooden cap with an average wall thickness of 0.20mm + 0.30mm glass of 4 to 5mm thickness as per the design. The partition is inclusive of fixed glass frame doors and hardware. The work shall be carried out as per detailed drawing and as directed by Engineer in charge.

The consolidated item shall be measured and paid on Sq.mt. basis.

Item No.3

Providing and fixing of S.S. Railing pipe 50 mm x 16 G AISI 304 Grade

General

This work shall consist of providing and fixing [S.S. \(Grade 304\) Railing using 50 mm diameter pipe at top & Two Nos. of horizontal intermediate 20 mm diameter or square fixed with Vertical pillar 40 x 40 mm @ 1.20m center to center, Vertical post fixed in treads as shown on detail Architect drawing](#) and conforming to these Specifications or as approved by the Engineer in charge.

1.0 MATERIAL**1.1 50 mm diameter stainless steel pipe for railing**

Stainless steel pipe conform to I.S. 226-1985: The stainless steel pipe shall be free from the defects mentioned in I.S 226-1975 and shall have a smooth finish. The material shall be free from loose mill scale, rust pits or other defects affecting the strength and durability. River bars shall conform to I.S. 1148-1973.

When the stainless steel pipe is supplied by the Contractor test certificate of the manufacturers shall be obtained according to I.S. 226-1975 and other relevant Indian Standards.

Stainless steel pipe for railing shall be of 50 mm diameter and conforming general Indian standards. **Stainless steel** pipe shall be free from the defects and shall have smooth finish.

2.0. Workmanship

2.1. 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

2.0 Mode of Measurement & Payment :

2.1 The payment will be made on running meter basis of the finished work.

- 2.3** All necessary labour materials, equipments, tools and plant, conveyance including loading and unloading etc. shall be provided by the Contractors directed by the Engineer in charge.
- 2.4** The railing shall be measured for its length, limiting dimensions to those specified on plan or as directed and shall be measured in running meters.
- 2.5** The rate shall be for a unit of **one running meter**.

Item No.4 Providing and fixing eco-friendly light weight calcium silicate false ceiling tiles having Tegular edge & 15 mm Thick Densified edges on the Tile Periphery for Extra Strength The Light weight calcium silicate ceiling tiles shall have , light reflection 85% non-combustible as per B.S. 476 part IV, 100% humidity resistance and also having thermal conductivity 0.043° w/m KC. for the best thermal Insulation . The Light weight calcium Silicate tile shall be of approved texture Fine fissured/ Spintone/Cosmos having NRC value of 0.5 & Globe having NRC value of 0.75 NRC or equivalent of size 595 X 595 mm to be laid on true horizontal level suspended inter locking metal grid of hot dipped galvanized steel sections (galvanizing @120 grams per sqm including both side) consisting of main 'T' runner suitably spaced at joints to get required length and size of 24X38mm made from 0.30 mm thick (minimum) sheet, 1200mm centre to centre, and cross 'T' of size 24X28mm made out of 0.33mm (Minimum) sheet spaced 1200mm along spaced between main 'T' at 600mm centre to centre to form a grid of 1200X600mm and secondary cross 'T' of length 600mm and size 24x28mm made of 0.30 mm thick (Minimum) sheet to be interlocked at middle of the 1200X600mm panel to form grid of size 600X600mm resting on periphery walls/partitions on a perimeter wall angle pre coated steel of size (24X24X3000mm made of 0.40mm thick (minimum) sheet with the help of rawl plugs at 450mm centre to centre with 25mm long dry wall screws @ 230mm interval and laying 15mm thick Densified edges light weight calcium silicate ceiling tiles of approved texture (Fine Fissured/Cosmos/Spintone) in the grid including, cutting /making opening for services like diffusers, grills, light fittings, fixtures, smoke detectors etc., wherever required, Main

Materials:-

- 1.1 Calcium silicate tiles for false ceiling confirming to relevant IS standard.
- 1.2 Grid channels of G.I. hot dipped galvanised steel section and Misc. fixtures and fastening shall be confirming to relevant IS/as approved by Engineer-in-charge.
- 1.3 Workmanship:-
- 1.4 The item covers the requirement of fixing of Calcium silicate tiles and grid framing of G.I. sections with approved fixtures & fasteners such as bolts, screws etc., as per details, drawings and as directed by the Engineer-in charge.

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1.5 G.I. channels confirming M-23 shall only be used.

1.5.1 Wall angle fixed to the perimeter at the wall at the ceiling level which decided.

1.5.2 Main sections are suspended from the soffit with the help of plugs, soffit cleat, 4 mm rod and levelling deep.

1.5.3 Cross sections are locked with the main section.

1.5.4 Completed frame work with section ready for laying ceiling panels.

1.5.5 The light weight calcium silicate tile shall be of approved texture fine fissured/Spin tone/Cosmos having NRC value of 0.5 & Globe having NRC value of 0.75 NRC or equivalent of size 595 x 595 mm to be laid on true horizontal level.

1.6 Mode of measurement and payment:-

1.7 The rate includes cost of materials ,all labours, tools tackles etc. required for satisfactory completion of item.

1.8 The necessary vouchers bill of purchase of materials shall be produced if demanded by the Engineer-in-charge.

Rate shall be in unit of on sq.mt basis.

Signature of the contractor

Deputy Executive Engineer,
Dharampur (R&B) Sub Division
Dharampur

Executive Engineer,
Valsad (R&B) Division
Valsad

- : SCHEDULE FOR TESTING OF MATERIALS :-

For ensuring quality control and workmanship Various tests prescribed below for materials shall be taken at periodical intervals as stipulated below. The materials shall be got tested at Government recognized Laboratory (R&B) or field Laboratory of GERI (R&B) for which 1% of the estimated amount put to tender shall be recovered from the contractor from the RA bills and final bills and the testing charges shall be paid to the GERI by the Government . 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)/

It. No. as per schedule "B"	Brief description of materials to be tested	Qty of material	Prescription of test which shall be carried out	Frequency at which test shall be carried out	Total No of test to be taken.
1]	Coarse Aggregate		- Gradation test - Impact value - Flakiness and elongation	1 to 100 cm 1 test 100 to 500 cm 3 test 500 to 1500 cm 5 test 1500 to 5000 cm 7 test Minimum 1 test/ work	
2]	Grit		- Stripping value	As above	
3]	Granular materials		- Gradation - Atterbeg limits	As above	
4]	Murum		- P I Value	One test per 50 cum.	
5]	Sand/ quarry spall		- Silt content - Gradation - CBR test	One test per work/ season One test per 200 cmt. One test per work	
6]	Asphalt		1 Penetration test as per IS 1203 2 Ductility test as per IS 1208 3 Specific gravity test as per IS 1202 4 Softening point test as per IS 1204 5 Viscosity test as per IS 1206	1 to 10 tanker 1 11 to 20 tanker test 21 to 50 " 2 51 to 100 " test Remaining every 50" 3 test 4 test 1 test	

7]	Cement		<ul style="list-style-type: none"> - Consistency - Setting time - Compressive strength - Fineness - Chemical analysis - Soundness 	Up to 50 MT 100 MT 200 MT 300 MT 500 MT 800 MT 1300 MT	1 test 2 test 3 test 4 test 5 test 6 test 7 test and 8 test for larger consignment	
8]	CC Cubes		<ul style="list-style-type: none"> - Compressive Strength (I.S. 519 – 1959) 	1 to 5 cms 6 to 15 cms 16 to 20 cms 21 to 50 cms 51 and above	1 No 2 No 3 No 4 No 4 + 1 (For each additional 50 m ³ or part thereof)	
9]	Water		<ul style="list-style-type: none"> - Chemical test 	Once for approval of source of supply		
10]	Steel		<ul style="list-style-type: none"> - Tensile Strength - Yield Stress - Elongation - Size 	1 test/ 40 tonnes/ per category		
11]	Bricks		<ul style="list-style-type: none"> - Water absorption - Efflorence - Size - Compressive Strength 	1 test per 50,000 bricks		
12]	Prime coat/ Tack coat		<ul style="list-style-type: none"> - Quality of binder - Binder temperature for application - Rate of spread of binder 	Number of samples per lot and test as per IS:73 At regular close intervals Two test per 500 m ² and not less than two test per day		
13]	Carpet and Seal coat mix/ B.M/ M.S.S.		<ul style="list-style-type: none"> - Quality of binder - Grading - Temperature of binder 	Number of samples per lot and test as per IS:73 1 test on individual contents and mix aggregate from the dryer for each 100 tonns of mix subject to minimum of two test per plant per day At regular close intervals		

			<ul style="list-style-type: none"> - Binder content vide 45 IMD 2172 - Rate of spread of mix materials 	<p>One test for each 100 tonnes of mix subject to mini. of Two per day</p> <p>Regular control through checks on layer thickness</p>	
14]	Granular Sub-base	''''''	<ul style="list-style-type: none"> - Gradation - Atterberg limits - Moisture content prior to compaction - Density of compacted layer - Deleterious constituents - C.B.R. 	<p>As mentioned under serial number 3</p> <p>As mentioned under serial number 3</p> <p>As mentioned under serial number 3</p> <p>One test per 500 m²</p> <p>As required</p> <p>As required</p>	
15]	Wet Mix Macadam		<ul style="list-style-type: none"> - Aggregate Impact Value - Grading - Flakiness and Elongation Index - Atterberg limits of portion of aggregate passing 425 micron sieve - Density of compacted layer 	<p>As mentioned under serial number 1</p> <p>As mentioned under serial No.1</p> <p>As mentioned under serial number 1</p> <p>As mentioned under serial number 3</p> <p>One test per 500 m²</p>	
16]	Water Bound Macadam		<ul style="list-style-type: none"> - Aggregate Impact Value - Grading - Flakiness Index and Elongation index - Atterberg limits of binding material - Atterberg limits of portion of aggregate passing 425 micron sieve 	<p>As mentioned under serial number 1</p> <p>As mentioned under serial No.1 As mentioned under serial number 1</p> <p>As mentioned under serial number 1</p> <p>As mentioned under serial number 1</p>	
17]	Earthwork		<ul style="list-style-type: none"> - Sand Content [IS: 2720 (Part-4)] - Plasticity Test[IS:2720 (Part-5)] 	<p>2 tests per 3000 cubic metres of soil</p> <p>2 tests per 3000 cub. metres of soil.</p>	

			<ul style="list-style-type: none"> - Density Test [IS:2720 (Part-8)] - Moisture Content Test [IS :2720 (Part-2)] - CBR Test 	<p>2 tests per 3000 cubic metres of soil. One test for every 250 cubic metres of soil.</p> <p>One CBR test for every 3000 cum. at least or closer as and when required by the Engineer.</p>	
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The Number of tests will be as per Manual of quality control or latest Govt. G.R./Circular and it will be considered final

The contractor shall have to pay 1% of the estimated cost put to tender towards all testing of materials and the same shall be deducted from their bills for the works.

Testing charges of GERI shall be borne by Govt. No refund be made nor extra charges over 1% shall be recoverable from the contractor.

If directed by the Engineer in charge, the materials intended to be used for the work but not included in the above schedule shall also be got tested at Government recognized Laboratory or field Laboratory.

Signature of Contractor

Deputy Executive Engineer
Dharampur (R&B) Sub Division
Dharampur

Executive Engineer
Valsad (R&B) Division
Valsad